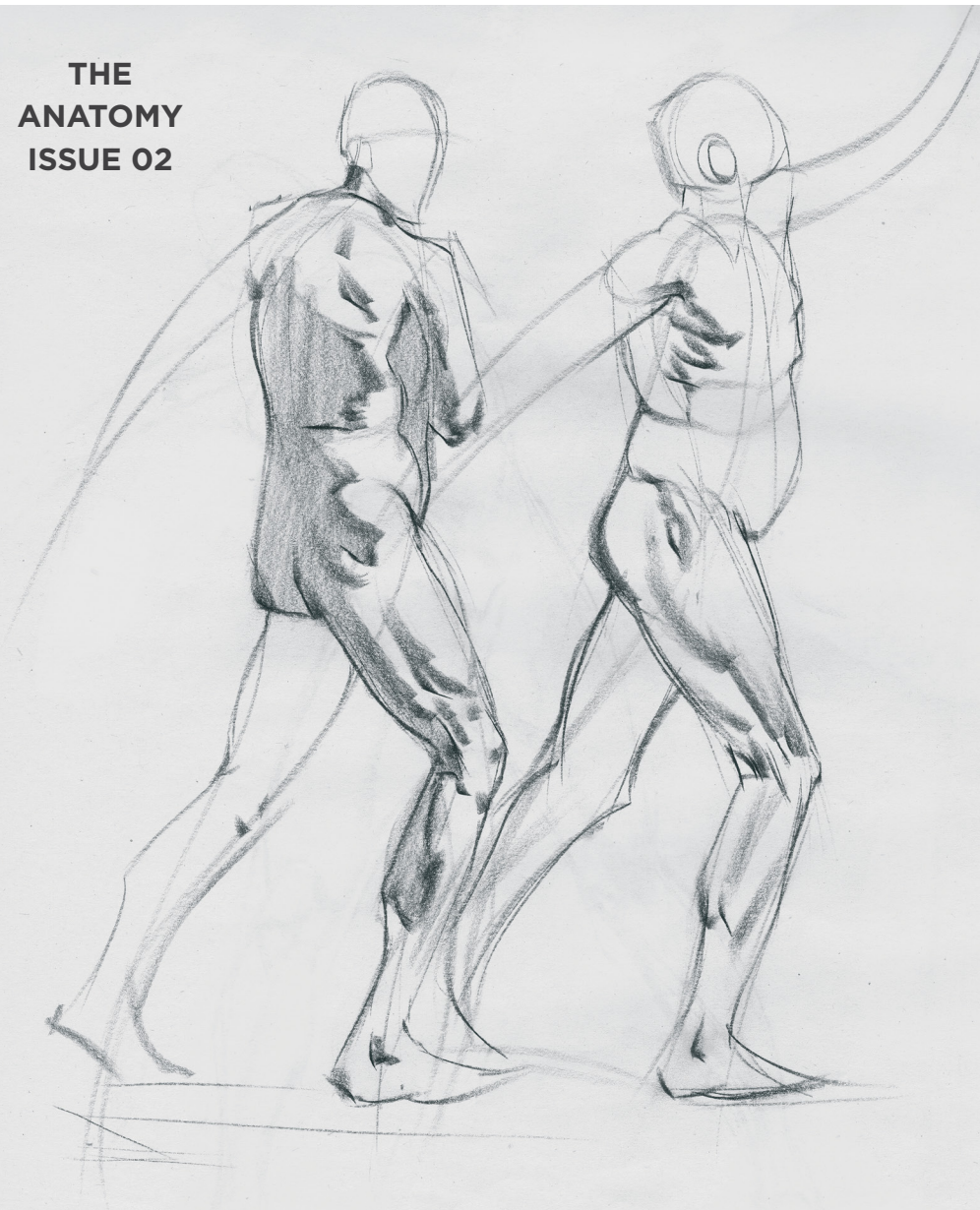


THE  
ANATOMY  
ISSUE 02



# total

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3dtotal's free emagazine

04



Hello and welcome to the celebratory issue of our free magazine *total*. Why “celebratory”? Well, we’ll tell you. 3dtotal has been a top resource site for CG artists and hobbyists for nearly twenty years, and in that time the internet and the way people view it has changed beyond recognition! We’ve been aware of the need to update the website; to appeal to the wider art community, improve user experience, and continue to provide the valuable resources and tools that 3dtotal users have enjoyed for many years.

Taking this into account, we’ve created a new site from scratch that encompasses our values and affirms our commitment to the art community. This free magazine is to celebrate the new and improved 3dtotal.com, and to showcase some of the updated and innovative, cutting edge features the new site contains.

As a thank you for supporting us we have put together a collection of character and anatomy focused tutorials to enjoy, and to give a taster of the fantastic content 3dtotal will continue to generate to aid your creative endeavours.



Cover image © 2017 Kan Muftic

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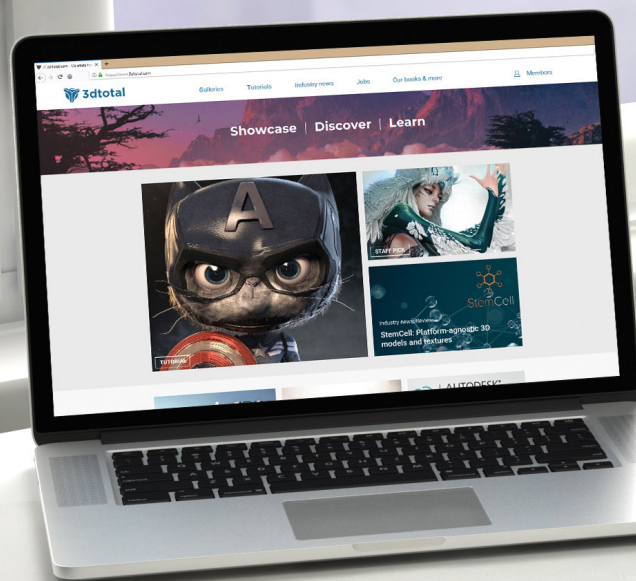
90 | Wings

By Eliza Ivanova



# 3dtotal's new website

If you've been following our development blog ([www.blog.3dtotal.com](http://www.blog.3dtotal.com)) you will be aware that the main 3dtotal website is undergoing some major redevelopment. And if you haven't, well where have you been? For years, 3dtotal.com has been a go-to resource for tutorials, news, and inspirational gallery images, but it hasn't evolved too much with the times. Until now.



3dtotal.com



3dtotal history

The last update to the site was in late 2011, and before that it hadn't changed much in over ten years.

Digital art has come such a long way over the years, and while 3dtotal has continued to grow too, not only as a brand and presence, but also with what we do for the art community with our books and other products, there was one area we always felt we could improve, and that time has arrived.

For those of you who were here in the early 2000s here's a blast from the past, and for newcomers, we're sure it must be interesting to see our humble beginnings.

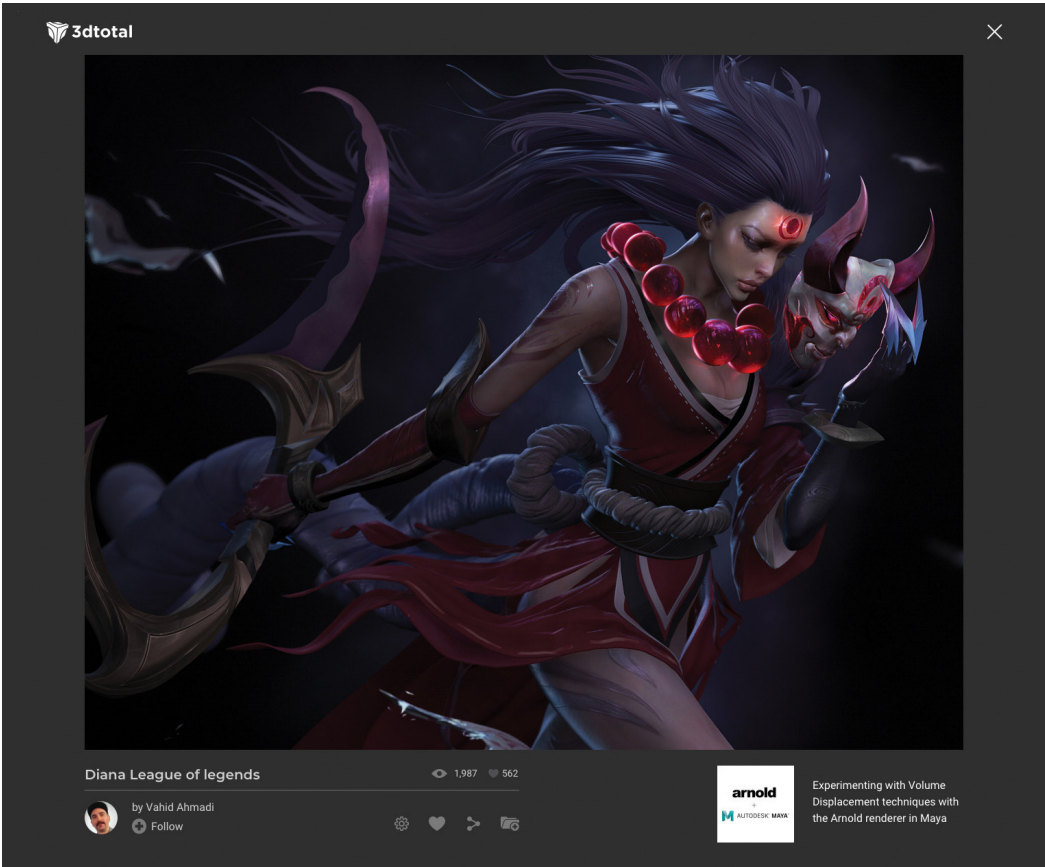
Seven years later and it had barely changed. We added new content on an almost daily basis, becoming a resource for textures and gallery inspiration, for video tutorials, interviews and making ofs. We grew our collection of ebooks and realized there was a need in the art community for quality art books, which is when 3dtotal Publishing was born.

Eight years on and we are bigger and more successful than ever, publishing a minimum of eight books a year, crowd-funding with Kickstarter, printing a highly sought-after anatomy figure range, and even dabbling with card- and board-game creation. As we grew, we were humbled by the real-life cases of artists who had started



with one of our books; who we had helped overcome a particular challenge that took them to the next level. Artists who are now full-time in their chosen profession. It

is this sense of pride, and a desire to provide the art community with as much as we can to help them along their way, that is channeling our passion into a new website.



Community galleries & presentation options

Currently, the only artwork to feature in the gallery is artwork we have selected, meaning there is a whole submission and selection process which we feel is outdated. This process was always limiting to the beginner. With all the tutorials, ebooks, and tutorial books available from 3dtotal, it feels like a disservice not having a way for beginners to showcase their work, to gather feedback, and to continue their education side-by-side with the content available on the site.

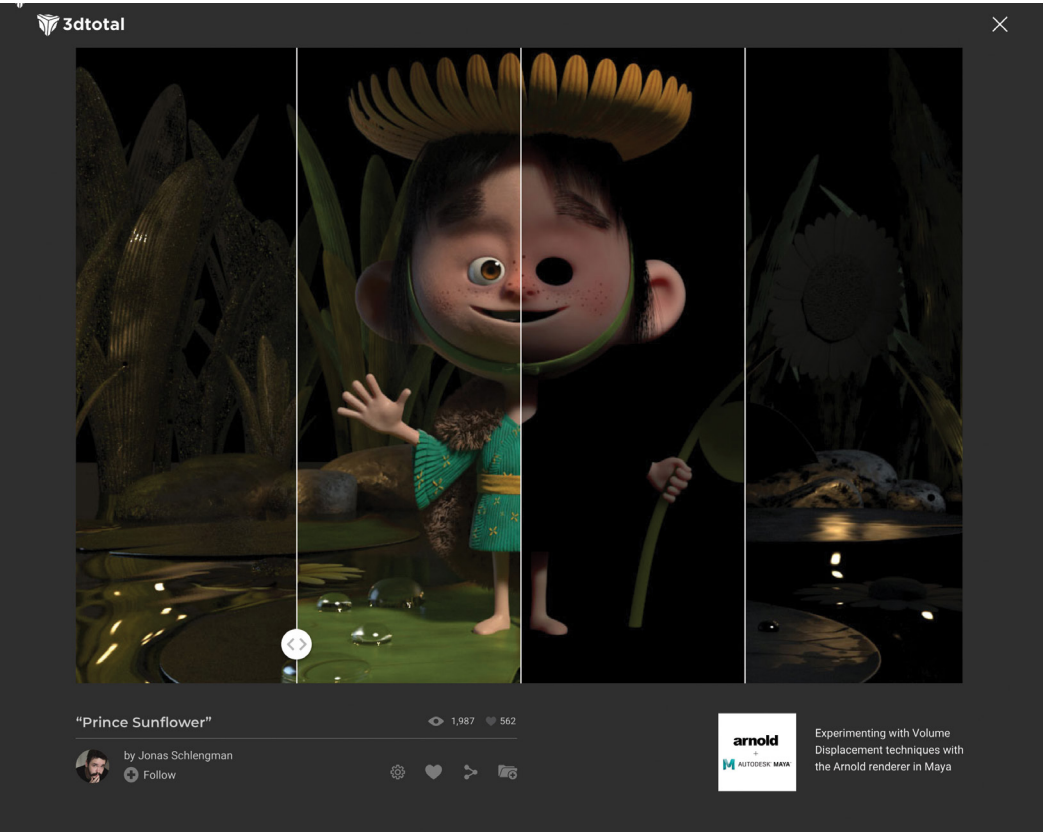
Dedicated 3dtotal members will know we have had a portfolio section for some time but that it was hidden away - we'll be bringing this out front for everyone to use. There was a prestige (we hope!) to being selected for the 3dtotal gallery, and this will remain in the form of staff picks. There will be five top headers for exploring the gallery: Staff picks, Popular, Debuts, Recent, and Following. These are self-explanatory, but excitingly it reveals the ability to be able to follow your favorite artists. This isn't particularly revelatory, but we hope it indicates our

commitment to putting artists and their artwork at the center of the new website.

Top left: Our website back in 2003

Bottom left: 3dtotal today

Above: Image showcase WIP



Many sites exist where you can upload your work, so the challenge for us is to offer features and abilities that others do not. There will be your now-standard support for slideshows, videos, and 3D models, but also something we are calling 20:20. You will be able to upload the different stages and/or passes of your work to create a 20:20 image with sliding bars.

Moving these bars around will display the different passes or stages of the artwork, which we think is a cool feature! We'll also be adding Sketchfab's embed ability, so you can showcase your 3D

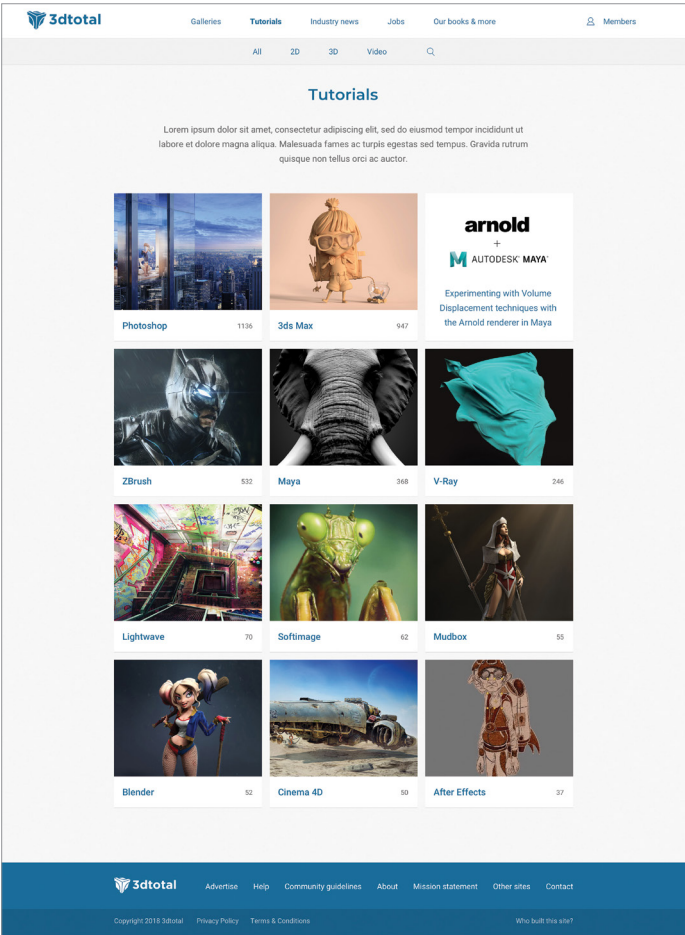
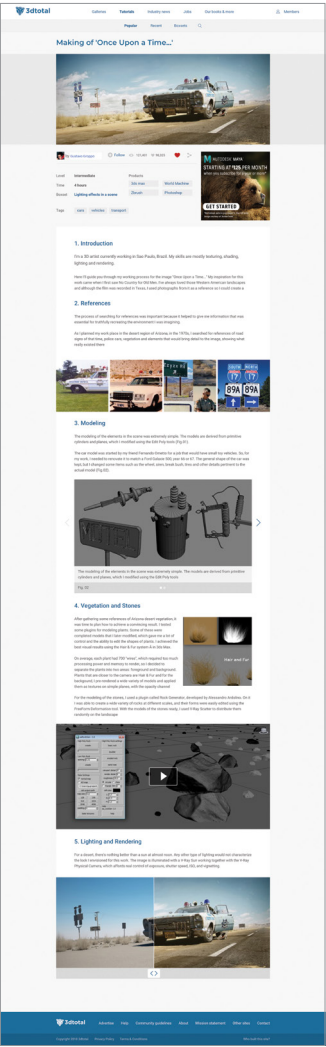


images from every angle! One of the most exciting additions is the ability to create a parallax image. You will be able to upload multiple layers of varying distances to create a parallax effect within your 2D or 3D image.

This gives the illusion of 3D space and depth by creating a moving 'camera' position. This 'camera' will have the ability to move through the x, y, and z axis, allowing you to really show off your artwork in a unique way.

## Tutorials & interviews

We will continue to host making of's and commission tutorials. Maybe you're a complete beginner and a new tutorial appears that explains perfectly how to paint hair. Or maybe you're a digital painter looking to expand your knowledge of 3D, and up pops a 3ds Max hard-surface tutorial to get those creative fingers working. Or there's a speed painting guide



where the artist has used an interesting technique that could speed up your own workflow. We understand that, as artists, recognizing how a piece came together is often as important as just enjoying the final image.

As for the tutorials themselves, we will add some further categorization in the form of difficulty level and how long it will take. We will also have much greater customization options for how the tutorials themselves are

laid out, meaning we can optimize how they are presented so they are as clear and helpful as possible.

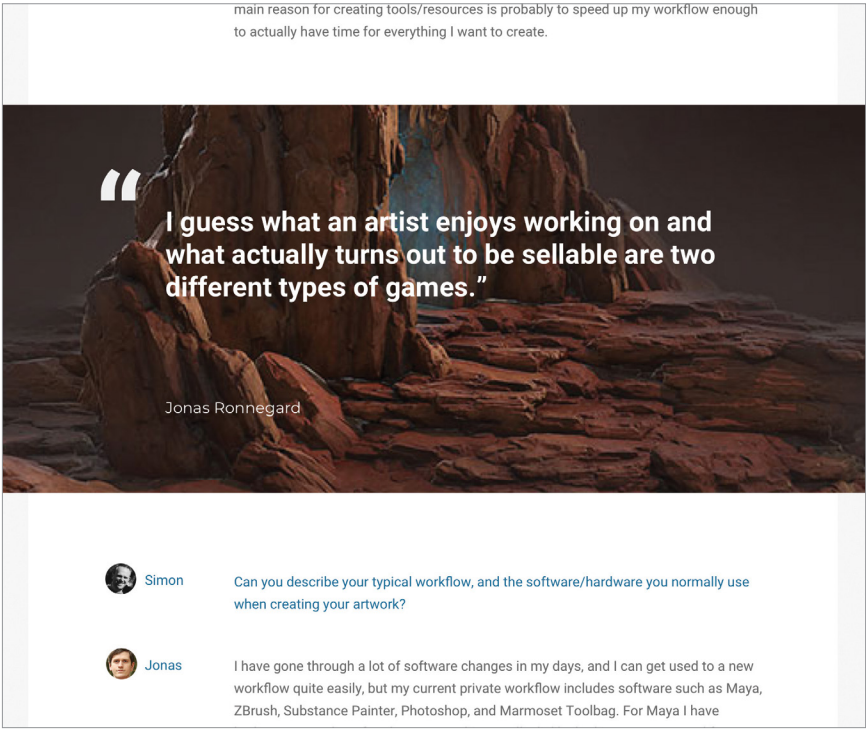
Far top left: New 20:20 feature

Far bottom left: Display your images with the parallax effect

Above: New tutorials display

Near left: New options for article layouts





Left:  
Highlighting  
stand-out  
quotes

Below:  
New mobile  
functionality

Near right:  
Profile page  
WIP

Far right:  
Analytics  
page WIP

Another cornerstone of the website are our artist interviews. These allow the artist to connect to viewers and other artists, and give us an insight into their inner workings! It's also an opportunity to showcase their work and gain further fans! We feel it is essential to continue to do these, and to make them as presentable as possible. The new layout options will enable us to really push the presentation side of things, from how we can layout images, to taking pertinent quotes from the artist and highlighting them.

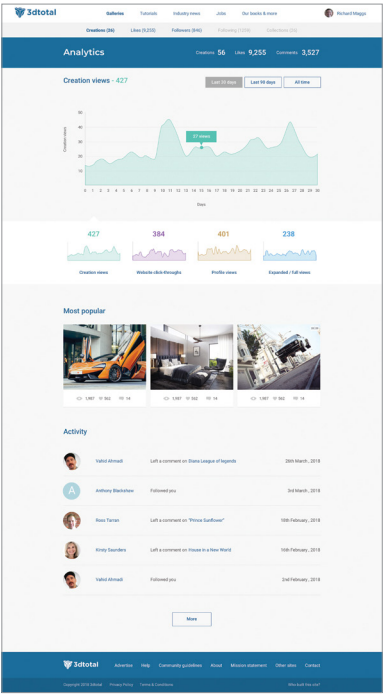
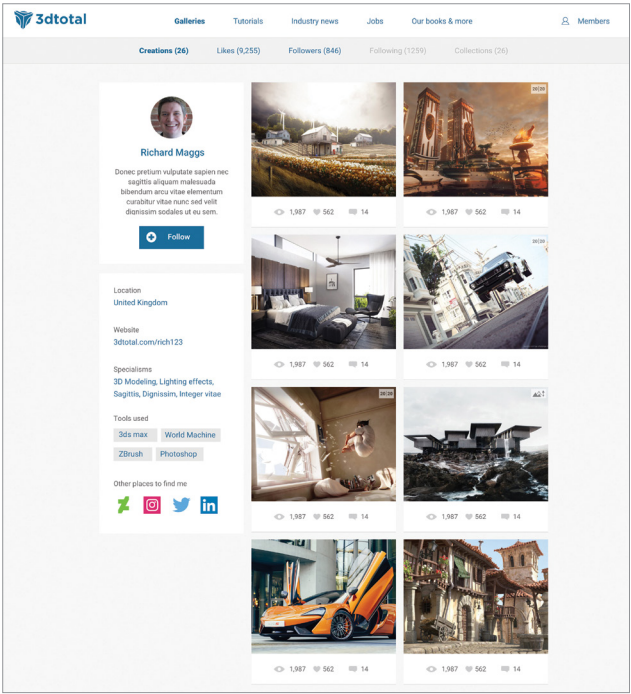
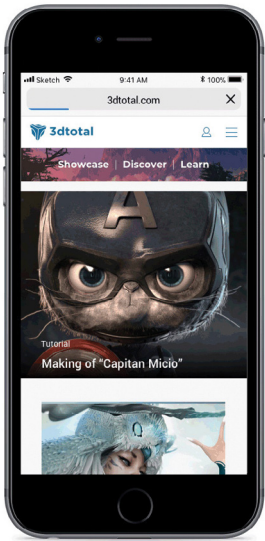
Mobile efficiency

3dtotal.com as it exists now is not great for mobile viewing, so improving the accessibility of

the site was a top priority and something the development team have been working hard to achieve. Landing on the homepage will become a much more pleasant and streamlined experience. Scrolling down will reveal all the latest tutorials, interviews, and features, with further content showing up based on your own preferences, worked out by looking at the content you have liked in the past.

From the top-right of the screen you'll be able to access the rest of 3dtotal and your members area. We hope that this added functionality will especially help those of you engaging in the tutorials, with your tablet or phone

open on your desk besides your workstation. We know a lot of you work like this, so it was an important change.



Member profile

A 3dtotal account will also give you your own URL, allow you to create a complete profile; from your profile picture to social shortcuts, personal website, and biography. You'll then be able to choose your specialism and job availability. You'll be able to set your notifications, follow others, like posts, and even mention other artists. Security is also something we are taking very seriously, so you will be notified should someone else log in to your account from another location.

Once you have signed up, you'll be able to begin populating your portfolio, liking other artwork to build up your own personal social wall, and saving artwork you

particularly like in "Collections." We have gone for a clean, uncluttered style for your profile pages, but there will be options for customization and other ideas we are working on, to make your profile page something you can really call your own. For example, have you been chosen as a Staff Pick? Then you will get a special badge indicating this. There will be badges for other achievements, which will unlock other features too! Hopefully this will make it a fun, as well as professional, experience. And of course, it will be free.

Members will also have a range of analytics for their page and their artwork, in graph and statistical form, that can range from 30

days, 90 days, to All time. These analytics will include:

- Profile views
- Website click-throughs
- Creation views
- Number of likes received
- Number of followers gained
- Number of members you've followed
- Number of creations you've uploaded
- Most popular work

This will enable you to easily track the popularity of your work, giving an insight into what is really grabbing the viewer's attention at that time. If you have multiple images online, it can be difficult to keep track of comments, but in this new system you'll quickly be



able to see the latest comments; what advice, praise, or critique is being offered.

And with the website click-throughs, we hope that this figure will just grow and grow, showing you just how valuable a 3dtotal profile is as a way to show off your talents and get noticed! The rest of the information is there to be used to help you improve --knowledge is power after all!

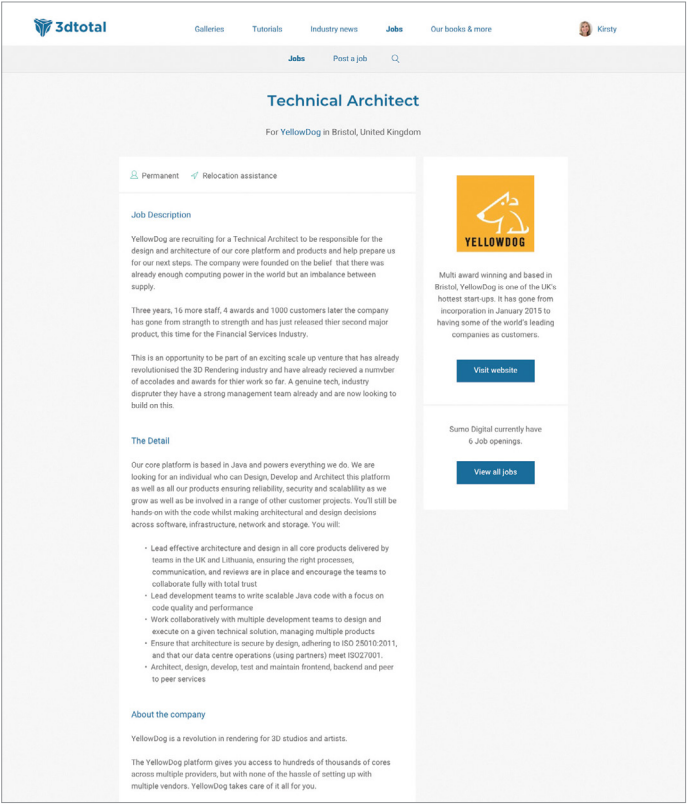
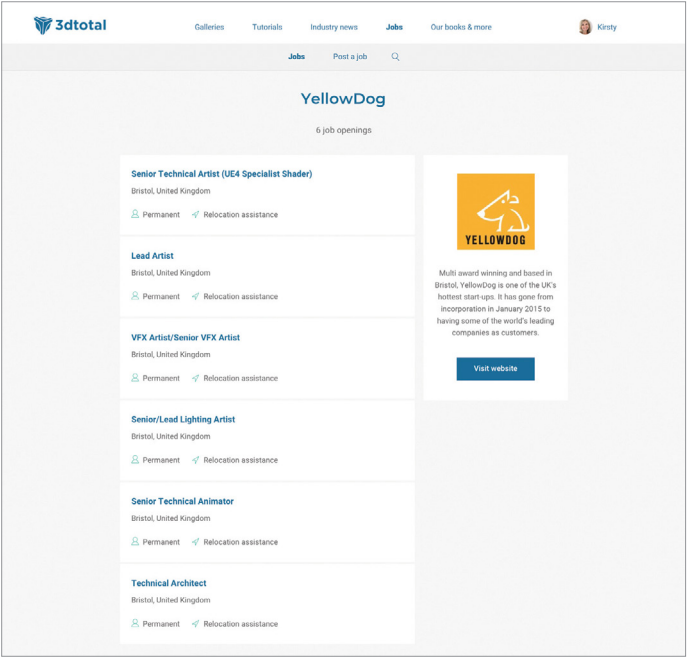
Jobs

Everyone wants to do their art for a living, right? That’s the dream... and we want to help that dream become a reality. In line with our greater community aspect will be the opportunity for employers to get involved; maybe they’ll want a lighting artist for a 6-month project, or a full-time senior character artist – well now they’ll be able to let you know.

From your profile page, you’ll also be able to make yourself available to certain jobs, so employers can contact you. Our aim is to help you get ahead in the industry! If we get great feedback on this, we have a couple more ideas we can try to streamline the process further!

Top right: Job advertising WIP

Bottom right: Job listing WIP



# 3dtotal.com

We hope you like the sound of these changes. Many of them have become standard on other similar websites, but the ideas we have in mind for the future will make 3dtotal a more unique experience. The artwork will always be the core motivator, with presentation paramount, and we hope to give you a platform to show it in its best light.



# Preparing for a life drawing session

Materials and tools

Posture

Warming up

Line is everything

Concept artist Kan Muftic talks us through the practical things you need to know and prepare before starting a figure drawing session.

**By Kan Muftic**

[kanmuftic.blogspot.com](http://kanmuftic.blogspot.com)

All images © Kan Muftic





Materials and tools

Materials are important. They are your armor, your sword, and your shield. When you go into battle, you want to be equipped with the best materials, and you want to keep them intact by taking care of them. The same goes for your drawing tools. You therefore need to be mindful of them. Some will work great for one thing and not as much for another. Certain pieces of equipment don't seem to agree with each other, while others seem to be a perfect match. I spent years trying to figure out what combinations of materials work best for the kind of drawing I want to produce. I will address each of them specifically here.

Paper

This isn't just a blank piece of paper. This is your canvas, your playground, and your big screen all at once. It is where you talk to your audience through the language of drawing. For figure drawing, we are looking for smooth, buttery strokes, and we therefore need a very smooth surface. The ideal paper for this task is smooth newsprint paper. It usually comes in loose sheets, but you can also buy it in a pad form, which is much easier to manage.

While drawing, make sure you have enough paper underneath the sheet you are drawing on. This means you will avoid scratching the rough texture from underneath into your drawing, and it enables you to draw very soft strokes. You should also fasten your pad to the drawing board to avoid a "bouncing" surface, which can greatly affect your accuracy to a large extent.

Easel

I use an easel whenever I can for figure drawing. A standing position is preferable to a sitting one because it demands better control over your dexterity. As you can see on the right, I have a simple easel for my home studies, but there are various types found in life drawing classes which are better suited for that specific purpose.



Top left:

Ensure there is padding underneath the sheet you are drawing on

Bottom left:

Newsprint paper's smooth surface is ideal for figure drawing

Right:

Henry Yan's drawing and my father's watercolor on the walls keep me inspired and serve as a constant reminder to keep practicing







### Pencil

In my opinion charcoal pencils are the best for achieving the painterly effect on newsprint paper. They also reach a great range from bright to dark tones. I use 2B or 4B pencils by General's, or a 1710-B pencil by Conté à Paris. There are plenty of other charcoal pencils which you can try out to see if they work for you.

Keep your pencils sharp, ideally with a long tapering tip. In order to execute a gestural look, you need a full range of line thicknesses, which is best achieved with this shape of tip.

### Sharpener

Sharpening is more important to me than having an eraser. If my pencils are sharp, I don't need to fix things as much. There are various

types of sharpeners and just as many opinions on which ones to use; I would like to let you decide for yourself and find the one that you like to use. I personally like to use a scalpel for sharpening pencils, but other types will work just fine.

Sharpening pencils is a crucial part of the drawing process. It forces you to slow down and be in the moment. If you rush this part, you might end up breaking the tip and having to start over again.

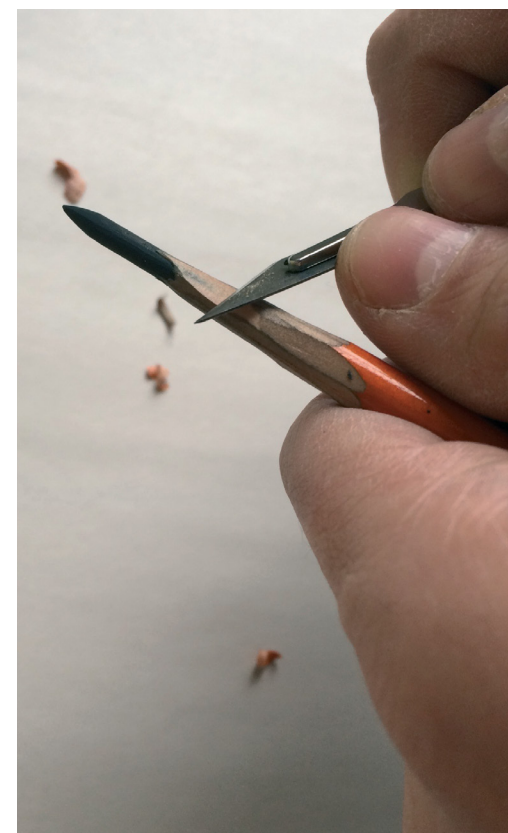
Therefore, slow down. Do not think about anything else but that pencil in your hand. Gently, layer by layer, release the tip from within the wooden coating. Keep spinning the pencil in your hand so that you achieve a nice rounded surface that isn't jittery.

As the long tip is revealed, refine it by taking a piece of sandpaper and moving the pencil forward and backward, holding it at a downward angle. Repeat this process until you have three or four pencils in stock; one pencil might break during drawing, so you must be able to replace it without losing your flow.

**Above:** Charcoal pencils with long tapered tips are ideal for the methods you will use in this book

**Top right:** Using a scalpel to sharpen a pencil

**Bottom right:** Smoothing the sharpened pencil with sandpaper







### Eraser

When it comes to quick sketching, my personal advice is: Don't use an eraser. In fact, the whole point of the particular style of drawing covered in this book is to be loose, yet confident – something that is a challenge to achieve. Erasing should therefore be purposefully avoided as it removes both of those aspects.

If you do need to use an eraser, however, another problem arises.

Charcoal is a tricky beast – once it has found its home on paper, it is reluctant to leave. Removing it isn't easy at all. Very light strokes can be removed, but if you have carved something into your page, you need to forget about it!

You can use an eraser as a drawing tool, though. A kneaded eraser (also known as a putty eraser) is great for picking out the highlights and tiny details, but should be used sparingly.

**Above:** A putty eraser can erase marks without leaving rubbings on your paper

**Right:** Using a kneaded eraser to create highlights







### Posture

After attending a workshop by Henry Yan, posture was an area that I was able to correct. It is important to:

- relax your shoulders
- straighten your back
- unlock your knees
- keep your arm below your eye line

I was unaware of just how tense I was when I was drawing. Henry told me to control my breathing. Yes, breathing! How could I have been breathing so badly while drawing? Breathing calmly will help to relax your posture and slow down your approach.

Henry also told me to think before putting down the pencil on the paper. This literally changed not only my way of drawing and painting, but my attitude to life in general. Approaching things in life with mindfulness is the greatest gift I received from my master.

---

**Far left:** My standing posture

**Near left:** A collaborative drawing with Henry Yan





01



02

**Warming up**

Now that you are breathing calmly and have a good, relaxed posture, you are ready to warm up. I strongly advise doing the following exercises before you start your drawing session as it will help you to loosen up and prepare your muscles for the task ahead.

**01** Start off by drawing various lines: thin, thick, bright, dark, straight, and curved.

**02** Next, start tracing over these lines, staying close to the originals.

**03** Now start drawing ovals and circles. This is an exercise I learned from the artist Jeff R. Watts, and I find it very useful for warming up my whole arm.

**04** Finally, hold your pencil almost flat on the page and start pulling short, wide strokes across it. Change the direction of the strokes in order to get more gesture in your mark-making.

You can use this technique when it comes to rendering anatomy in your sketches.

**Above left:**  
Warm-up mark-making

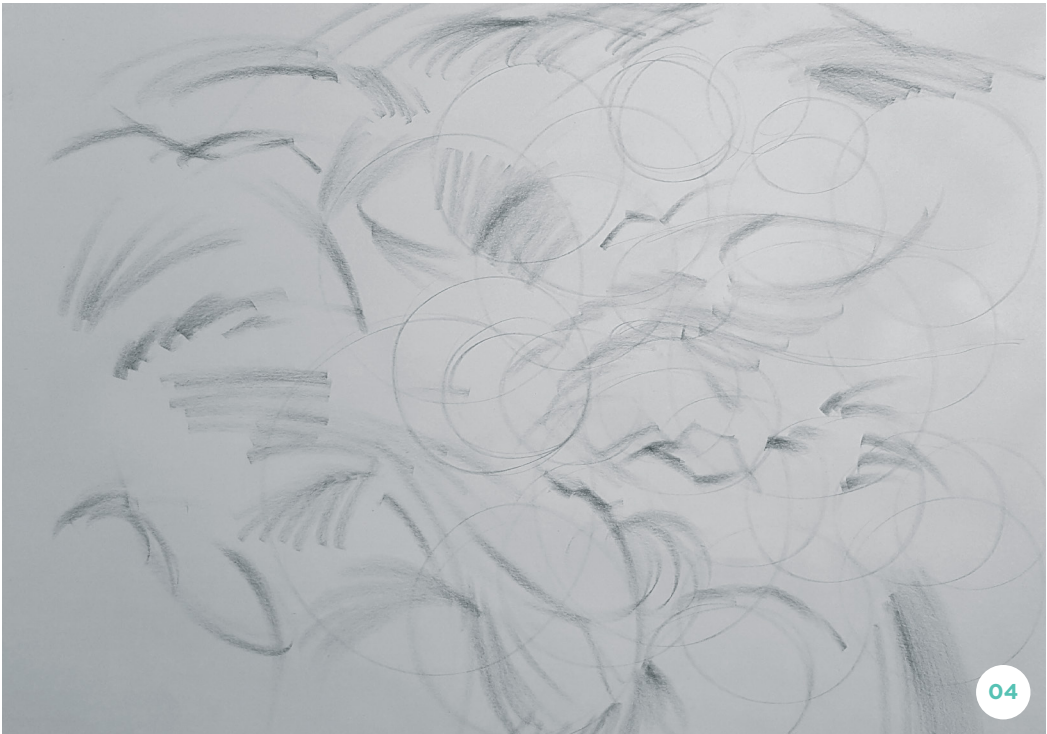
**Above right:**  
Following the original lines

**Top right:**  
Sketching ovals and circles

**Bottom right:**  
Creating different types of wide marks

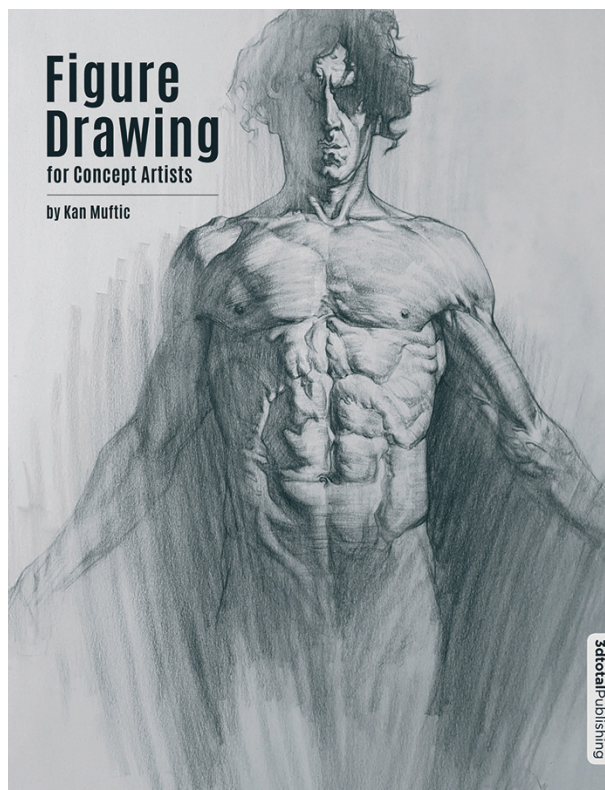


03



04

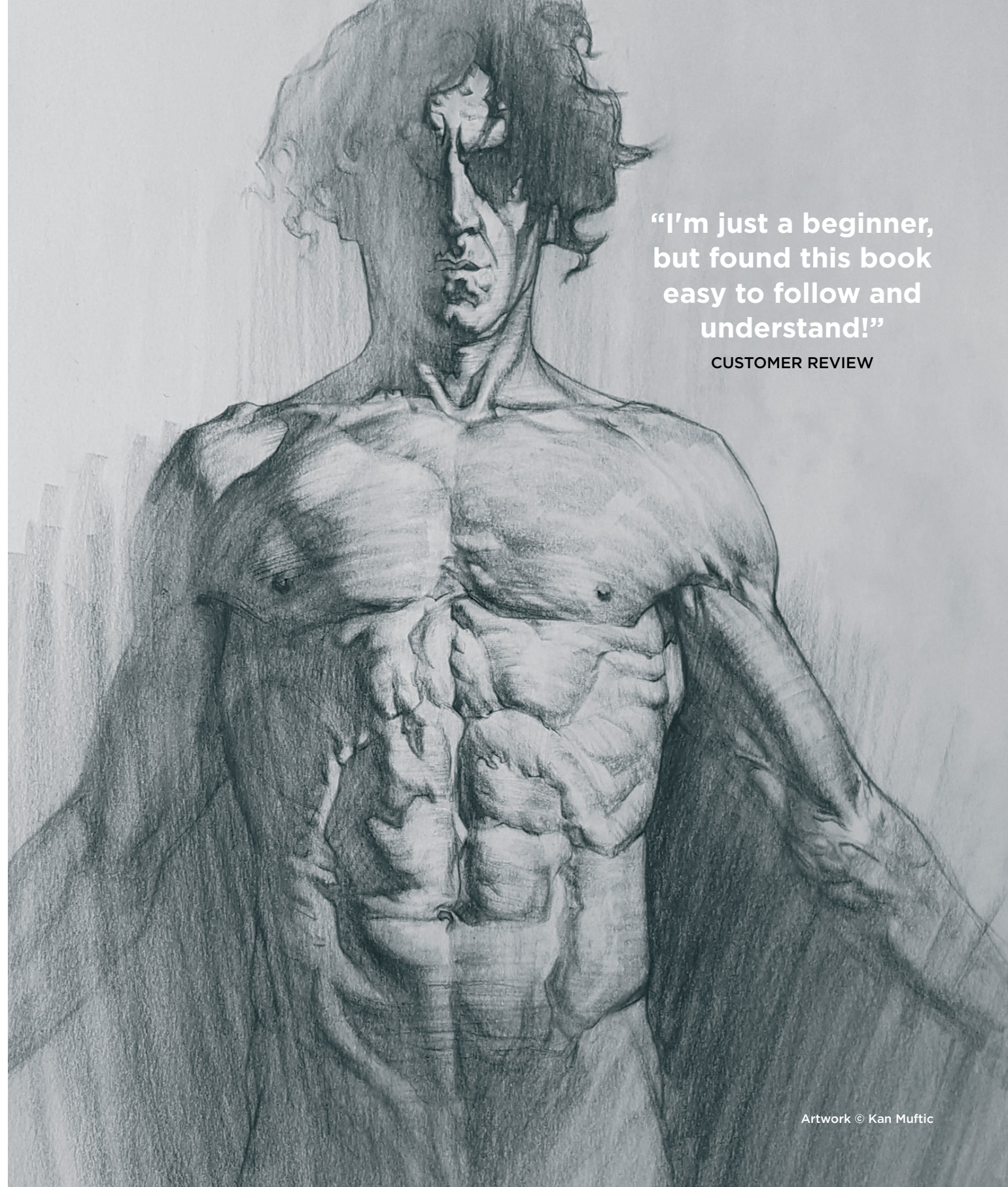




## Figure Drawing for Concept Artists

Accessibly written and lavishly illustrated by respected concept artist Kan Muftic, this book celebrates the common ground between traditional life drawing and the fast-paced world of the concept art industry. Learn about the skills, techniques, and mindset needed to make successful life drawings, how to capture the forms of the human body on paper, and how to improve your character and concept art with a dynamic approach to figures and anatomy. *Figure Drawing for Concept Artists* offers a unique, up-to-date perspective on classical skills, with the contemporary practitioner in mind.

AVAILABLE NOW  
**[shop.3dtotal.com](http://shop.3dtotal.com)**



**“I’m just a beginner,  
but found this book  
easy to follow and  
understand!”**

**CUSTOMER REVIEW**

Artwork © Kan Muftic

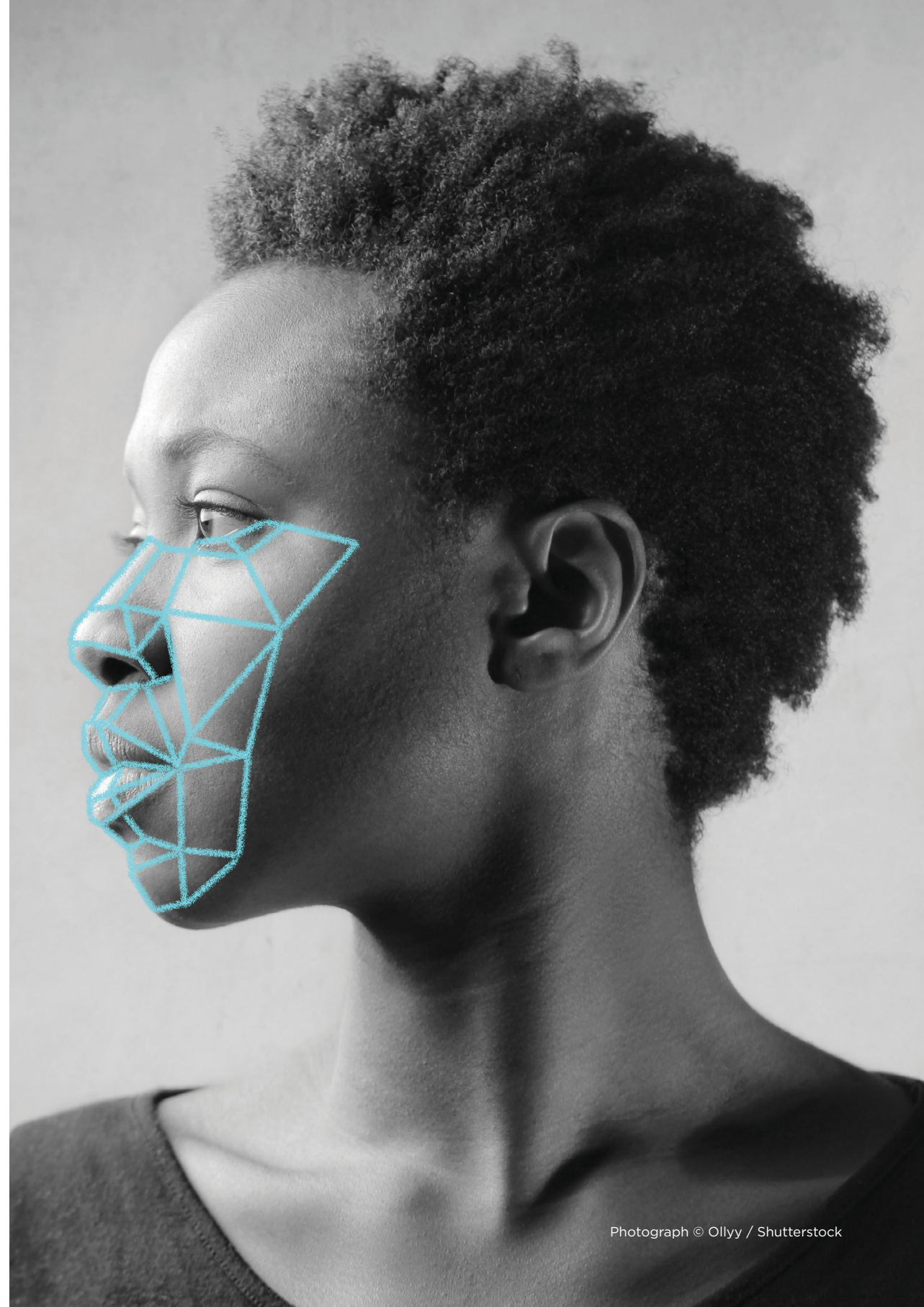


# The planes of the head

Understanding and recognizing the planes of the head is a valuable tool for any artist who wants to create well-proportioned and recognizable faces. In this chapter we will look at how to break down the face into its basic planes using a planar bust. We will then look into how this translates to real faces.

**By Marisa Lewis**

[instagram.com/marisa.draws](https://www.instagram.com/marisa.draws)



Photograph © Ollyy / Shutterstock



**Top left:**  
Male and female planar reference busts

**Bottom left:**  
A planar interpretation of the male head

**Near top right:**  
Front view of a male planar bust in shadow

**Far top right:**  
Using the male planar bust to quickly sketch out proportions and features

**Bottom right:**  
Filling in simple shading: shadows, midtones, and blending



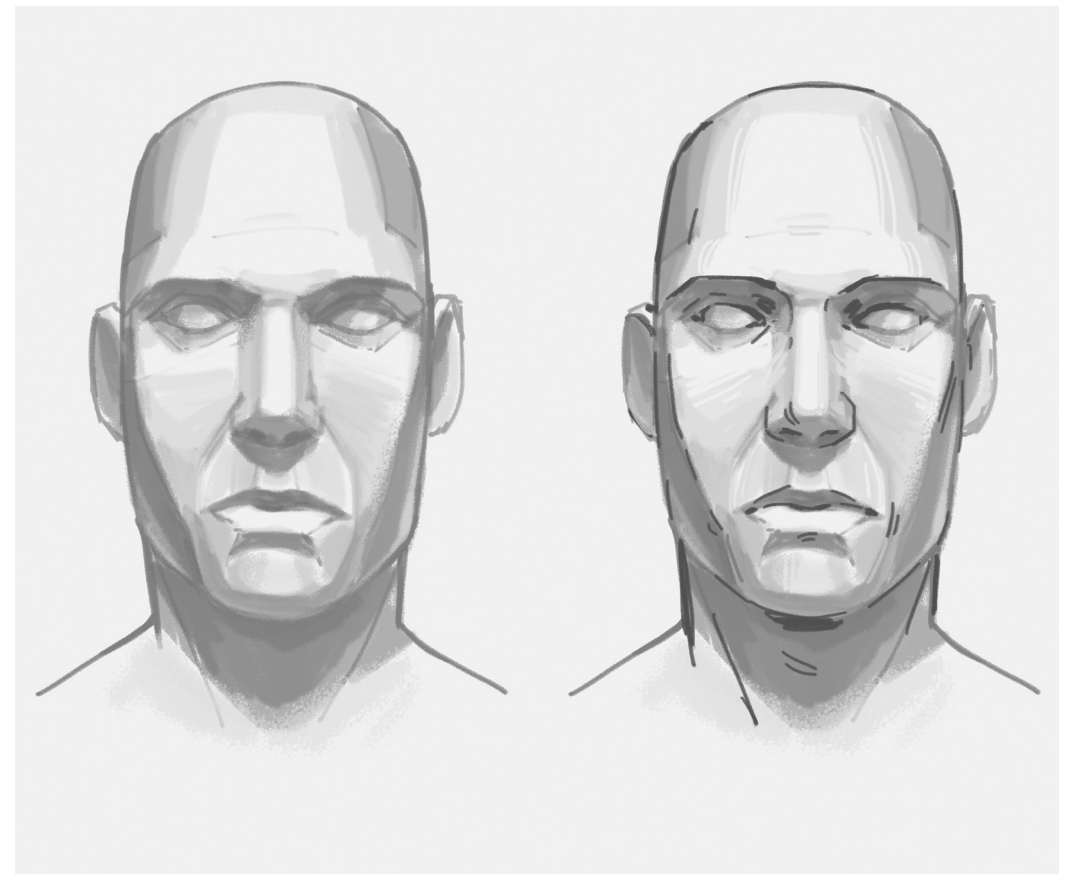
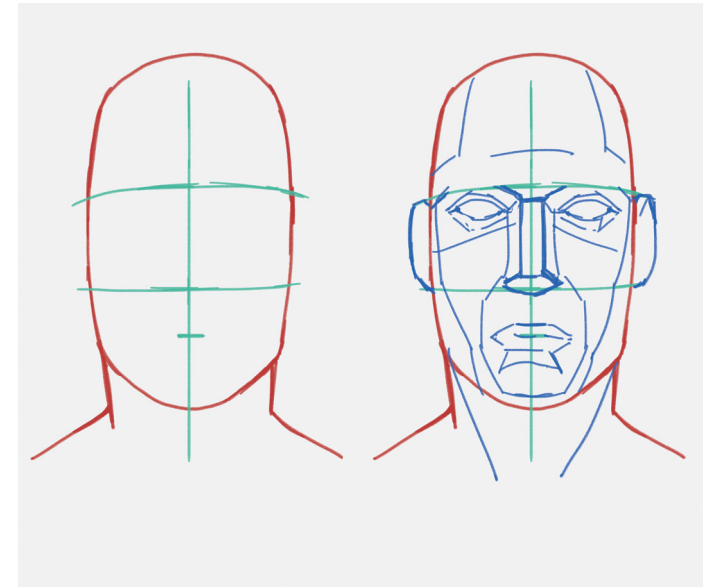
### What is a planar reference?

As the name suggests, a planar reference simplifies the subject into geometric planes, rather than specific anatomical detail. When trying to capture the nuances of bones and muscles, it is easy to lose sight of the big picture – the form, lighting, and proportion

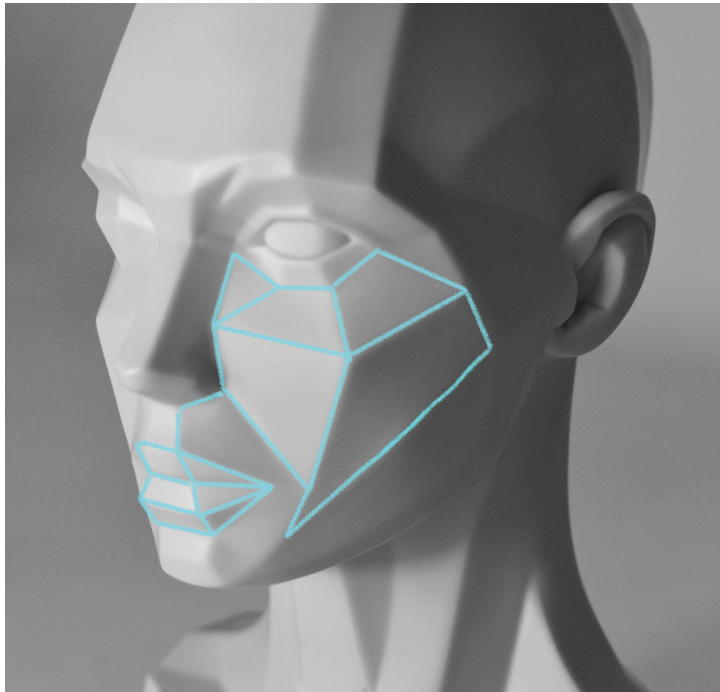
of the head – and that is where using a planar reference can be an invaluable complementary approach to drawing.

By breaking down the complex shapes of the head into simple geometry, you will be able to define the major anatomical landmarks more easily, and lay the

groundwork for believable lighting and shadows. It is an approach used in various degrees and styles throughout the ages, by respected artists such as Andrew Loomis, Frank Reilly, and John Asaro. You can see examples of planar references and how they can be used to plan out key shapes of the head on these two pages.







**Left:** Note how parts of the face are simplified into planes; some areas are more detailed, others are simple and subtle

**Below:** Do not just focus on blocks and squares. There are organic lines and flows present even in a planar figure

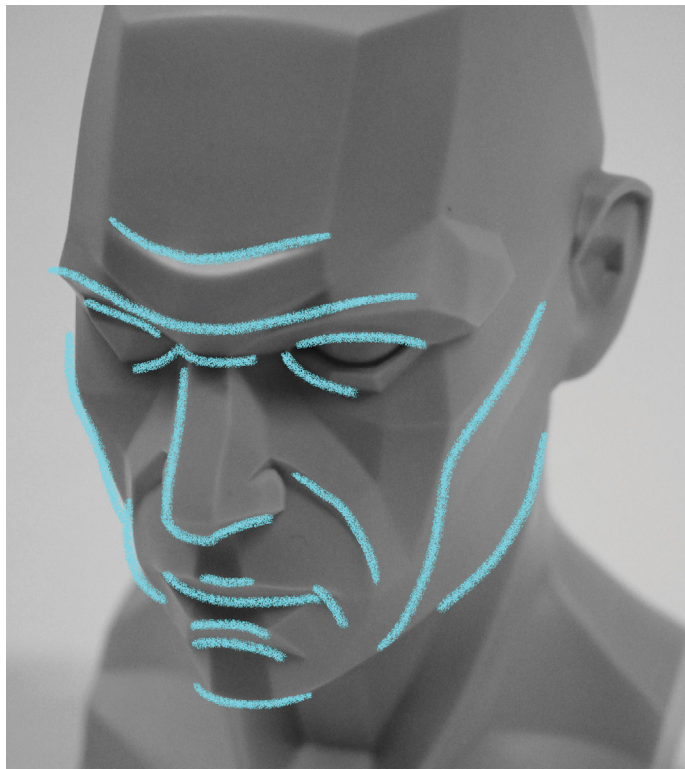
**Near right:** Photograph  
© Mangostar / Shutterstock

**Far right:** Finding some of the same lines and structures in a photographic reference. Photograph  
© Mangostar / Shutterstock

### Studying the planar head

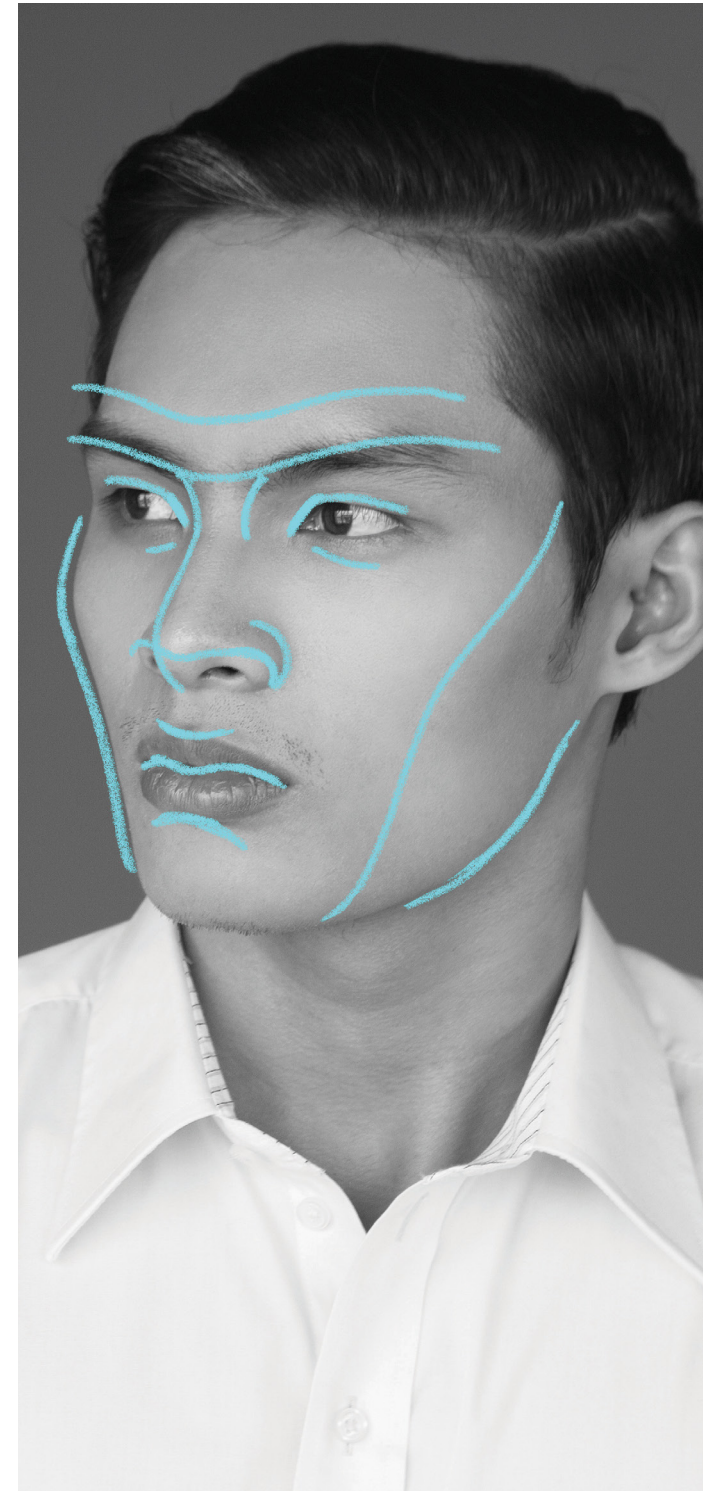
You can use a planar model to study the head from all angles, blocking out all the major geometry, proportions, and bony landmarks, and plotting out the shapes of light and shadow. The brow, eye sockets, cheeks, mouth, and chin are key features to focus on, but the subtler forms of certain areas, such as the temples, should not be forgotten.

Every human head is unique, and by understanding the proportions and placements of these key features you can create an infinite variety of faces or capture any likeness. Any head, whether in real life or a photograph, can be broken down into a simpler planar



structure when you know what landmarks to look for. This is invaluable for creating life studies or stylized versions of your own.

As you study, bear in mind that the “planes,” though flattened, simplified interpretations of features, are not necessarily completely flat. A plane of the face may have natural bends or curves to it, but it is important to be able to recognize it as one piece of the facial structure puzzle. Despite seeming like a robot at first glance, a planar figure will still have an organic flow to its features. Once you have become acquainted with the planes of the face, you will be able to find and follow those lines and rhythms in real faces a lot more easily.







**Left:** Examples of dramatic lighting on a female planar bust, using a pocket torch in a dark room

**Right:** Examples of dramatic lighting on a male planar bust, using a pocket torch in a dark room



## MAKE YOUR OWN RESOURCES

If you work with clay or 3D, it can be beneficial to make your own planar head model. The process of sculpting in three dimensions will enhance your understanding of the planes, helping you to absorb that information more deeply, and the resulting sculpture will be a useful resource that you can keep for future reference.

### Studying lighting

Another advantage of using a planar reference model is that you can control the lighting conditions under which you are studying it.

You can use a lamp or small torch to create dramatic chiaroscuro-like lighting scenarios from any angle you choose. It is a great resource for making value studies with both traditional and digital media, or for quickly consulting when you cannot find a suitable photographic reference with the precise angle or lighting quality that you need. Protruding structures in the face will often

catch the most light, such as the brow ridge, nose, points of the cheekbones, lower lip, and chin. Remember that these parts can also contribute to the deepest shadows: dark eye sockets, the cast shadow of the nose, and the labiomental crease between the lower lip and chin.

Some parts of the face are rounded and subtle, such as the forehead and cheeks, which will often have no severe shadows. Remembering to render these features appropriately will go a long way to adding depth and structure to a face.

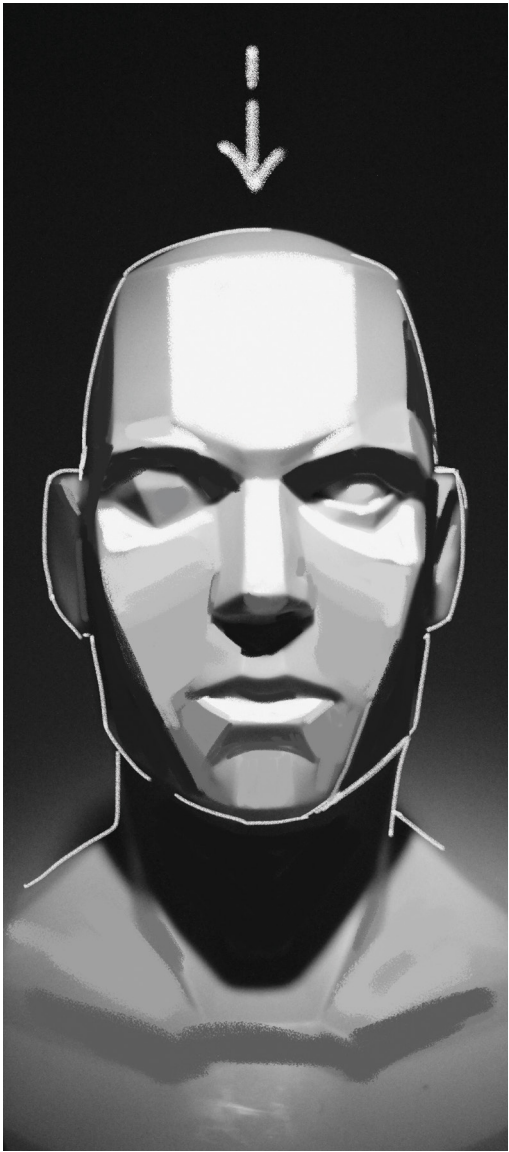




Also consider how bouncing or secondary light sources can subtly bring out the structures of the head you are drawing. A faint reflected light can clarify the outline of the jaw or the underside of the nose in a naturalistic way that does not distract from the main light source. Even if you

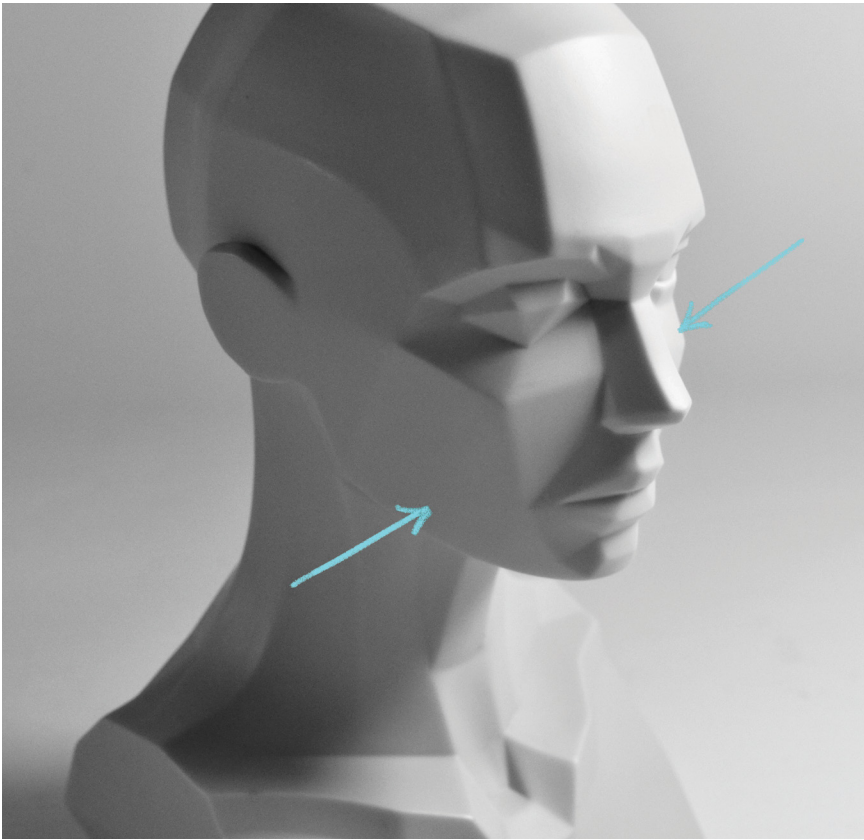
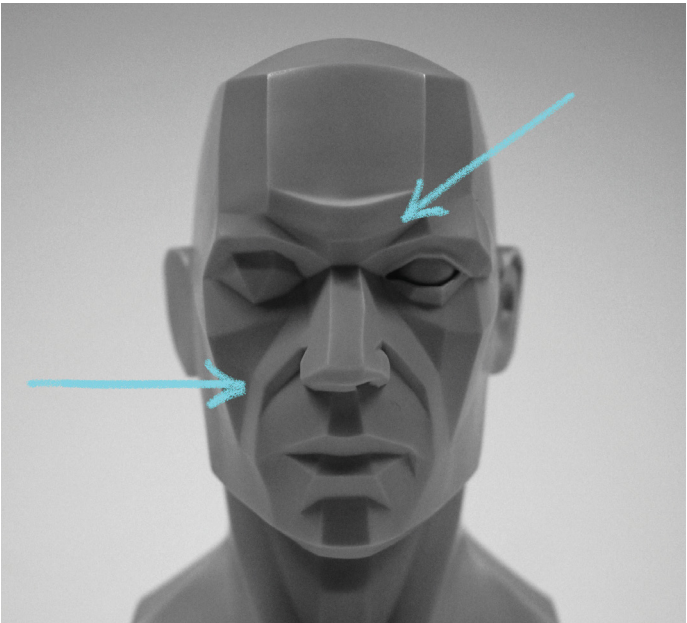
are only working with one light source for your planar head, and are assuming that some of the figure is in total darkness, you might be surprised by the subtle secondary light that bounces off the surrounding environment, affecting the outlines and even the colors of what you see.

**Below:** If you find the planes confusing, try squinting and simplifying the values into larger groups. Bear in mind the strength of your light source and how it falls on the reference



### Studying different heads

A classically masculine face, such as the planar model shown on the right here, features a prominent brow with deep eye sockets, a wide jaw, and generally angular facial planes; meanwhile, classically feminine features are softer and less angular, with a narrower nose and jaw. However, there are no hard and fast rules. Features and proportions will vary across ages, genders, sizes, and ethnicities, but once you understand the principles of a planar reference, they can be applied to almost anyone or anything.



**Above:**  
This planar model features a heavy brow ridge and rugged facial planes

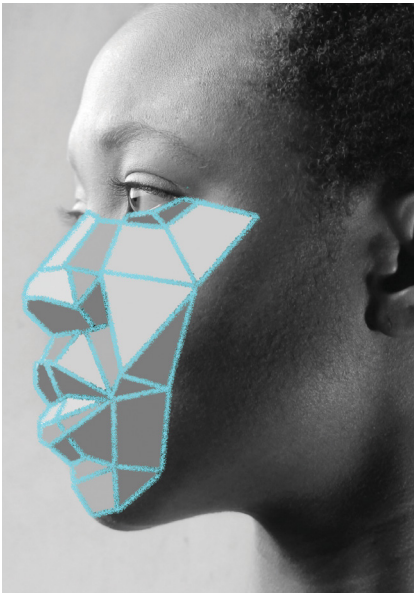
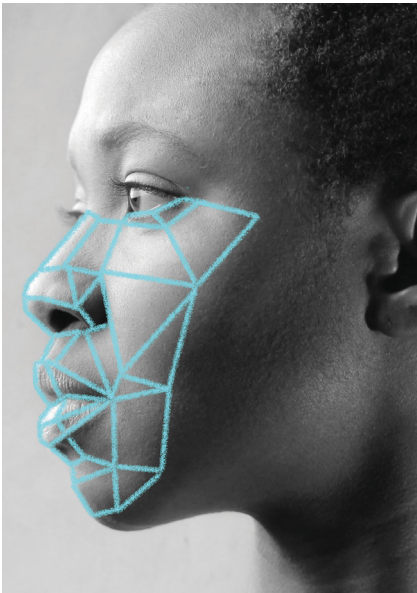
**Near left:**  
Comparatively, this figure has smoother and narrower features



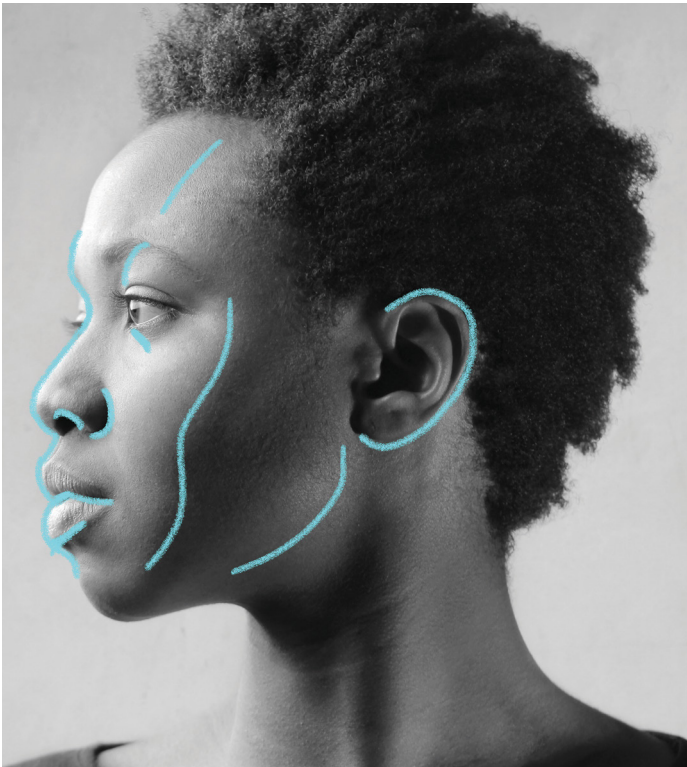
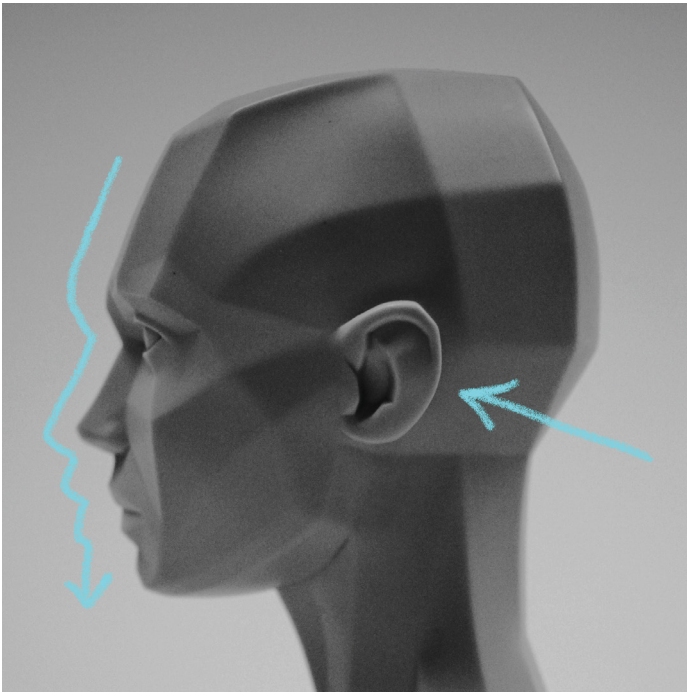


**Top left:**  
Photograph  
© Ollyy /  
Shutterstock

**Bottom left:**  
Any face can  
be broken  
down into  
a planar  
structure: just  
look for areas  
of light and  
shadow, and  
the underlying  
forms of the  
skull and  
facial muscles.  
Photograph  
© Ollyy /  
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**Top right:**  
Picking out key  
rhythms and  
proportions  
from a lateral  
view, such as  
the zig-zag  
profile of the  
nose and  
mouth, and  
placement of  
the ear  
between the  
face and back  
of the head



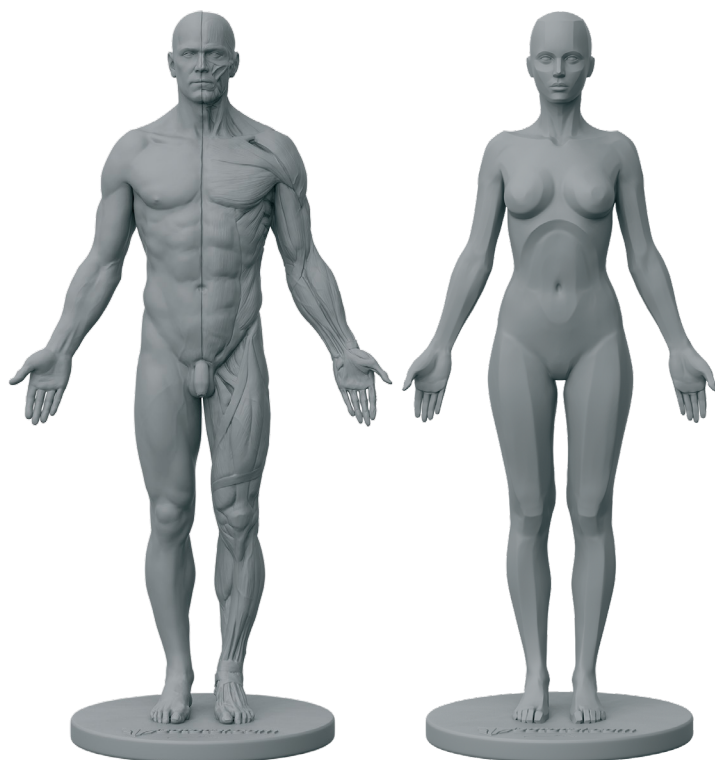
It is a worthwhile exercise to study real people with different facial structures and analyze their planes and proportions. Features such as cheekbones and jaw lines are easy to pick out on a planar model, but they are not always so clearly defined on a real person. It is valuable to learn about the geometry and landmarks of a generic head, while also studying as many real faces as you can in order to learn both the striking and subtle ways in which people's features can be manifested.

Studying planar references is not meant to be a substitute for studying facial anatomy and muscles in more depth; the two approaches should be taken together to gain a holistic understanding. Planar studies develop your sense of the head as a solid, generic object that interacts with light sources, while muscle studies develop your understanding of individual anatomical details and nuanced facial expressions. Both are essential if you are to accurately reproduce facial expressions.

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**Near bottom left:** Combining and applying the observations we have learned so far to a real head: picking out the profile of the nose and mouth, ear placement, and the soft flow of the cheek and jaw. Photograph © Ollyy / Shutterstock



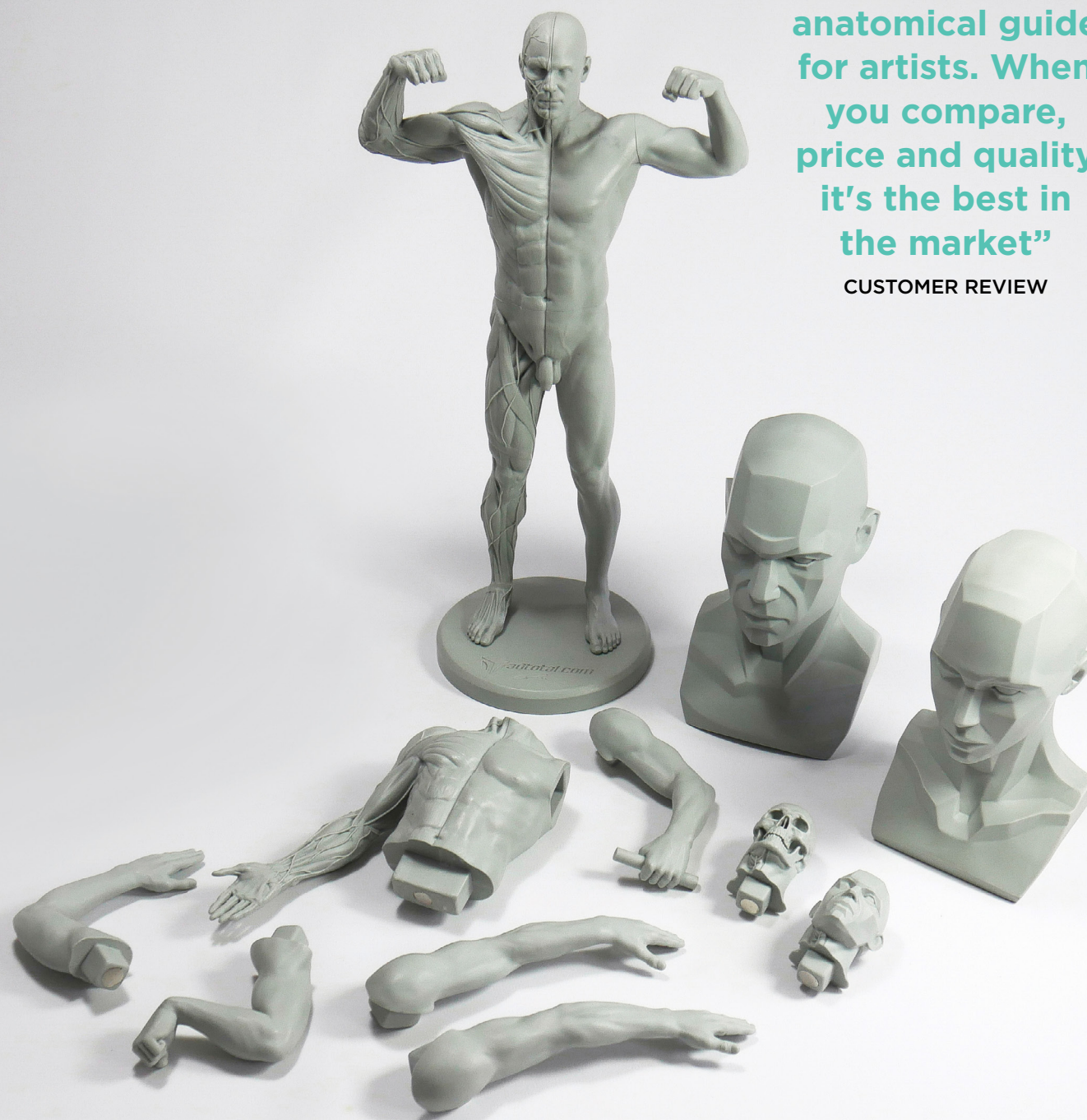


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Whether you use pencil and paper, paintbrushes, clay, ZBrush, Maya, 3ds Max, or Photoshop, our anatomical reference figures are invaluable if you want to understand the form and structure of the human body.

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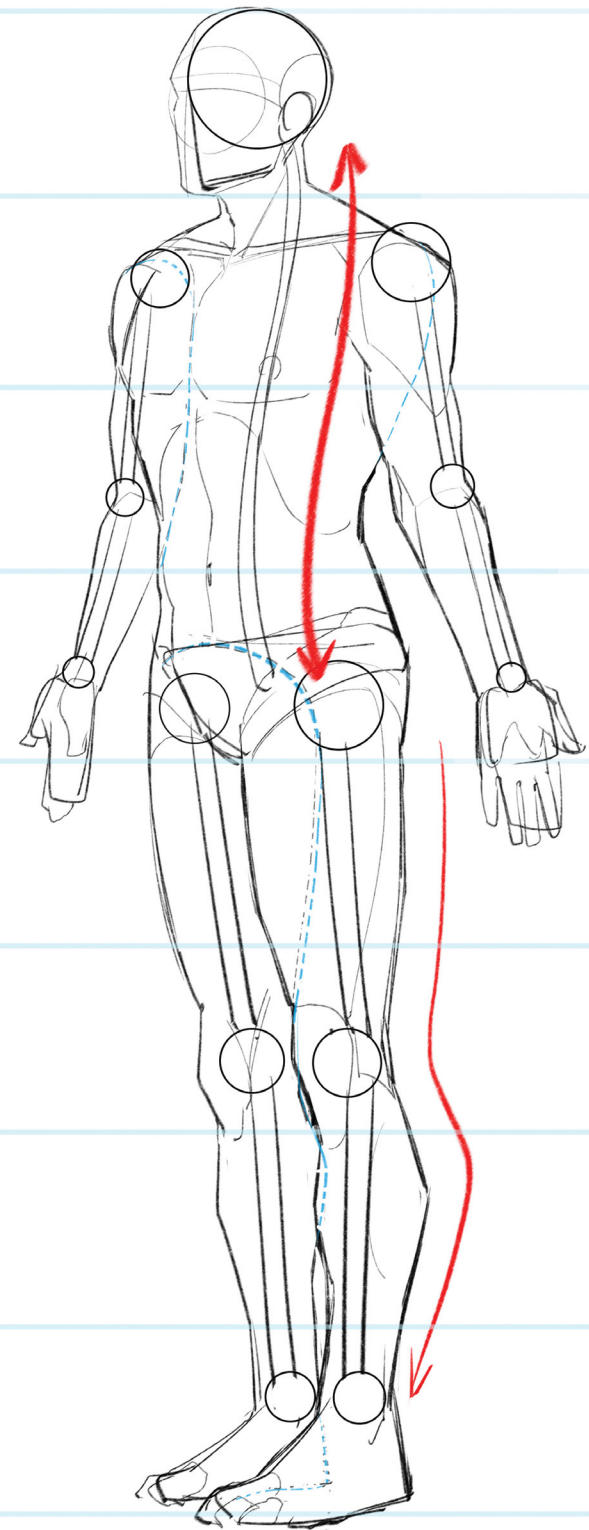


# Basic form and proportions

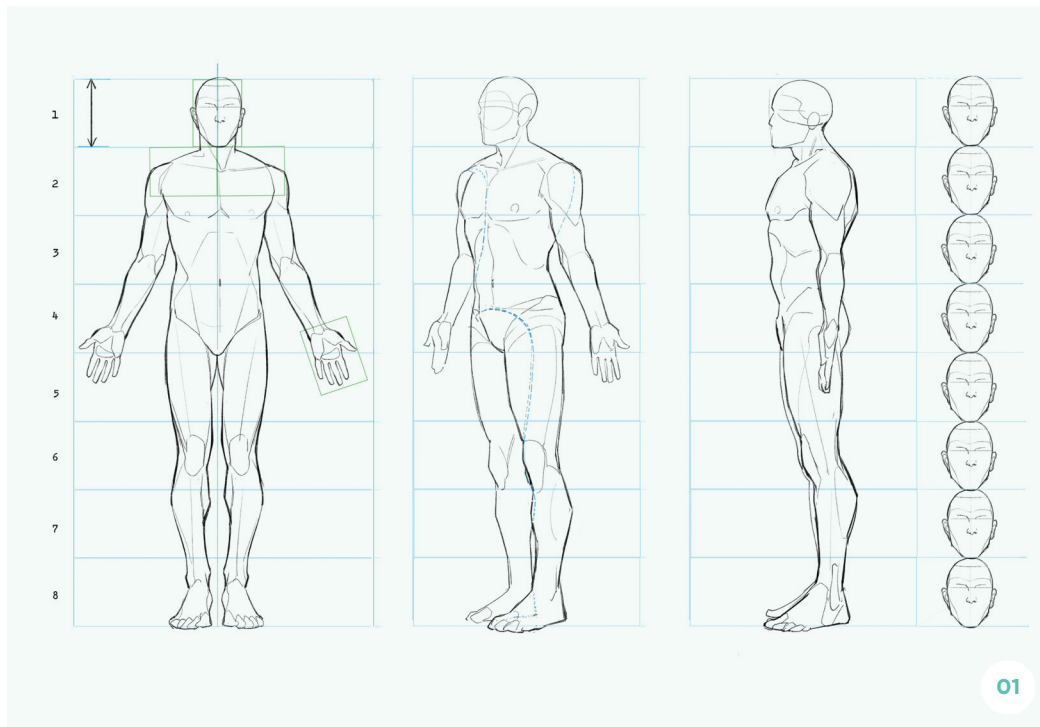
Human anatomy is one of the most complex things to depict, but is also one of the most important areas to get right for the success of a project. From correct anatomy comes not only the credibility of a character but also the ability to convey their mood. We accomplish this through gestures, posture, and movements of the character. For this reason correct representation of human anatomy is essential to creating a successful work of art.

**By Laura Braga**

[laurabraga.com](http://laurabraga.com)







This chapter will explain the rules to help us understand how to depict the male body. We will start by breaking human anatomy down into basic proportions using simple forms and lines. We will not examine and illustrate a detailed medical study of anatomy, but rather a set of simple rules that will help us to represent the functional nature of the human body, specifically applicable to the realm of artistic illustration and 3D animation.

We will study the anatomy of the adult male body, with a standard physical shape – it will therefore be a classic, idealistic model. Obviously not all human bodies reflect this kind of physical

presence, but this model is definitely the most suitable and usable to start studying this topic.

After studying the general proportions of the human body, we will then move to the construction of the body as a whole.

### Proportions of the human body

To ensure we have the correct proportions for the male anatomy, we can refer to simple standard schemes that some illustrators use on a regular basis. These are as follows:

- The ideal height of the human body is eight times the height of the head

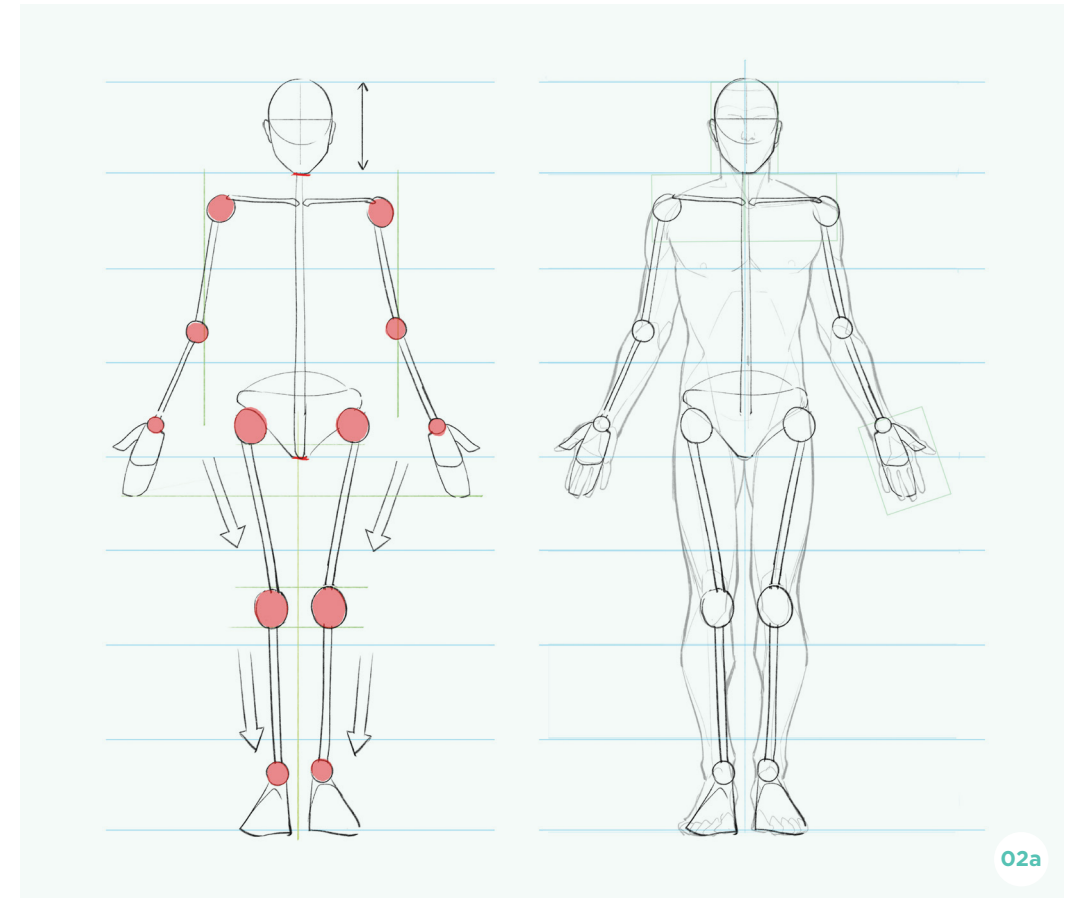
- The width of the shoulders is equal to twice the height of the head

- The length of the hand is equal to the height of the head

It is apparent that the height of the head is used as a consistent measure for the proportions of the human body. When rotating a model to represent him from other angles (3/4, profile, and rear), we must also keep in mind that it is critical that the proportions remain the same (**fig.01**).

### Basic line references

Keep these proportions in mind as you build the figure. It is useful to



draw horizontal lines as a base for your image in order to show the segments of proportions that we have referred to so far.

Building the human body with a rough line mannequin allows us to quickly see whether we are using the right proportions for the body, and judge if any proportions need to be fixed. This shouldn't take too long. Mark the joints with circles (**fig.02a**).

We can also build the legs at this stage, starting from the base. Note that the lines that define the legs

(of the thigh and calf) will not tend to be perfectly vertical to the rest of the body, but slightly oblique (**fig.02b**).

Remember to keep the pose supple rather than rigid. Even when standing up straight the body is made up of gentle curves, not hard angular lines.

The spine is important to get right because it is the main support column of the human form and conveys a natural look to the figure; it is not straight from the side but has a gentle S-curve (**fig.02c**).

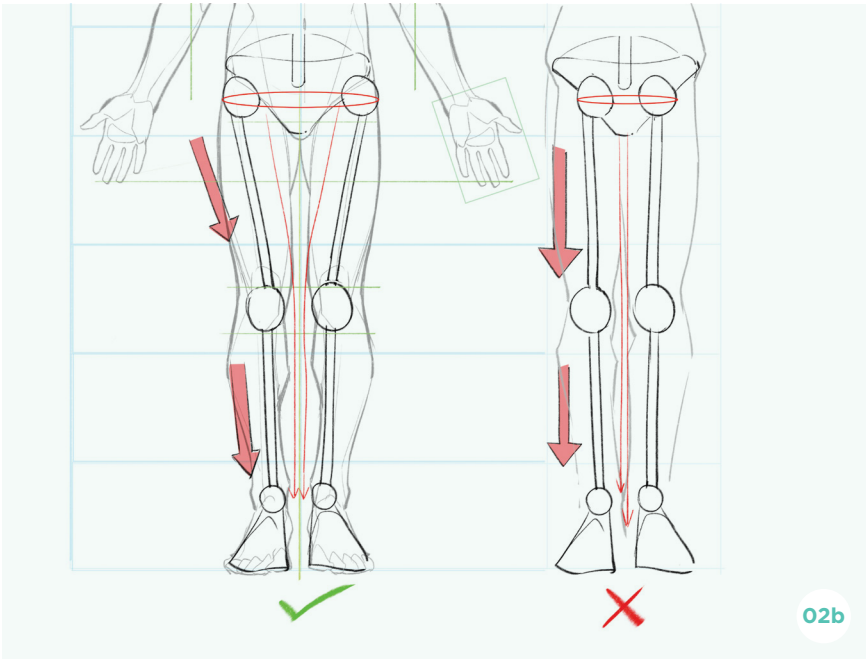
### DON'T REPRODUCE THE LINES

Don't just copy the correct forms; try to understand why and how it is that the forms of the human body work in a certain way.

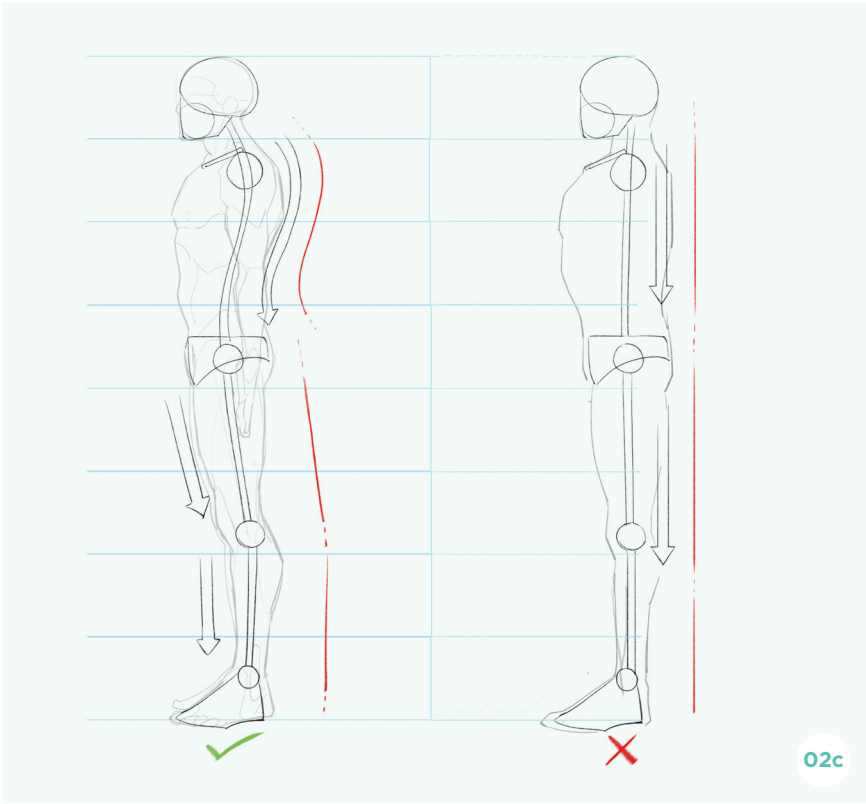
**Left:** Front, 3/4, and profile views of the male form

**Above:** A rough line mannequin with joints highlighted





02b



02c

**Top left:** The legs have a subtle change from hips to thigh to calf

**Bottom left:** The S-curve of the spine

**Near top right:** Front view with solid shapes

**Far top right:** You can see more of the S-shape of the spine in a 3/4 view

**Bottom right:** The male torso doesn't have an angle change at the waist

**Using solid shapes – front and 3/4 view**

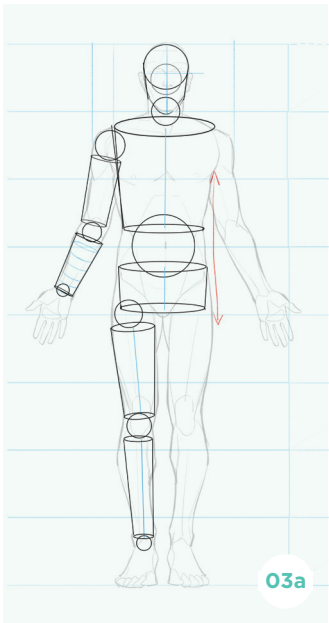
In order to simplify the anatomy of our model, we will begin to build the entire male human body using only cylinders and spheres. Place the spheres in the joints and in the head; for the rest of the body use cylinders (**fig.03a**).

It is important to use the correct cylindrical shape and orientation when drawing the individual parts; drawing an imaginary line down the middle of each can help to check orientation and placement. At first we will use simple cylinders and then look at the right shapes and volumes later.

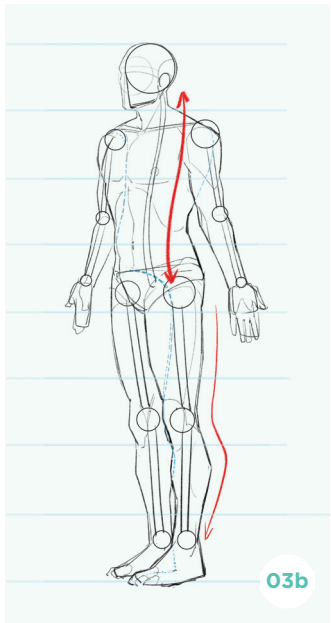
It will be easier for us to understand and represent the body seen from the front than from a three-quarter view, but it is good practice to study all the positions and rotate our model a full 360 degrees to better understand all forms of human anatomy.

When rotating the model, remember that the spine will not be straight as depicted in the frontal view, but will instead form an S-shape (**fig.03b**). This shape gives the correct posture and allows the body to stay erect. Remember though that the male body is not as curved as the female body (**fig.03c**).

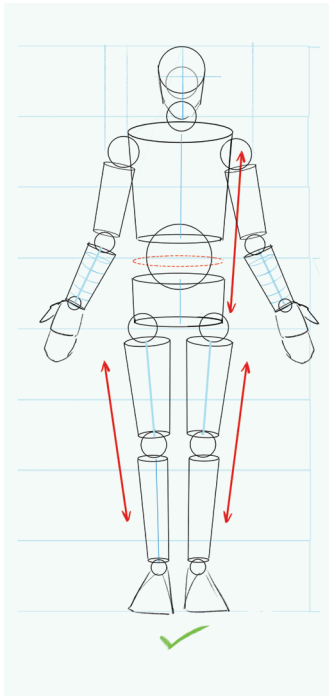
A good trick for respecting the right distances and proportions of the figure is to draw all of the



03a



03b



03c

body's limbs in full, even those that you cannot see at all, as if the model is transparent. This way we

can be sure that all the limbs will be proportioned and positioned at the correct height.



### Using solid shapes – profile and back view

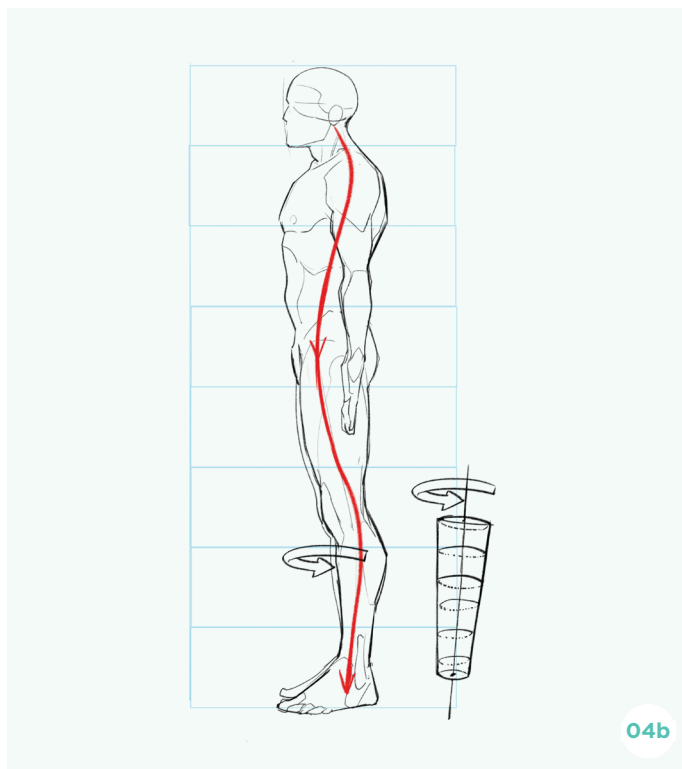
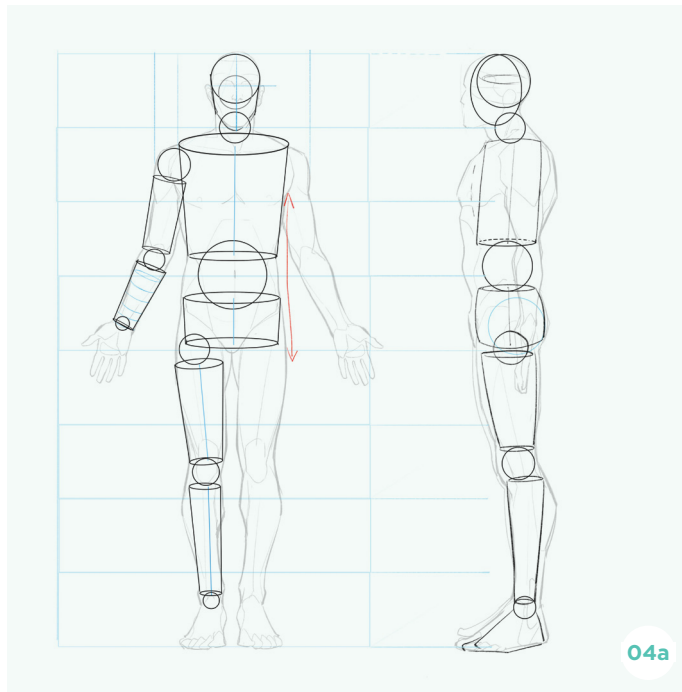
We can best observe whether the posture is correct from the side. As mentioned, when we start working on the profile of our model, we can see how much more evident and accentuated the S-shape of the spine is (**fig.04a**).

Special attention should also be paid to the area of the basin that protrudes slightly forward and then goes back near the pubic area. We have to place a sphere for the articulation of the pelvis and legs, and also include the buttock area. The legs, as well as the spine, will not be built on a perfect vertical axis but will instead be slightly tilted (**fig.04b**).

When we work on the figure seen from behind, it will be helpful to refer to the first studies we did to build the front view of the figure (**fig.04c**).

### Using solid shapes – head proportions

Finally, we can also build and understand the correct proportions of the face using geometric shapes as demonstrated in **fig.05**. Start by drawing a straight line vertically down the center of the page, and then a horizontal line that intersects the first one. These two lines will be the center of our face as seen from the front. Place the eyes along the horizontal line and the nose and mouth along the vertical line.

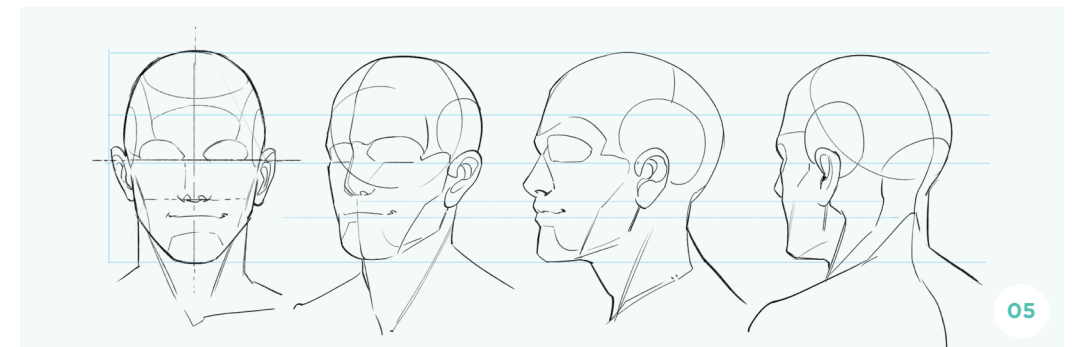
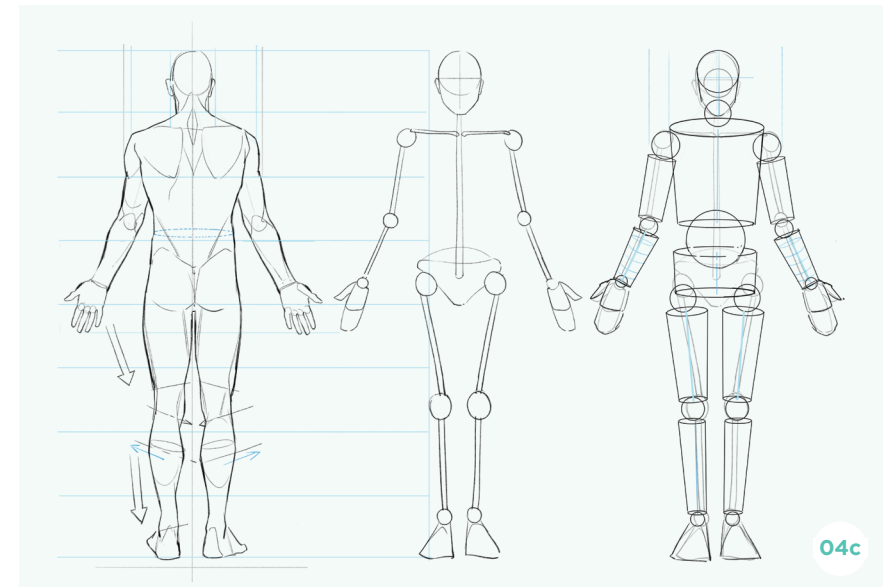


**Top left:** Note the S-curve of the spine from the profile view

**Bottom left:** The legs have a slight tilt

**Top right:** Back view with solid shapes

**Bottom right:** The proportional head



The human face can be divided vertically into four equal parts from the top of the head to the chin (in aesthetics this form will tend to correspond to the height of the ear), and another four equal parts horizontally, from the root of the ears.

The eyes are positioned at the center of this imaginary grid and, as a rule, the distance between one eye and the other is that of another eye. The inner corners of

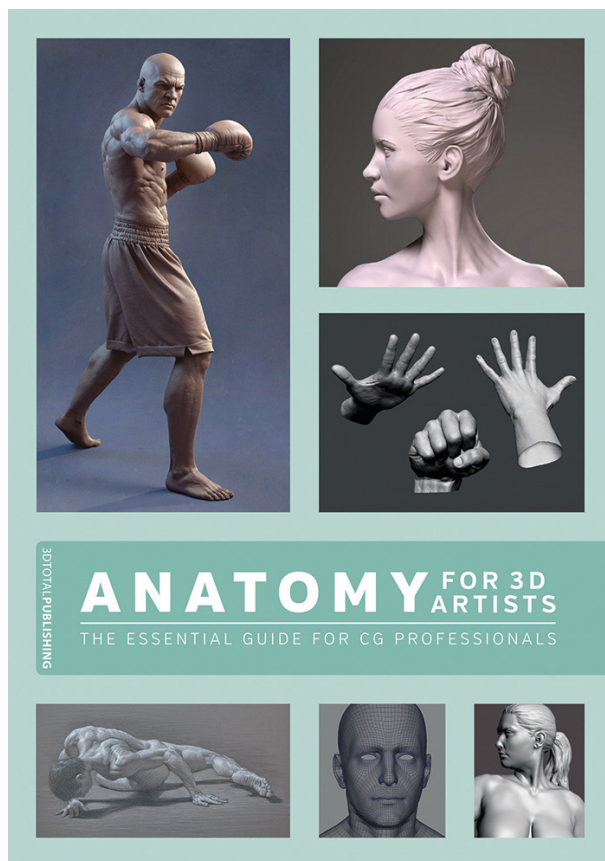
the eye must match the width of the nostrils. We get the width of the mouth by drawing two vertical lines from the pupils.

Obviously this construction of the face is an approximation akin to a classic model. Actually every face is different and has different proportions. We'll get a completely different appearance just by moving the eyes out a bit, lengthening the nose, and widening the mouth.

What I advise, and what I personally find to be very useful as well as fun, is to start from the classic grid and then change the size of the internal modules in order to create different appearances depending on the character that you are trying to create.

It will be fun and interesting to see how the face can change by even slightly changing the size of the modules that you have previously built up.





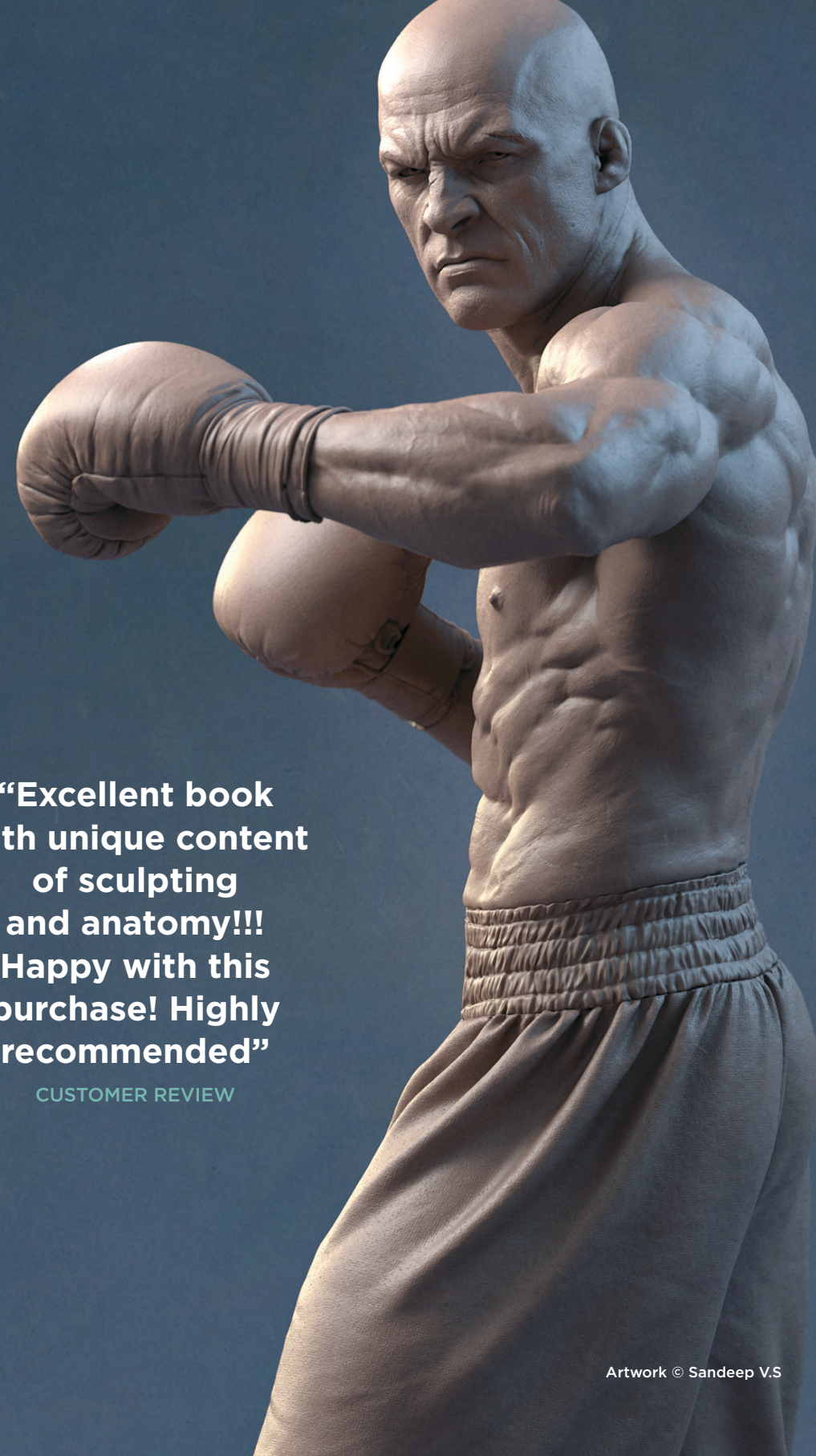
## Anatomy for 3D Artists

*Anatomy for 3D Artists* is an essential teaching guide for sculpting human anatomy. Non-software specific, it is packed with everything that today's 3D artist needs to know in order to tackle the difficult task of recreating the human form in 3D. Starting with the use of 2D references, and moving on to practical and advanced 3D sculpting – including topology – the book covers every stage in the creation of all kinds of male and female figures. Featuring established artists such as Chris Legaspi and Mario Anger.

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Artwork © Sandeep V.S



# Drifting free in space

“She just wants to connect, with anyone. Almost a year of drifting free in the Pariah asteroid belt, and not one commuter... until now. The transmission alarm sounds, waking her. She lurches from her captain's chair and peers at the forward screen, then her comms. Is she seeing this correct? She rubs sleep from her eyes and runs her hands through long, black hair, tying it up out of her face. “Another mining class?” she smiles, beams. “Finally!” She stands and pulls up the zip of her mining uniform, the Corps Mining logo half-torn from her breast. Trousers hang slightly loose from malnutrition. Barefoot had been the choice footwear option for months. She breathes in and tries to look casual as she gives the order to open video transmission. The forward screen connects. It's like staring at a mirror.”

**By Almu Redondo**

[almuredondo.com](http://almuredondo.com)

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Narrative by Adam J. Smith | [adamjsmithauthor.blogspot.co.uk](http://adamjsmithauthor.blogspot.co.uk)



Artwork © Almu Redondo





In this tutorial you will encounter one of the most challenging and exciting scenarios for a character designer: to design from a narrative brief! This is the best opportunity to bring extra depth to your characters through the use of subtleties, several layers of psyche, and some fascinating back stories.

For this reason, every small detail counts and the challenge to make a solid, relatable, and “living” character is the most difficult but interesting part of it.

To help you achieve this, I recommend you print and hang by your desk the wonderful Walt Stanchfield mantra: “Draw ideas, not things; action, not poses; gestures, not anatomical

structures.” To communicate the greatest amount of story and personality, with the fewest number of lines, should be your objective, and this is what we will aim to do in this tutorial. I will go through different techniques that will help you achieve this, starting with rough maps of ideas and thumbnails in pencil, going through ink drawings and digital retouches, to the final color and presentation in Photoshop. Are you ready? Let’s dive in!

### Extracting from the brief

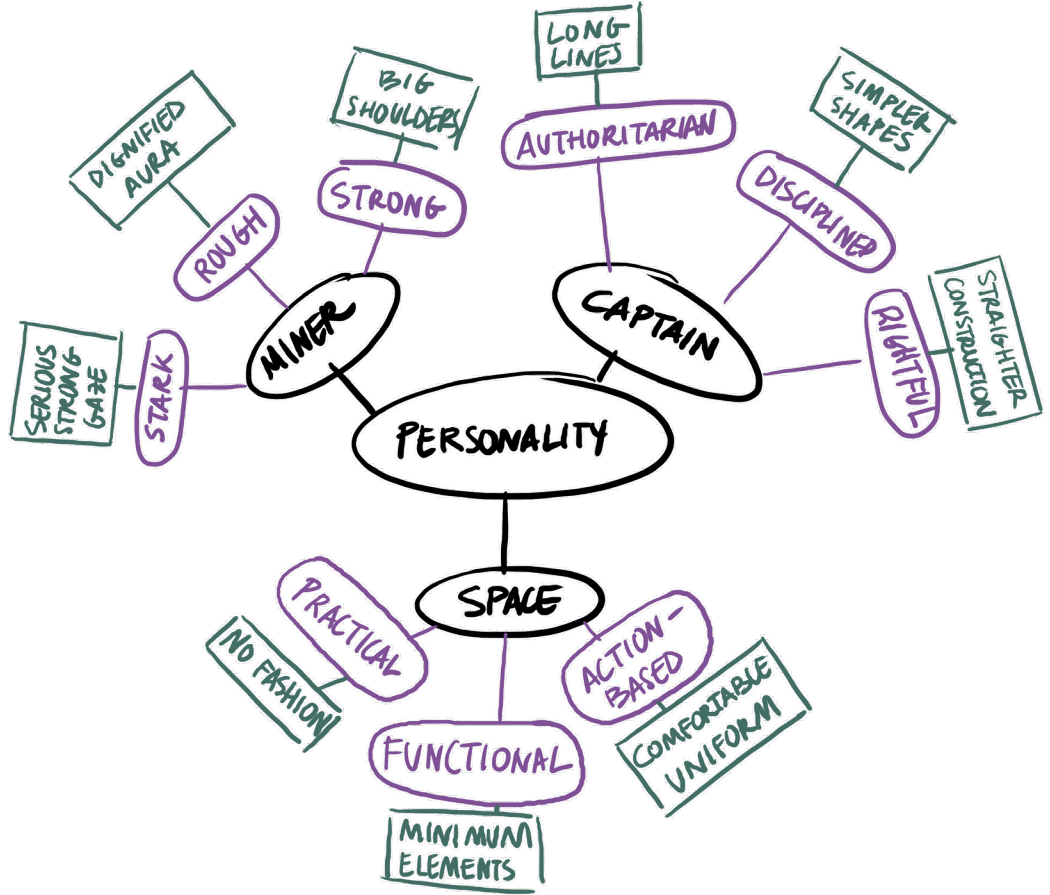
To start with, and to get you into the creative mindset, highlight the main words from the brief. Start writing or creating thumbnails of the ideas, sensations, or feelings these concepts create in you.

Those first minutes with the text are fundamental, so read through it with a notebook by your side to catch the first ideas and thumbnails that come to mind.

It also helps a lot, if possible, to capture your initial ideas while relaxed (in your favorite café for example) and to read the text slowly. The best ideas come in this state of relaxed attention.

In this case, I choose three keywords from the narrative: “miner,” “captain,” and “space.” From these keywords are several concepts that I want to associate with them (which I note in purple) and thoughts of how I would translate those ideas into practical visual concepts for the design (which I note in green).

Below: A diagram showing the most important concepts drawn from the brief and its interpretation



### ALPHA STATE

Picasso said, “Inspiration exists, but it has to find you working.” What if we could actually switch inspiration on and focus it every time that we need to? Actually, studies of our brain waves have found we can!

It has been shown that our brain has five frequency states and one of them, the Alpha state, is the best one for creative work. When our brain is relaxed, it is also more focused. The amazing news is that we can trigger this state of mind with music, meditation, or breathing (and coffee always helps!). I practice this every day and it makes me considerably more effective, productive, and creative. I encourage you to research it and get the most out of it!



SWOT (Strengths, Weaknesses, Opportunities, Threats)

This is an exercise I have borrowed from my past experience as an architectural designer, which is used for urban planning projects. In this exercise you create a “SWOT board” where you identify the internal and external qualities of the design that are potentially helpful and harmful. In this sense, the internal elements are based on the details in the narrative and are character-specific, while the external elements are caused by the wider context the design will be viewed in.

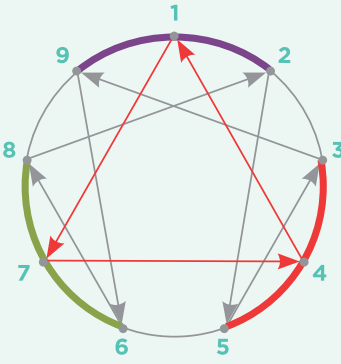
Through evaluating the internal-helpful characteristics of the design, you will locate its strengths, and by finding the internal-harmful elements you will learn where the design may have some weaknesses. By looking at the external-helpful facets, you can identify the opportunities that the design presents, and from the external-harmful aspects you can identify the possible threats to the design’s success.

The four categories of strengths, weaknesses, opportunities, and threats created by this exercise can be referred back to and will keep your ideas clear throughout the design process. This in turn enables you to commit to that key concept that will be the soul of your design.

Psychology

You can use an extremely interesting technique used by actors and

	HELPFUL	HARMFUL
EXTERNAL ORIGIN	<b>STRENGTHS</b> COMMANDER HERO POSITIVE PERSONALITY REAL GROUNDED	<b>WEAKNESSES</b> SITUATION NOT VERY ATTRACTIVE  DELICATE BALANCE BETWEEN FEMALE AND STRONG TYPE
INTERNAL ORIGIN	<b>OPPORTUNITIES</b> UNUSUAL STRONG FEMALE CREATE A “REAL” CHARACTER  CONTRAST BETWEEN HER SITUATION & HER PERSONALITY	<b>THREATS</b> FALL INTO STANDARD “CUTE” CHARACTER  MAKE A “BORING” CHARACTER WITH NO APPEAL



### THE ENNEAGRAM

<b>1 PERFECTIONIST</b> reformer, judge, critic Fear: anger	<b>5 THINKER</b> observer, investigator Fear: uselessness
<b>2 HELPER</b> connector, manipulator, nurturer Fear: own needs	<b>6 LOYALIST</b> skeptical, questioner Fear: deviance
<b>3 ACHIEVER</b> performer, status-seeker Fear: worthlessness, failure	<b>7 ENTHUSIAST</b> adventurer Fear: pain
<b>4 ROMANTIC</b> artist, individualist Fear: ordinariness	<b>8 CHALLENGER</b> leader, maverick Fear: conflict
	<b>9 PEACE MAKER</b> mediator. Fear: conflict

psychologists to define the personality of their roles or clients. This technique uses the “Enneagram.” The theory states that every person can be classified by one of nine personality types (although everyone has a little of each personality trait), and each type has a main “fear” and a main “passion” that determines our actions and reactions to the world.

The Enneagram technique also theorizes that each one of us has a hero and a demon side; we can be the brightest hero when we are at our best, or we can be the worst villain when we are under the most stressful levels of our personality. Fascinating, right?

You can learn more about this theory and how Enneagrams work at [www.enneagraminstitute.com](http://www.enneagraminstitute.com). This theory is incredibly helpful for character designers determining the character’s story arc and inner conflicts. For this character I select personality type six, the Loyalist, and list her strengths and weaknesses based on this.

Borrowing from reality

A very helpful trick to bring extra personality to your character is sketching real people in cafés and bars. Try to capture the personality and essence of your subjects in quick, simple sketches. This practice will help you drag ideas from reality to use as a base for your character design.

## PERSONALITY TRAITS OF A LOYALIST CHARACTER

6

<b>STRENGTHS</b> HEALTHY LEVELS	<b>WEAKNESSES</b> UNHEALTHY LEVELS
<ul style="list-style-type: none"><li>▶ STRATEGIST</li><li>▶ SELF-AFFIRMING</li><li>▶ APPEALING</li><li>▶ RELIABLE</li><li>▶ TRUSTWORTHY</li><li>▶ SACRIFICING</li><li>▶ CREATOR OF STABILITY</li><li>▶ STRONG BELIEFS</li><li>▶ DEVOTED &amp; LOYAL TO A CAUSE</li></ul>	<ul style="list-style-type: none"><li>▶ STUCK IN DOUBT</li><li>▶ ENDLESS QUESTIONING</li><li>▶ OVER-ANALYSIS</li><li>▶ FOCUS ON FAILURES</li><li>▶ FEEL PERSECUTED</li><li>▶ SKEPTIC</li><li>▶ ANXIOUS</li><li>▶ SARCASTIC</li><li>▶ BELLIGERENT</li><li>▶ BLAMING OTHERS</li></ul>



Sometimes just the position of an arm, or the expression on a face, can be the trigger for inspiration. This will then bring a solid foundation to your design.

Opposite page (top):

SWOT grids show the pros and cons of the brief

Opposite page (middle and bottom): SWOT grids show the pros and cons of the brief

Top: The strengths and weaknesses of this character based on her loyalist personality type

Above: Go out and sketch real people and distill their essence



### Embracing contrasts

Now it is time to look at the construction of the character. Your design will need to have contrast, not only in the basic shapes and volumes, but also from the inside-out. Often, the most successful characters (especially in animation) are those where the physical appearance is highly contrasted, or sometimes even opposite, from the personality. For example, the character Tyrion Lannister is described in George R. R. Martin's books as small, ugly, and almost repulsive, but he has the most attractive and seductive personality of the whole saga. Arya Stark on the other hand is a cute-looking little girl who hides a dangerous personality within.

Contrasts between appearance and personality is an extremely interesting idea to play with. In this case, I explore creating a large, strong body that will contain a tender personality encapsulating a righteous heart.

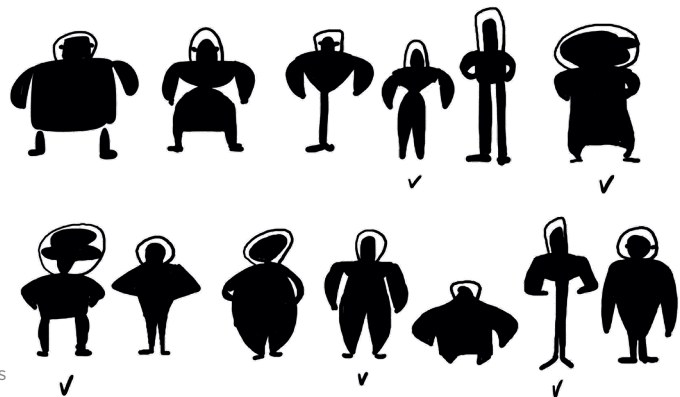
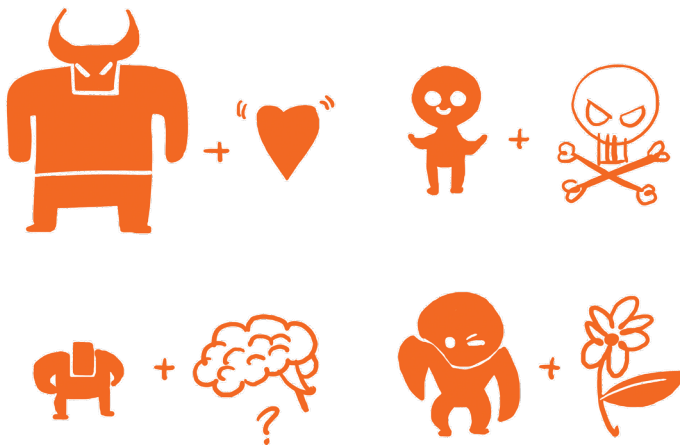
**Top:** Create dynamic and interesting contrasts between the physical appearance of your character and their interior self

**Bottom:** Apply intelligent exaggeration to your shapes that reinforce the story

**Opposite page:** Generate rough silhouettes with interesting proportions between the head, torso, and legs

### Intelligent exaggeration

Cartoonish exaggeration can be your best tool to create mind-bending characters full of feeling and story. However, it can look poor if the exaggeration is done without a clear purpose, sense of story, or direction. That is why it is important to have a clear understanding of the story, personality, and world of your character before you begin to manipulate the character's shapes and volumes.



For this character you could explore broad shoulders and strong arms, square shapes and straight lines. Balance them with some angles and triangles to get the feeling of strength, authority, and security that this character should exude.

However, keep in mind the key concept for the design. From these experiments choose a few that have the best contrast of shapes to develop the concept.



### Proportions

Proportions, and relative proportions, will help you most when defining an appealing character imbued with personality, and enable you to get the style of the character.

Keep in mind that one of the most important ways to achieve good proportions is to avoid "the ladder."

The ladder is an even distribution of the different body parts (generally the head, torso, and legs) which looks quite uninteresting.

Sometimes inspiration will not come, so instead you have to generate random distributions and then fill these in with the three main body parts later. Relativity is a key factor in adding

personality through proportions. For example, if you want to create the impression of a big head, the next part of the body — the chest — should be shorter so the head will look relatively bigger.

The same approach can be applied with exaggeratedly long legs and a short chest, or a big, hero-type chest and shorter legs.

### SWITCH TOOLS AND SWITCH OFTEN

You will find that there are many times when it is extremely beneficial to switch between traditional and digital tools throughout the design process. Each one of them has strengths that you can use to your benefit when designing.

While the pencil gives you a nice balance between freedom and commitment, ideal for the first stages of the design process, ink will force you to slow down and commit to each line you make. This makes your drawings purposeful and meaningful.

Finally, working digitally gives you the complete freedom needed to work in an intuitive way, and generate amazing clean and finessed pieces. Different techniques can help shape and tune your brain when working — so use them!



### Complex vs. simple designs

The need for complexity or simplicity of style is often determined by the kind of production the design is to be used for. Animation usually requires simple, clear characters to save time and make the production posing of them efficient, especially if it is a 2D animation.

More complex characters are only usually affordable in videogames. Often in these types of projects the character animation is minimal or in loops, and the need to quickly read the acting silhouette is less.

In this case, I explore some more design concepts, but they are not successful. I have a hard time focusing on the face and the actions of the character in these designs, so continue exploring alternative ideas.

### Soft and straight lines

Angular lines, straight, broken, or spiky lines; these can evoke different emotions from more flowing and soft lines. This can be an extremely useful technique for character designers. You can combine different types of lines to create straighter, more righteous characters or friendlier, more rounded ones. The type of line that is most prevalent and the quantity of other line types that are used can be the difference between a mean and dangerous character, and a highly sensual, natural character.



“Combine different types of lines to create straighter, more righteous characters or friendlier, more rounded ones”



**Opposite page:** Check for clarity and readability in your design. Getting the right amount of detail for the project is important

**This page:** Explore the difference between a character dominated by rounded lines and others by straight lines



### THE CHARACTER'S PERSONALITY

For a long time in the process I toy with the idea of contrasting the character's personality with a more spicy Indiana Jones feel. This would make the character appear more adventurous, cheeky, and playful. However, while it is fun to make the drawings, I do not get the depth of the character that I distilled from the brief, so sadly I put this idea aside. Nevertheless, this adventurous idea is always my favorite personality to explore!



Facial construction

To give your character expression you could apply a highly interesting concept from caricature drawing. This helps many artists learn what areas to exaggerate in a face and how manipulating features can tell a story.

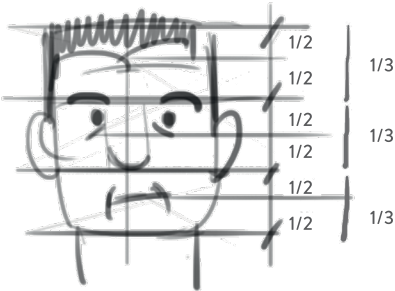
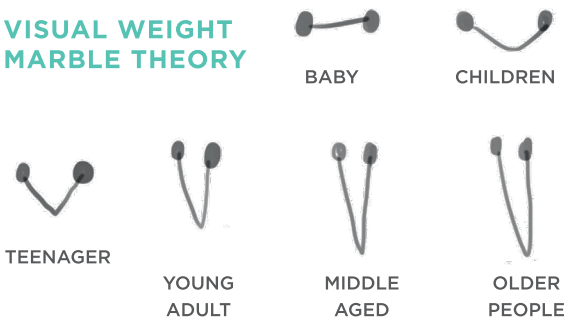
Start from a base of the “perfect” face, with it divided into thirds

and half-divisions. The perfect face does not exist in real life, but through comparison you can see when a nose is longer than normal, and what emotion and personality that offers. Furthermore, you can imagine a triangle in the face by mentally drawing a string between both eyes. The string pulls down in the middle to form a deeper triangle as we get older which

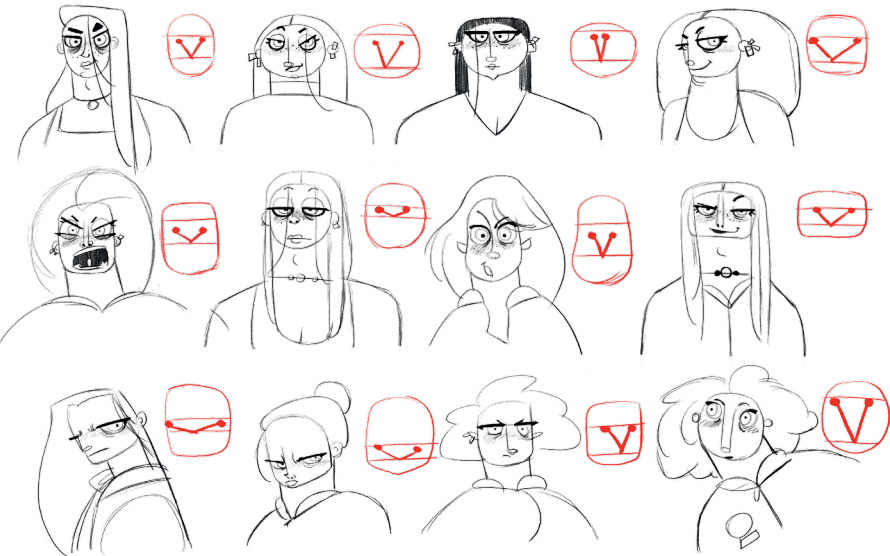
brings the eyes closer together. This is a trick that you can use to your benefit to bring maturity or wisdom to your characters.

You can even use this method to make your characters appear more appealing by giving them wider spaced eyes like a child, or make them more mean-looking with eyes brought close together.

VISUAL WEIGHT MARBLE THEORY



THE “PERFECT” HUMAN FACE



**This page:** Avoid trying to draw the perfect human face and instead inject personality with imperfections

**Opposite page:** Apply body language concepts to create the correct sensations and actions within your characters

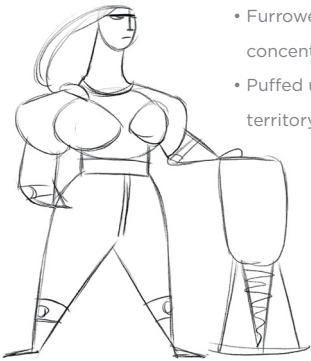
Body language

For learning about the many meanings behind human body language, I highly recommend What Every Body is Saying by Joe Navarro. With this information you can create high contrasts in the evolution of your character’s body language throughout the narrative.

You can see here how the character’s body language might change as the story unfolds. At the beginning of this character’s mission (top-left) she is positive and confident with her chin up, and an inflated chest. She stands tall in a power position with her feet spread, shoulders pulled back, a fixed gaze, and open forehead. This all suggests that she is a character with strength, ease, power, and authority.

By contrast, in the final pose (bottom-right) her shoulders are lowered and hunched forward. She is looking down to the floor with low eyebrows and a small mouth. This suggests she is feeling troubled or doubtful, with strong worried thoughts and a sense of unease.

- Leaning forward – accessible
- Wider stance – even more authoritarian
- Furrowed forehead – anxiety, concentration, distressed
- Puffed up chest – territory dominance



- Wide stance – authoritarian
- Ventral front – confident
- Clear, raised eyebrows – positive
- Smiley eyes – happy, positive



- Closed fists – intensity
- Forward – ready to act
- Lower eyebrows – intense conflict
- Arms akimbo – intense authority and territorial dominance

- Shoulders hunched – low confidence, negative emotions
- Leg touching, “pacifying” discomfort – anxiety
- Ventral denial – trouble



USING HAIR IN DESIGN

As the master animator Glen Keane says, the hair is an extension of a character’s personality. The design and movement of the hair can tell the audience as much about a character as the face or hands.

In the case of this character design, the hair shows the most blunt, honest, and fluid side of her. It creates big, simple gestures by either floating in the air, or falling down to cover her face when she has deep and insightful moments. It can act like a curtain to hide her from the world while she is lost in thought, but it is also practical, unkempt, and natural. It suggests she has been isolated for so long that she has forgotten to take care of herself and simply allows her hair to grow disheveled.





### Acting and gesture

In general terms this character has an air of quiet authority. She is not explosive, but thoughtful. How would she react in a conflict? With quiet and peaceful security, an analytical thought process and a Zen-like approach I think. She keeps her nerve and her presence evokes respect in others.

She is a strategist, decisive, the first one in line, and protective. Once there is a clear sense of who the character is as a person, it is possible to theoretically cast an actor to give you an extra

dimension of reality and help make the design more solid.

For this character, I imagine a personality that's somewhere between Ripley in *Alien* for her fearless commitment, Sarah Connor from *Terminator* for her strength, and Brienne of Tarth from *Game of Thrones* for her fortitude.

You can show this development by creating drawings that are looser, and closer to animation roughs, with no need for them to be "on model." This will keep the energy and essence of the narrative



moment, and the drawings can be cleaned later if needed.

### Final design

Often, the smaller, rougher thumbnail in the corner of a sketchbook (or even on a napkin) can hold the best design and balance of proportions. This is the case for me with this character design. So, taking the final line drawing, I adapt it to the proportions of this tiny sketch (right). It is important to choose the most appealing final pose or one that tells a lot of the story. In this case, I choose a very heroic

**Far left:** Cast an imaginary actor to help create an extra dimension and more believability

**Near left:** Fine tune your final image to get the best pose and design

**Right:** Final image © Almu Redondo



pose, before she becomes isolated in the asteroid belt station.

### Final color

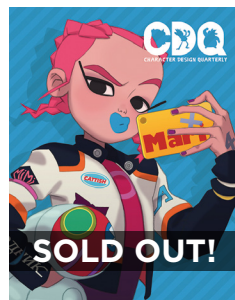
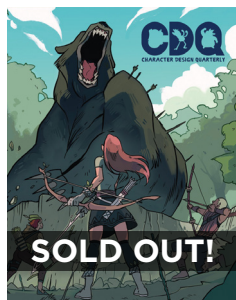
The choice of colors was clear to me in this design from the very beginning. A very quiet character with a deep emotional dimension

demands cold colors, unlike a vibrant red which would show the real strength of her on the inside.

For this contrast a cold palette of blues and purples (a color associated with high positions in society) will be suitable. To

compensate for her internal depth, and give the color palette a final punch, an occasional red-pink touch helps to balance the color harmony. To finish, add some simple lighting and final texture to bring the design to a semi-finish that could be shown to the client.





Character Design Quarterly is a creative and illuminating magazine for illustrators, artists, animators, and character art enthusiasts. Released four times a year, the magazine offers inspirational and educational articles, tutorials, and interviews specifically geared to help artists hone their character design skills. This unique, engaging magazine provides a regular stream of insider knowledge and illuminating advice from experienced professionals to help artists of all skill levels improve their workflow and designs.

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“It’s simply amazing!  
The book has hands-  
on tutorials on  
designing characters  
and gives new  
ideas to focus your  
character design”

CUSTOMER REVIEW

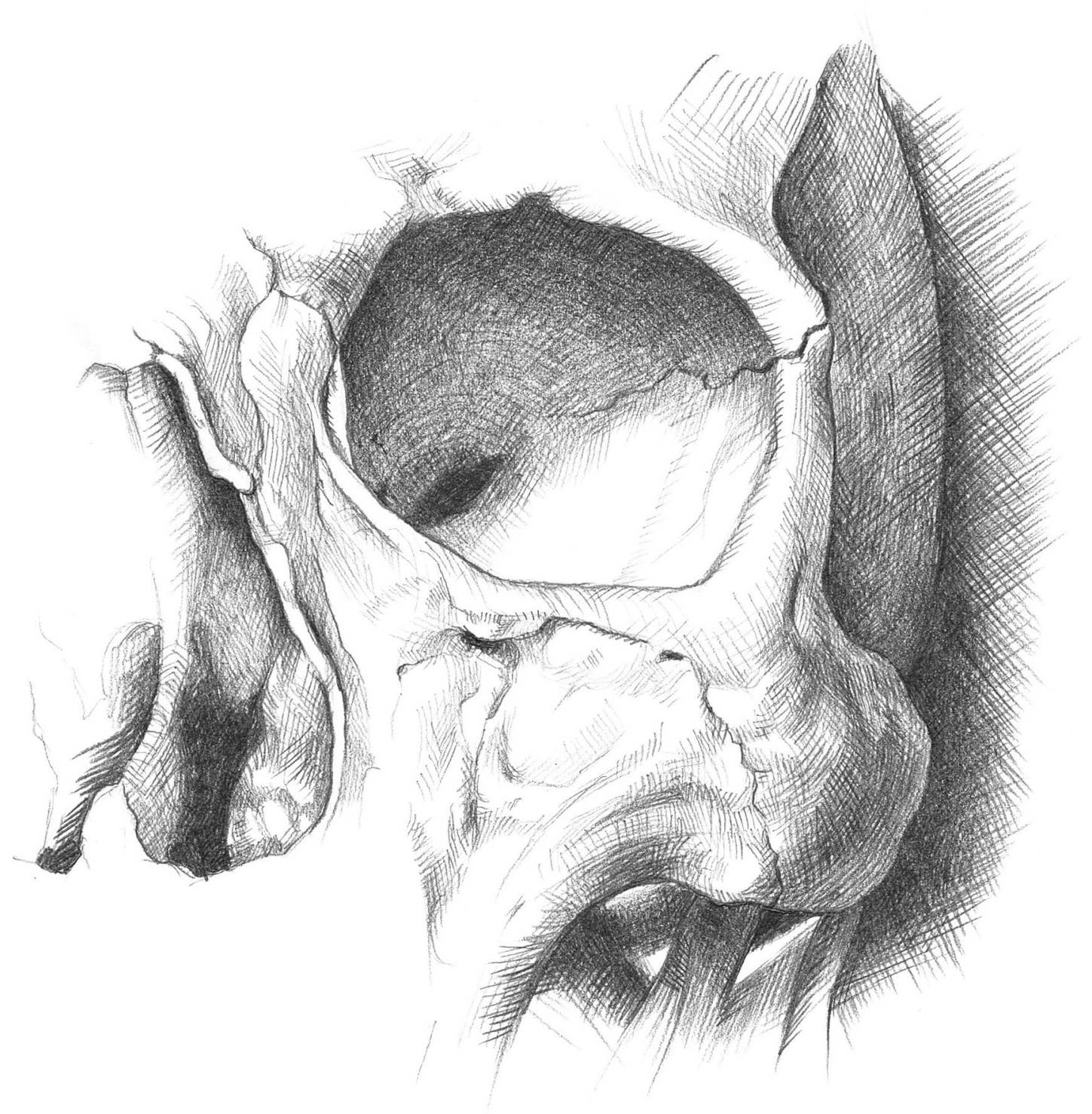


Artwork  
© Pernille Ørum



# The structure of the skull

Though most of the human skull is covered by muscle and fat, there are still some key points that are clearly seen on the surface of the face. Knowing the location of these bony landmarks can help you visualize the skull beneath and give you a better understanding of the construction of the human head in general. When it comes to drawing and painting, they are also important because they often create hard-edged shadows, which help make a piece of work look more three-dimensional.



**By Rita Foster**

[ritafooster.blogspot.co.uk](http://ritafooster.blogspot.co.uk)



In this chapter we will examine the standard proportions of the skull to help you more easily place the landmarks. We will then take a closer look at the landmarks themselves and how they impact the face on the surface.

Standard measurements of the skull

As a general rule we can apply a basic measurement system to the human skull which can help you to identify landmarks when beginning a piece of art. These are more like guidelines rather than fixed dimensions since the shape of every human skull and face differs slightly.

Imagine a horizontal line extending along the top of the skull, a second horizontal line along the bottom of the mandible (the lower jaw), and then a third horizontal line that runs through the center. The horizontal line that runs through the center of should align with the orbital cavities (eye sockets). The skull may then be separated into thirds. The first third will run from the top of the skull to the brow, the second third will go from the brow to the base of the nose, and then the final third will run from the base of the nose to the bottom of the chin.

In the images here you can see the skull divided into thirds and halves from anterior and lateral points of view. After these standard measurements have been



identified, it will then be easier to block in the major shapes of the skull, which will greatly reduce the likelihood of creating a skull with uneven proportions.

Thinking of the cranium and mandible as two separate aspects of the head can also be helpful in terms of simplifying the forms, as it means you can block out the cranium as a simple circle in the anterior view or an oval shape in the lateral view. In the anterior view, marking a vertical center line also helps to ensure that the proportions are even on either side of the skull.

**Above:** The skull divided into halves and thirds (anterior view).  
Artwork Milunkic/Shutterstock.com

**Top right:** The skull (lateral view).  
Artwork Milunkic/Shutterstock.com

**Bottom right:** Rough guidelines can be used to roughly sketch out the forms of the skull



KEY LOCATIONAL TERMS

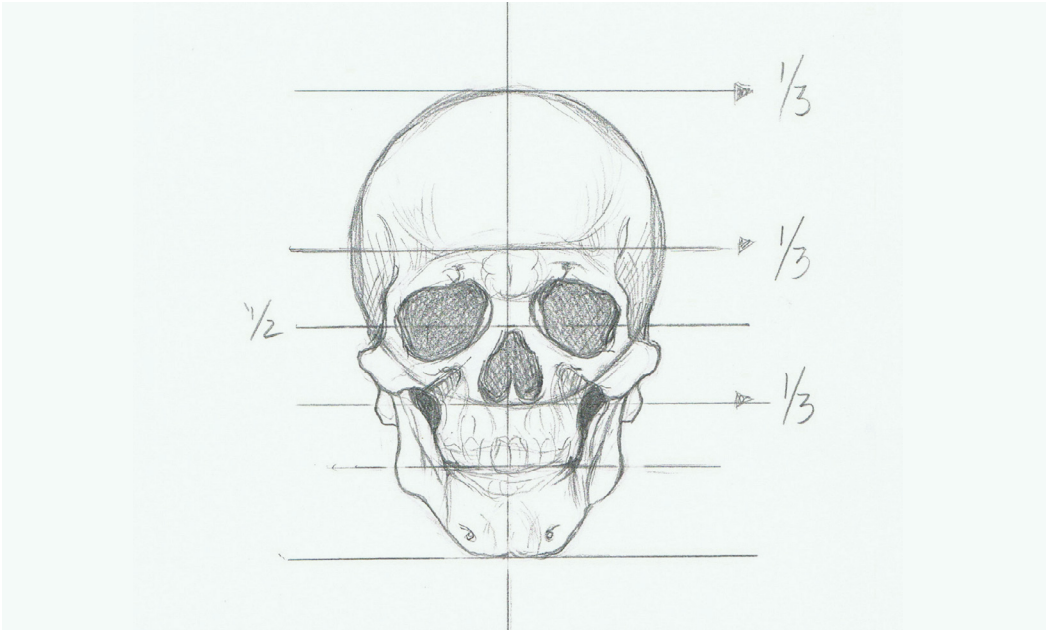
There are a few anatomical terms used in this chapter that it will be useful for you to be familiar with.

**Anterior view:**  
View from the front

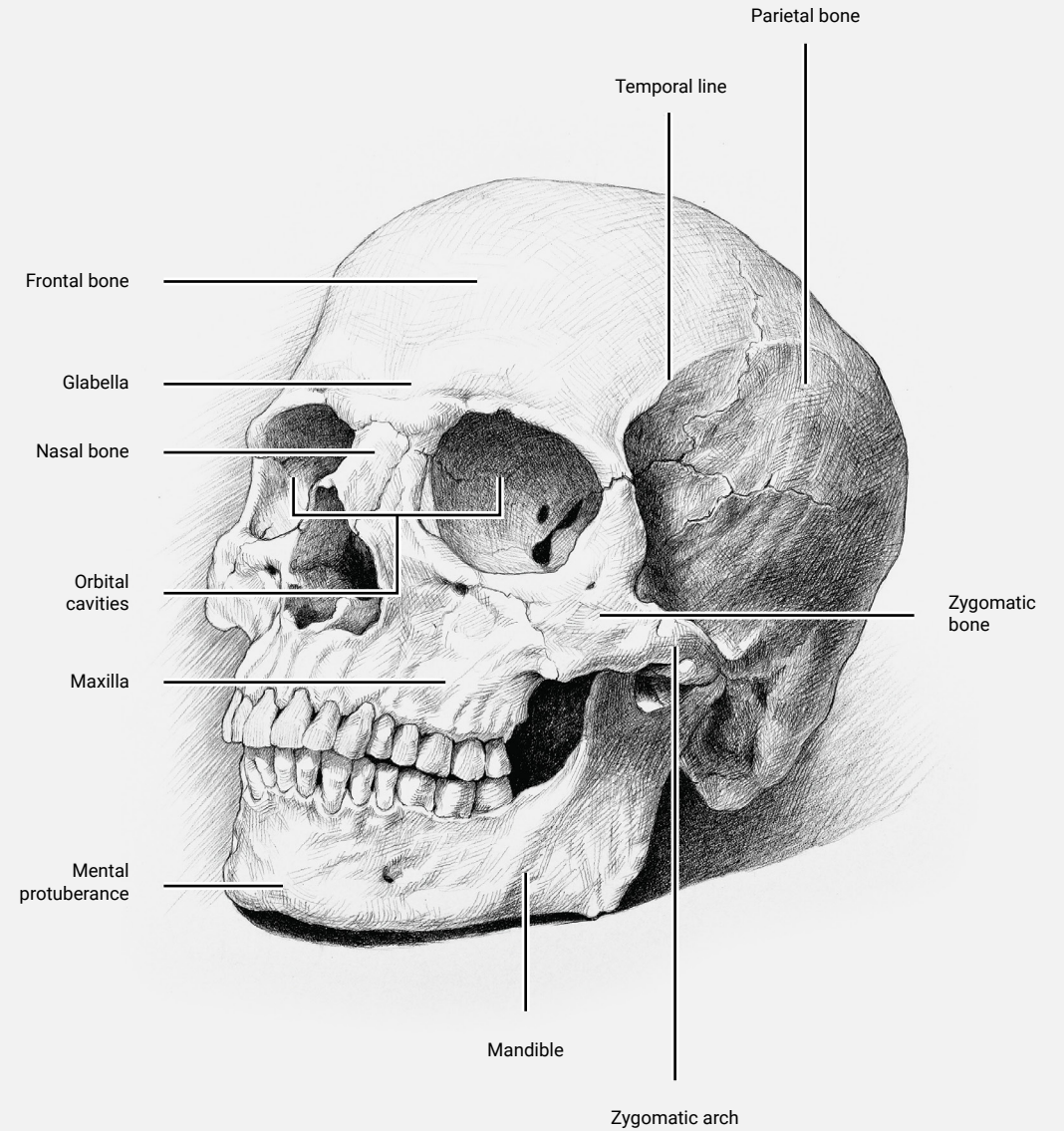
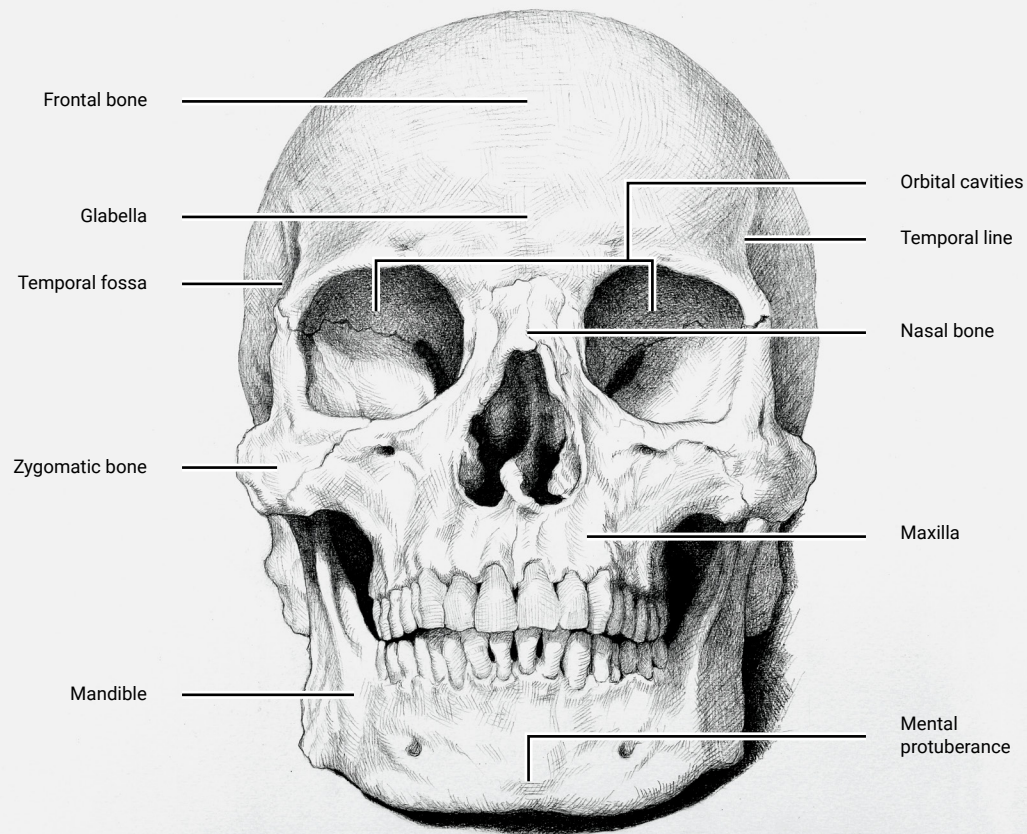
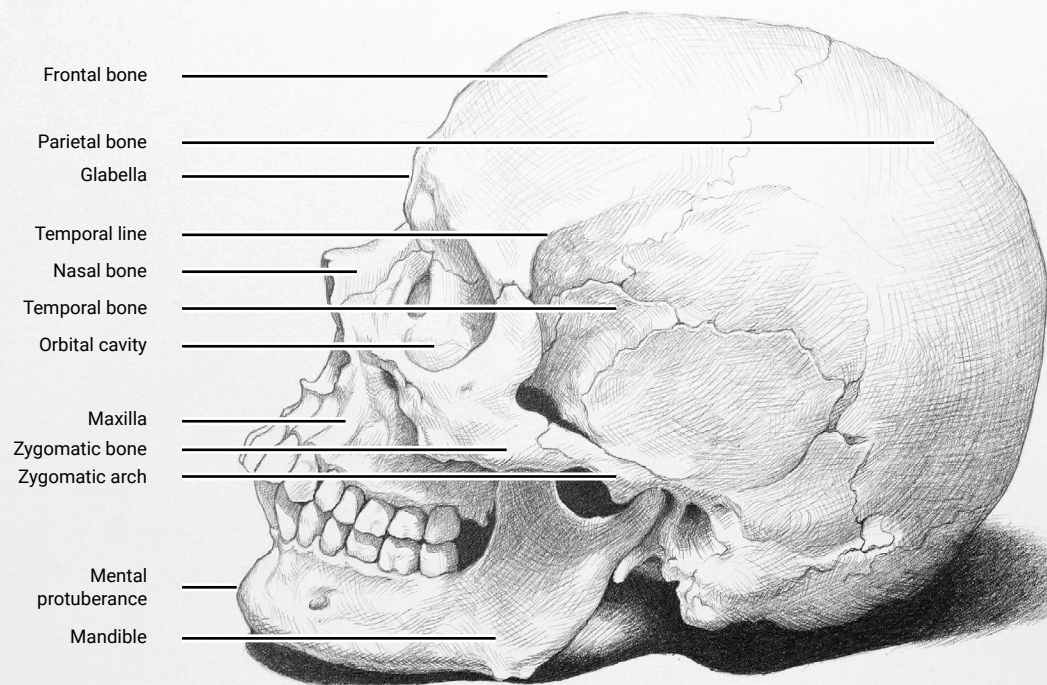
**Lateral view:**  
View from the side

**Superior view:**  
View from above

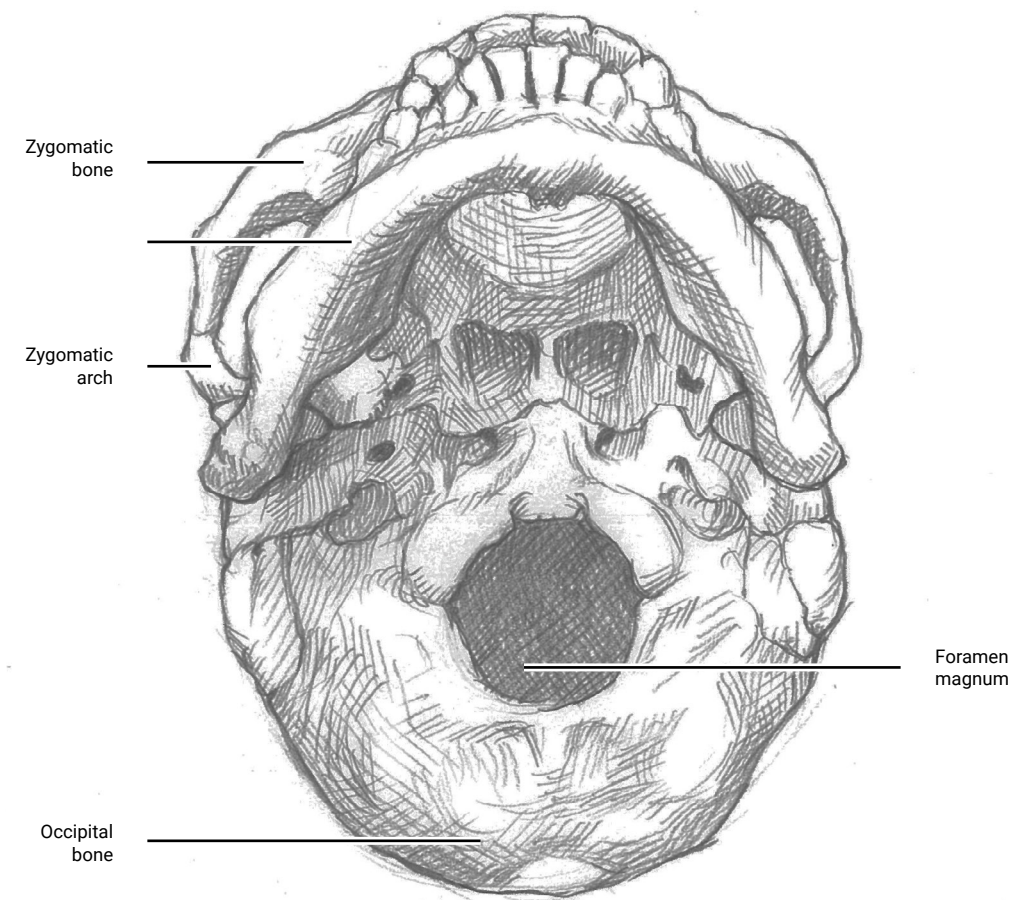
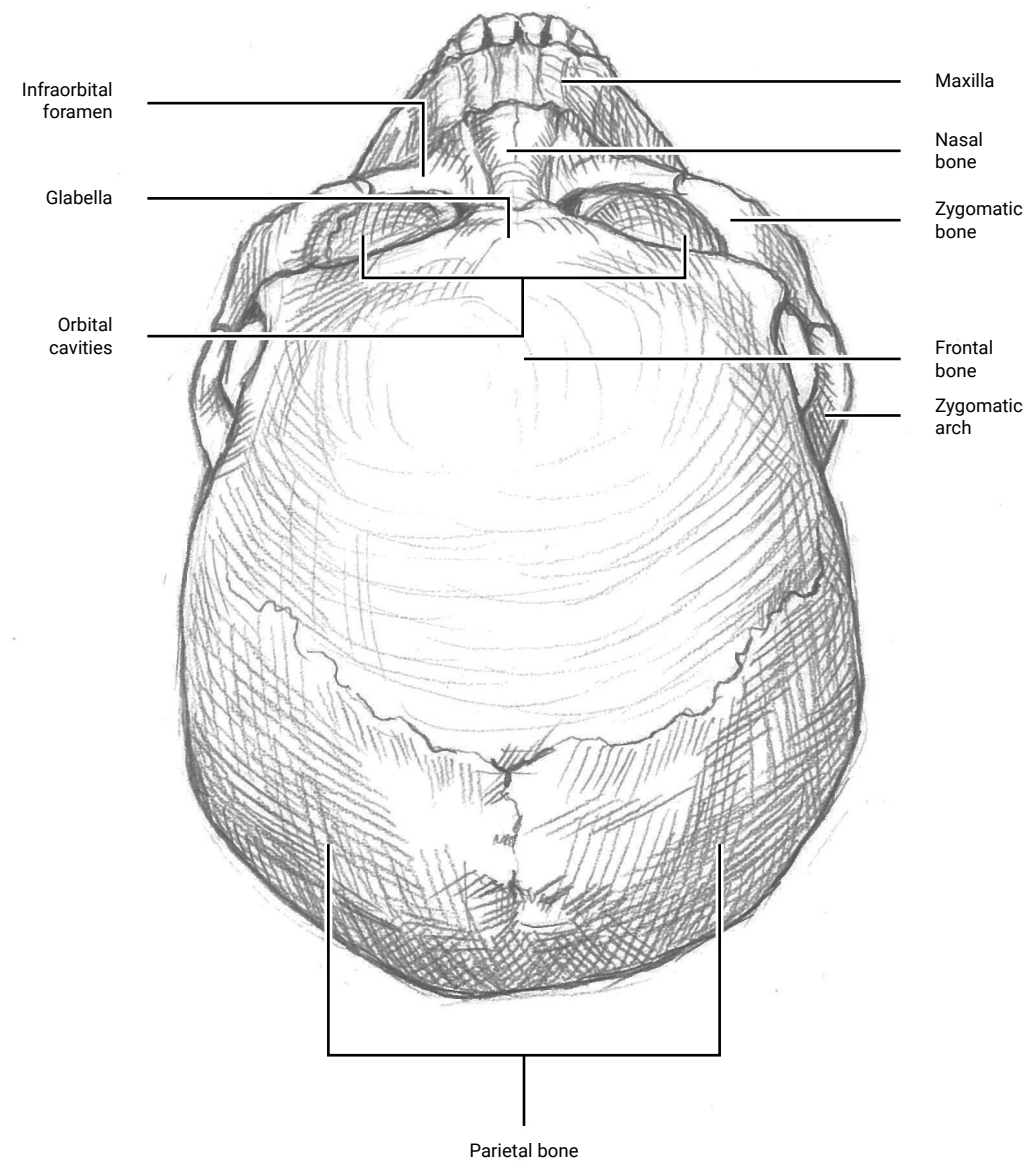
**Inferior view:**  
View from below













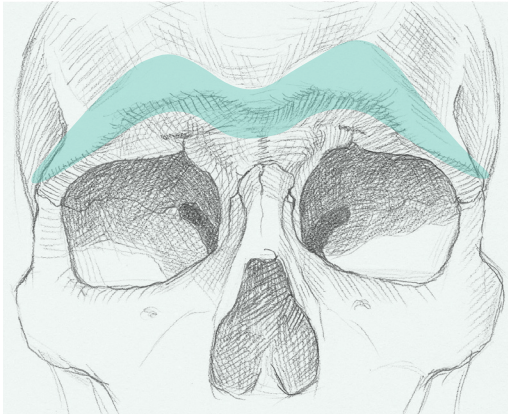
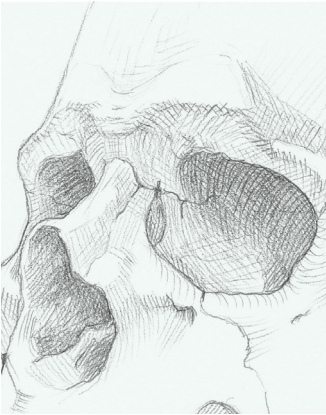
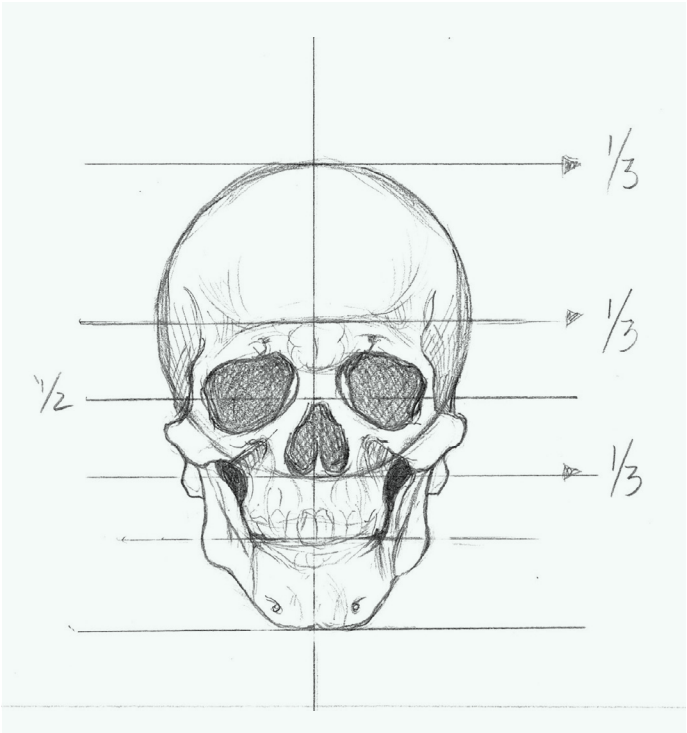
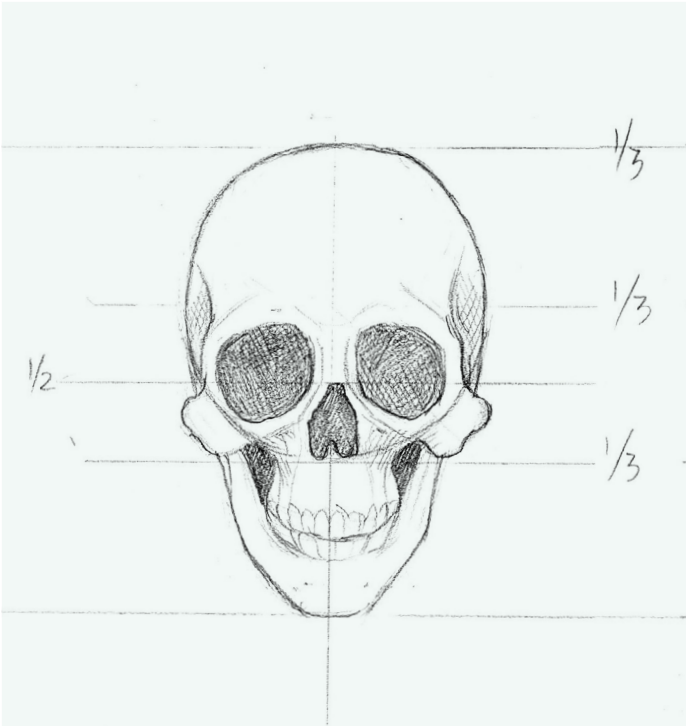
Differences between male and female skulls

There are a few differences to keep in mind when drawing male versus female skulls. With a female skull, you will find that the weight and size is generally smaller than that of a male skull, and the cranium itself will tend to have a more bulbous shape.

A male skull is squarer, which is most evident when studying the shape of the eye sockets and the mandible. The glabella (the area between the eyebrows, above the nose) is also more prominent on a male skull. In general, the bones of a male skull are thicker, heavier, and wider than that of a female skull. However, when it comes to construction, male and female skulls can both be divided into thirds as described previously.

Superciliary ridge

The superciliary ridge (or brow bone) is located at the base of the frontal bone of the forehead and just above the orbital cavities. Its prominent protuberance makes it easy to identify. Its curved shape helps to support the muscles which control eyebrow movement. This bony landmark often stands out straight away, especially in male skulls, and as light comes down from above, a hard edge is usually cast against the orbital cavities, as you can see in the male portrait sketch.



Top left:  
Female skull  
(anterior view)

Bottom left:  
Male skull  
(anterior view)

Near top right:  
Superciliary  
ridge (three-  
quarter view)

Far top right:  
Superciliary  
ridge (anterior  
view)

Bottom right:  
Note the dark  
shadow cast  
by the brow  
over the orbital  
cavity. Artwork  
© Rita Foster





Nasal bone

The nasal bone is actually made up of two separate bones fused together in the middle to form the upper part of the nose.

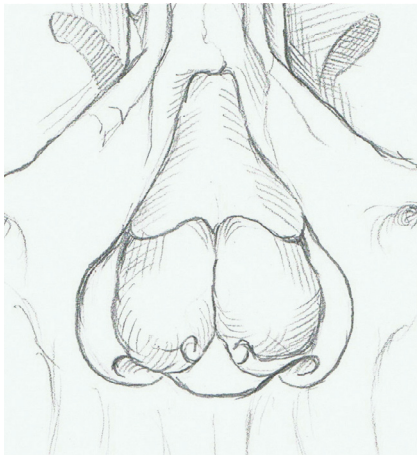
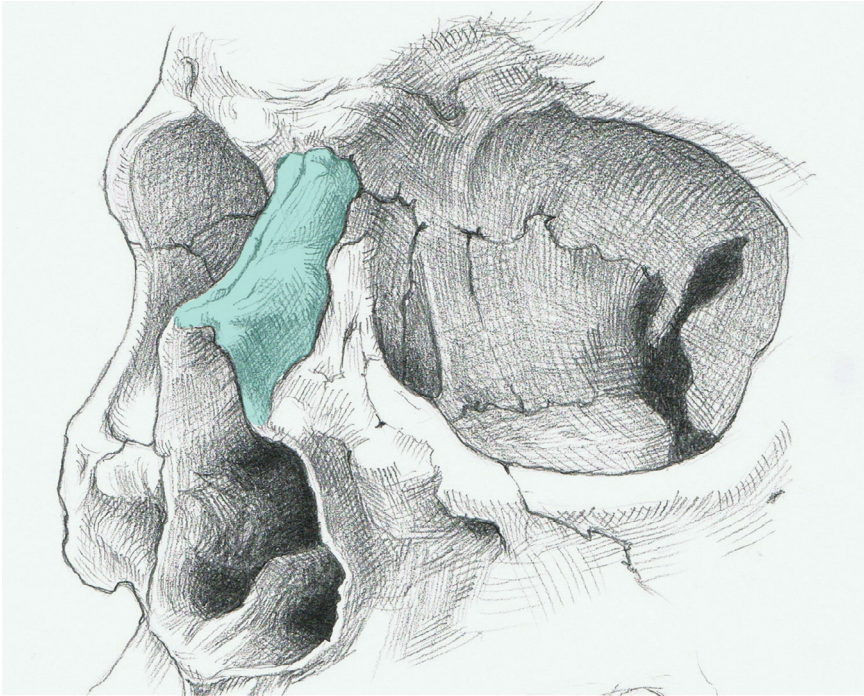
This is often referred to as the “bridge.” At the bottom of the

bridge, the nose is then formed by several sections of cartilage which create the shape of the nose you will be more familiar with.

You can see the cartilage overlay drawn in the image below. Once the cartilage is taken into account,

the shape of an individual’s nose can differ dramatically from person to person.

You will also notice a slight plane change on people’s noses as the forms change from the nasal bone to the cartilage.



Top left: Nasal bone (three-quarter view)

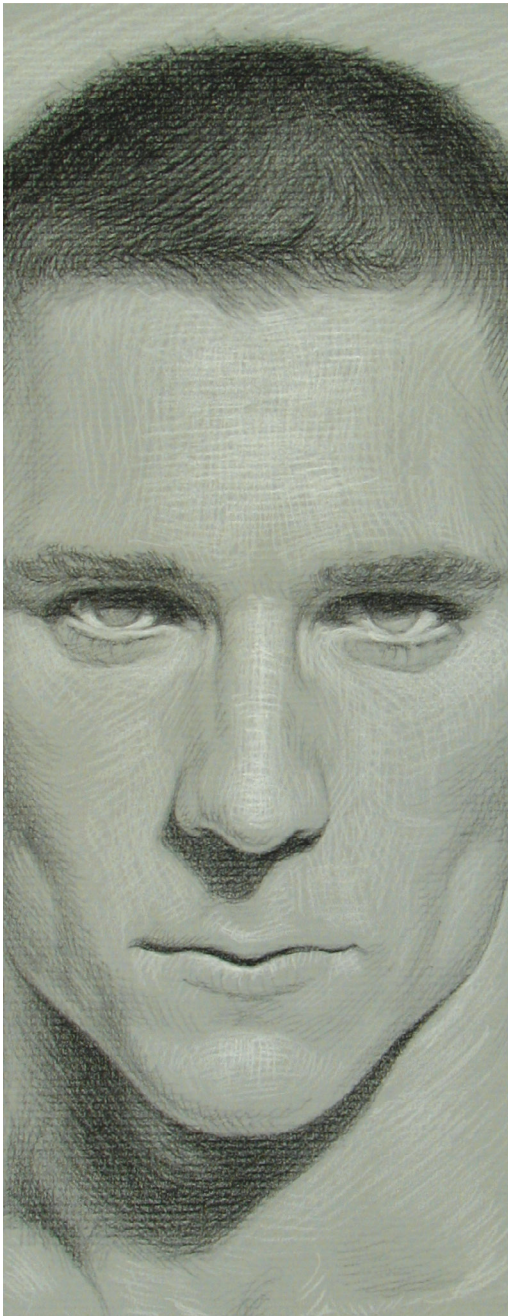
Far bottom left: Nasal bone (anterior view)

Near bottom left: Nose shown with cartilage overlay (anterior view)

Near top right: Nasal bone (lateral view)

Near top right: Nose with cartilage overlay (lateral view)

Far right: Here you can see how the nasal bone and cartilage help form the planes of the nose. Artwork © Rita Foster



There are three basic planes of the nasal bone, and when the light shines onto one of them it creates hard edges of shadow

on the opposing side. This will help to ensure that you add three-dimensionality to a facial feature that can be quite difficult to

construct when viewed from the front. In the portrait below you can see the three planes of the nose more clearly.



Zygomatic bone

The zygomatic bone (cheekbone) is another bone that can be seen on the surface of the face relatively easily. It is another landmark (like the superciliary ridge) that supports the border of the orbital cavity and also extends up along the lateral side of the skull. In an anterior view of the skull you will observe a concave portion between the zygomatic bone and maxilla (upper jawbone) just beneath the bottom ridge of the orbital cavity. You can see the superior and inferior views of the zygomatic bone on the right-hand page to give you more of an idea of how this bony landmark affects the outline of the skull.

This area is another point where shadows will usually occur when the light shines across them. Highlights can also sometimes be seen along the top of the zygomatic bone. Cheekbones vary, and can be more prominent in some people and less prominent in others.

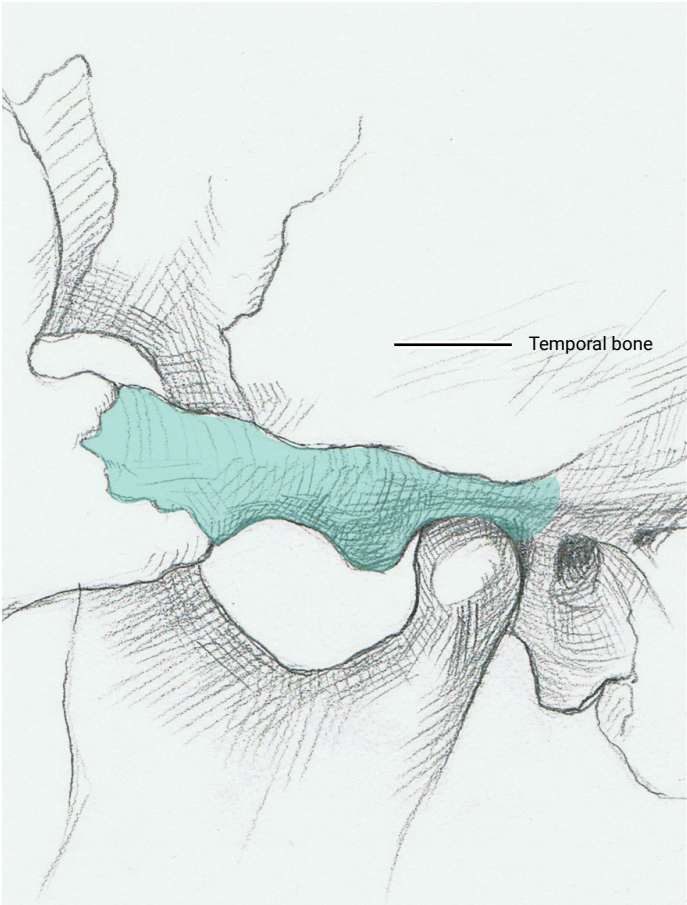
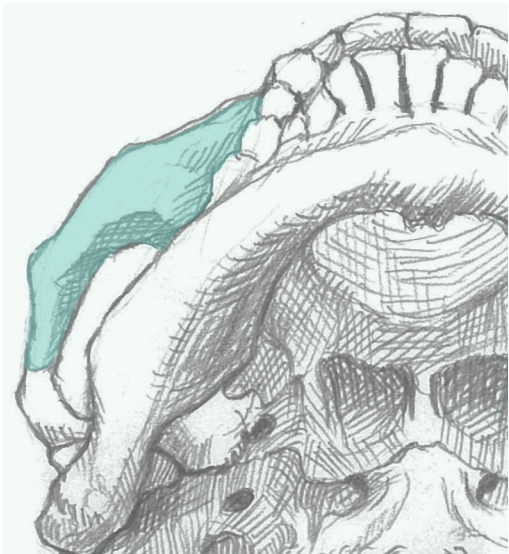
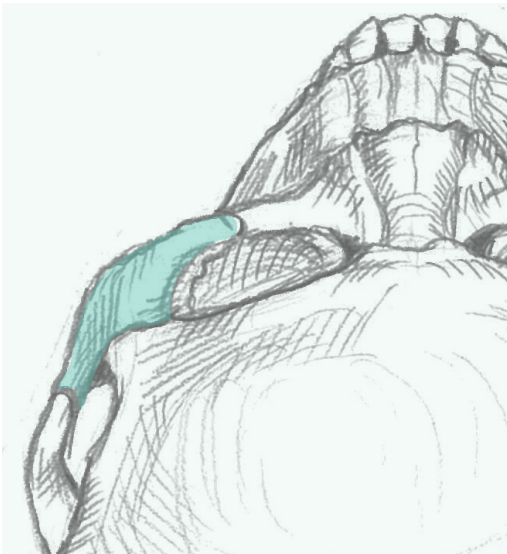
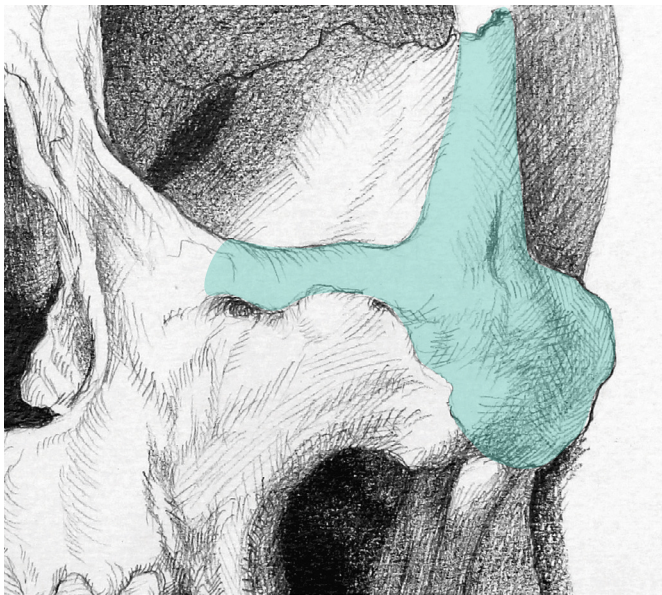
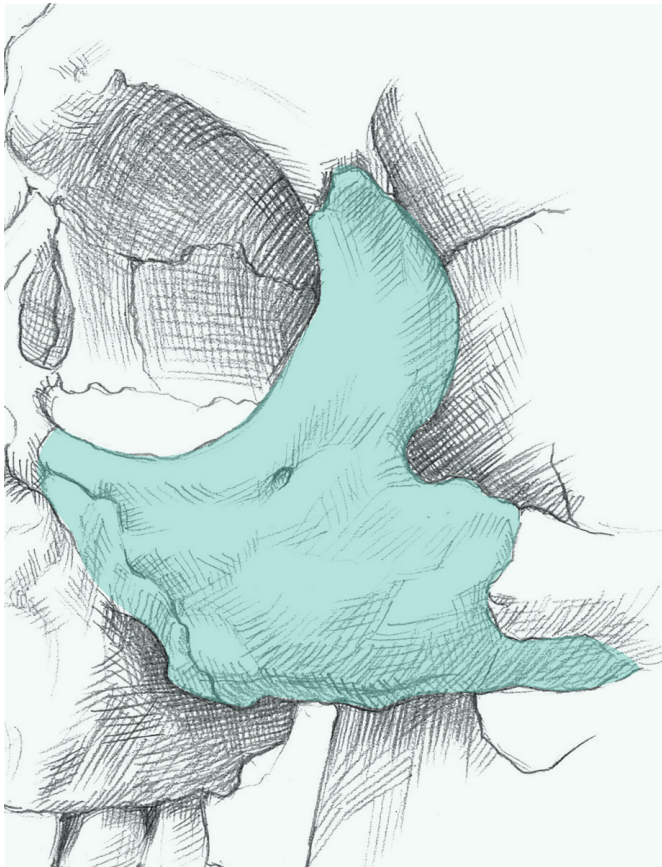
Near top right: Zygomatic bone (lateral view)

Near bottom right: Zygomatic bone (anterior view)

Middle top right: Zygomatic bone (superior view)

Far top right: Zygomatic bone (inferior view)

Bottom right: Zygomatic arch (lateral view)

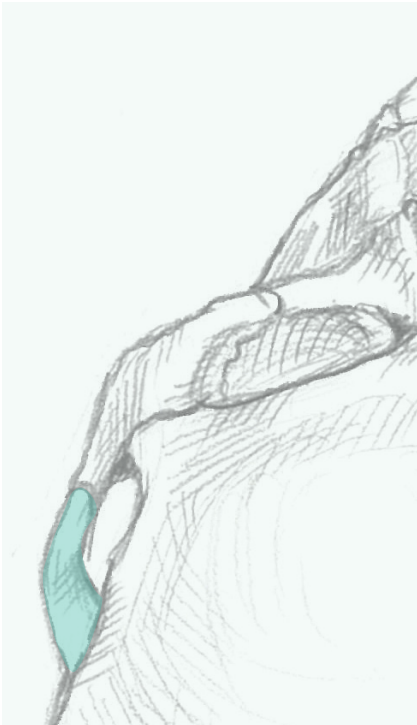


Zygomatic arch

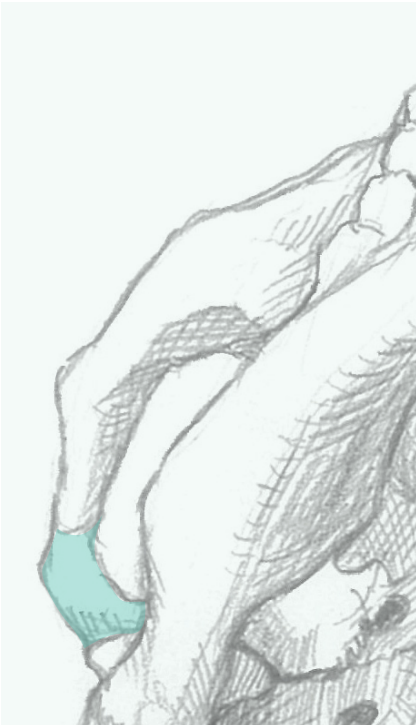
The zygomatic arch is another part of the zygomatic bone which extends along the side of the skull and connects to the temporal bone (shown in the image on the left). The temporal bone itself will form part of the side and base of the skull. This is the point (the temporomandibular joint) where the mandible is connected by muscles and ligaments to the cranium area.

When viewing the zygomatic arch as an undulating form beneath the skin, there is a definite ridge that stands out and creates a separation of planes in the face. It is helpful to remember the shape of this bone in order to establish a convincing structure of a human head. You can see the superior and inferior views for reference on the next page.

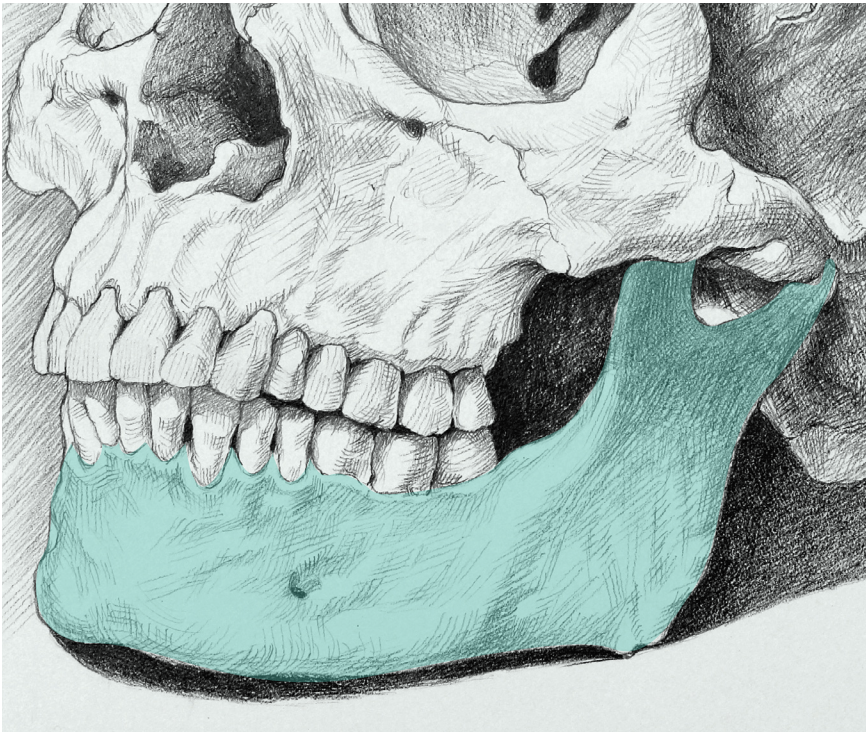




**Far top left:**  
Zygomatic arch  
(superior view)



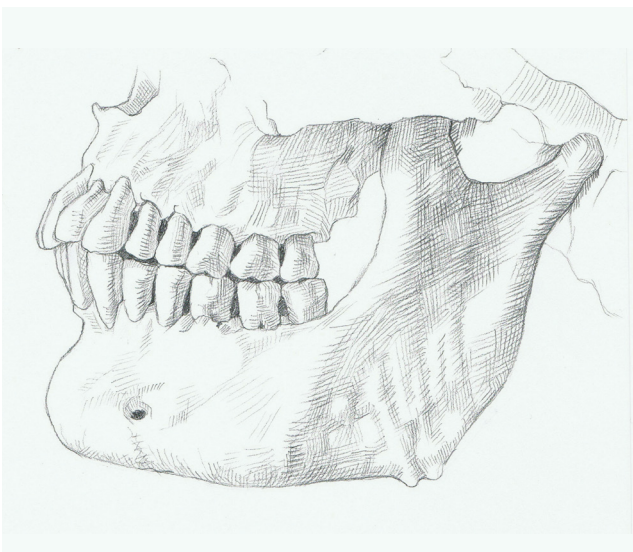
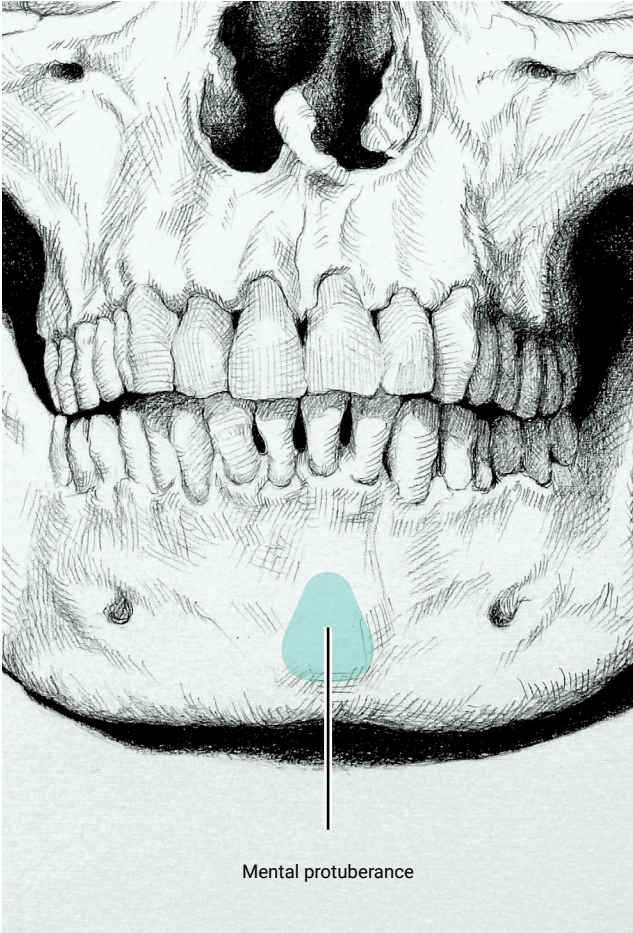
**Near top left:**  
Zygomatic arch  
(inferior view)



**Bottom left:**  
Mandible  
(three-quarter  
view)

**Top right:**  
Mandible  
(anterior  
view). Note  
the mental  
foramina  
and mental  
protuberance

**Bottom right:**  
Mandible  
(lateral view)



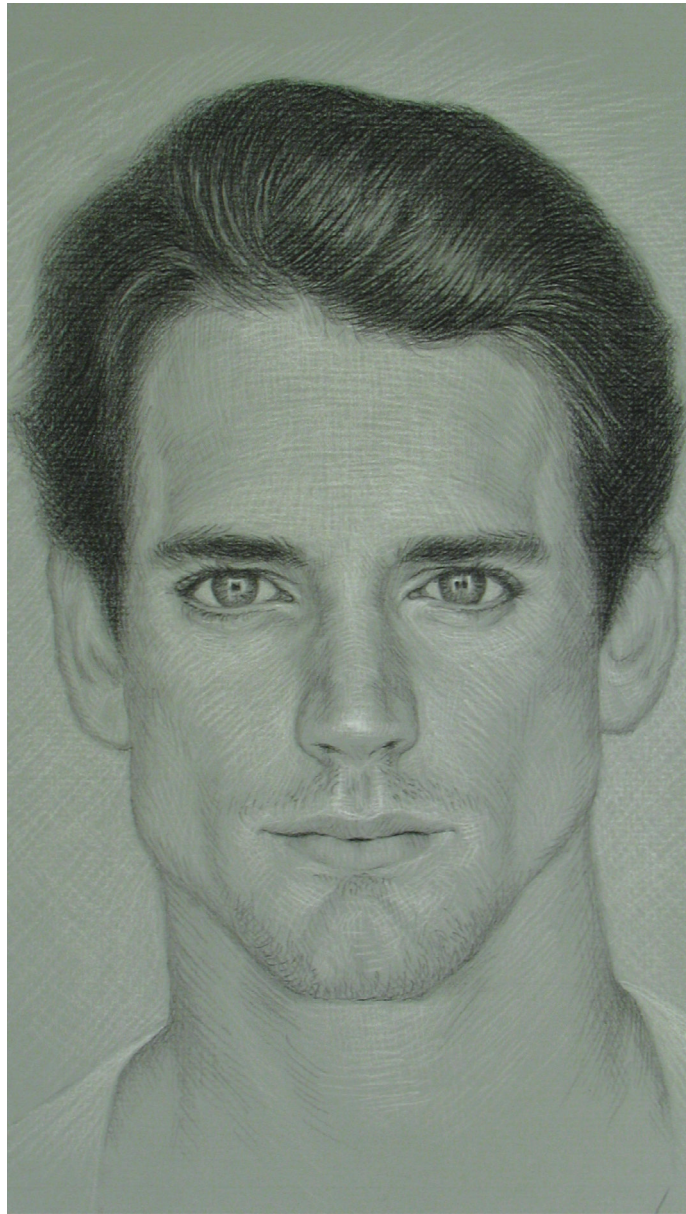
### Mandible

The mandible forms the lower part of the skull and is connected to the cranium by powerful ligaments and muscles, one being the masseter. There are a series of ridges in the bone allowing attachment of muscles, which in turn allow the jaw to function for tasks such as opening and closing the jaw and chewing food. One of the main differences between men and women is the shape and size of the mandible; men tend to have larger and squarer jaws than women, and the mental protuberance (see next page) is more pronounced on men.

As the skeleton develops in utero, there are many individual pieces of the skull that are not fully fused. These bony pieces and the seams between them do not seal until young adulthood, and even then the skull continues to develop throughout a person's life. For example, the mandible is composed of left and right processes (projections from the bone) that fuse together and harden after birth into the bone that we recognize as the lower jaw. On the mandible, the seam (which creates a slight ridge) where the two halves meet is known as the mandibular symphysis. Around this seam you can then see the mental protuberance, which helps determine the size and characteristics of a person's chin.

In an anterior view of the mandible you will also notice two holes on either side of the chin, just below the teeth. These are called mental foramina (openings). They supply a canal for nerves to travel through to the lip and chin.





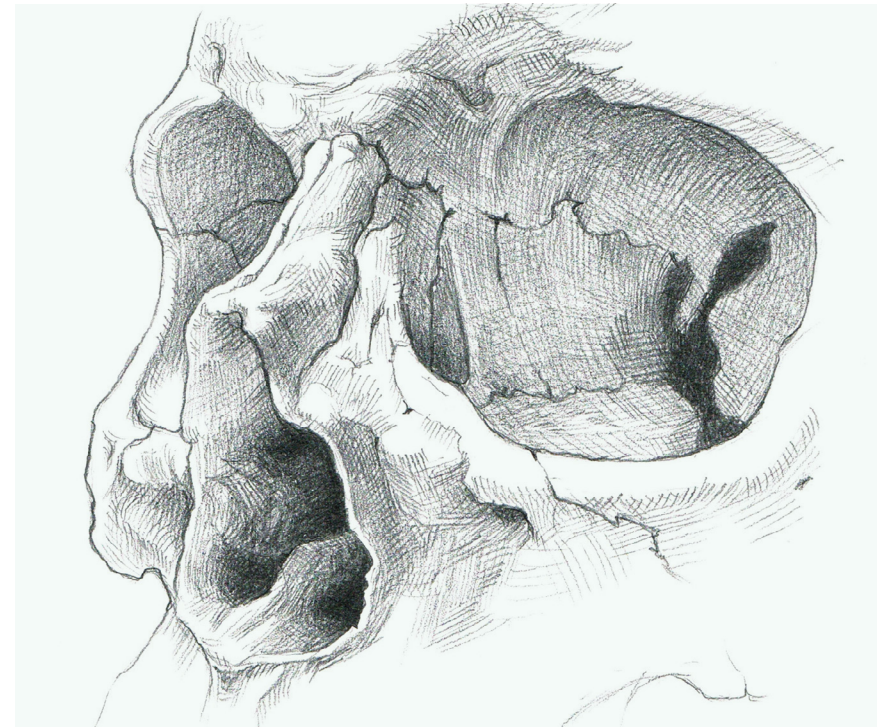
This portrait is a good example of how the zygomatic bones and mandible can have quite a pronounced effect on the surface of the face and the covering skin. With the light coming from above and in front in the drawing, you

can see how the shadow forms underneath the zygomatic arch and around the maxilla. You can also observe how a highlight is formed along the bottom of the orbital cavity, which we will go on to discuss next.

### AVOID PERFECT SYMMETRY

Though the human body is developed in symmetrical parts, the left and right halves of our features are never perfectly symmetrical; as with our hands and feet, the two halves of our skulls are not perfect mirrors of each other. Adding asymmetry and subtle differences between the left and right side of the face will add a level of authenticity and realism to your work. A truly symmetrical face will always strike the viewer as uncanny and even alien.

If you look at any face, you can find a midline down its center. From here, imagine that each half of the skull has its own unique bone structure, and that seemingly symmetrical surface features of the face (such as the eyes, philtrum, lips, and chin) are not perfectly mirrored. By doing this you will be able to capture better likenesses and invent more natural-looking faces. As you can see in the sketch on the left here, the hairline, structure of the nose, lips, and eyes are not perfectly symmetrical.



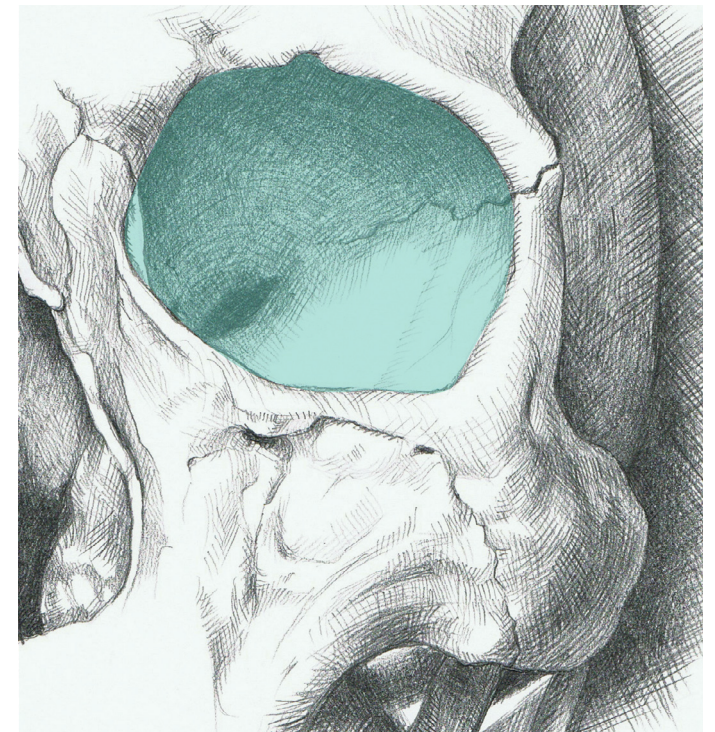
**Far left:** Sketch in which you can see the impact of the underlying zygomatic and jaw bones. Artwork © Rita Foster

**Near left:** Orbital cavity detail (three-quarter view)

**Below:** Orbital cavity (anterior view)

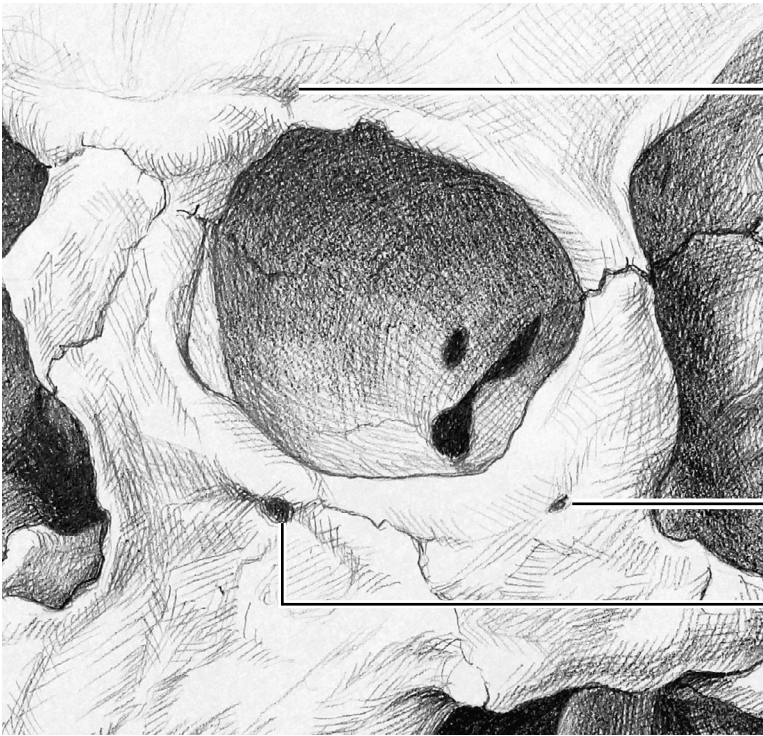
### Orbital cavity

Each orbital cavity is situated between the nasal bone, the superciliary ridge, and the zygomatic bone. One orbital cavity is about as wide as the nasal cavity is long. This landmark is particularly noticeable as it creates a shadow in the upper inner region where the nasal bone meets the superciliary ridge. In older people the orbital cavity may become more noticeable on the upper outer edge and along the zygomatic bone.





There are three different notches in the bones surrounding the orbital cavity which are there so that arteries and nerves may pass through. One is located in the brow bone; it is called the supraorbital foramen (foramen is the singular term for foramina). There is another on the lateral side on the zygomatic bone called the zygomaticofacial foramen. Another is located just below the orbital cavity, in the maxilla; it is called the infraorbital foramen. Thinking about the functionality of these foramina will help you to remember that the eyeballs sit in the orbital cavities; if you keep this in mind it should help your eyes look more realistic rather than as if they are protruding from the head.



Supraorbital foramen

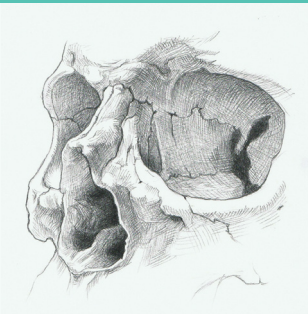
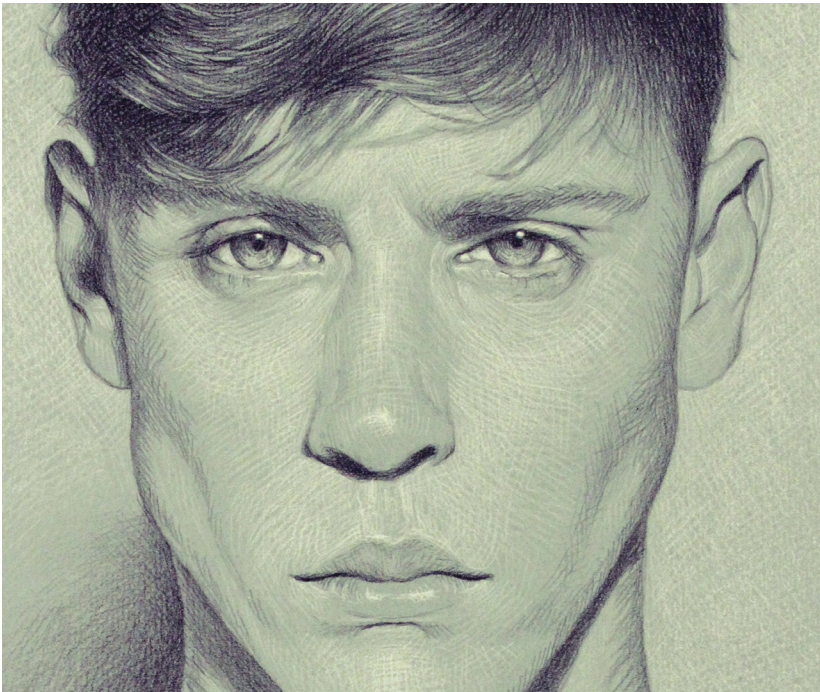
Zygomaticofacial foramen

Infraorbital foramen

**Top left:** Orbital cavity (lateral view)

**Bottom left:** Orbital cavity (three-quarter view)

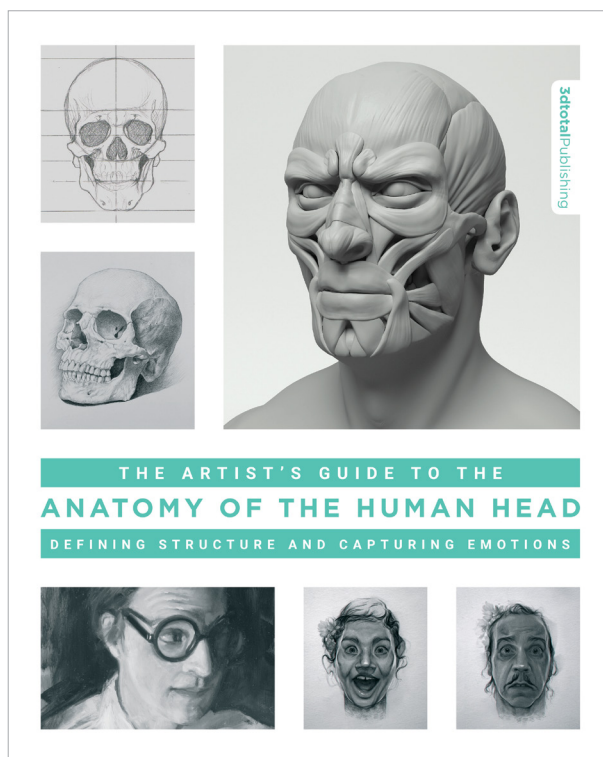
**Right:** In the drawing here you can see how the zygomatic portion of the orbital cavity produces a highlight. You can also note how definition is created by the nasal bone. Artwork © Rita Foster



**CONSTRUCTION TIP**

Shading is a very important aspect of drawing. When light hits a surface, shadow begins at the point where form turns away from the light. It begins with the darkest part of the shadow called the core (soft edge), turns into reflected light (lighter) and then a cast shadow (crisp edge). The cast shadow is a result of form blocking light. It is easiest to block in all the edges of the shadows first to create guidelines for shading the entire piece. That way you have all the shadows mapped out before you commit yourself to hours of shading work. As the subtle forms of the skull are quite complex in areas such as the orbital cavities and nasal bone, visualize the angles of form and the way they project out or become concave. Imagine the tip of your pencil as a tiny ant crawling along these forms in a series of lines which will soon become shading.

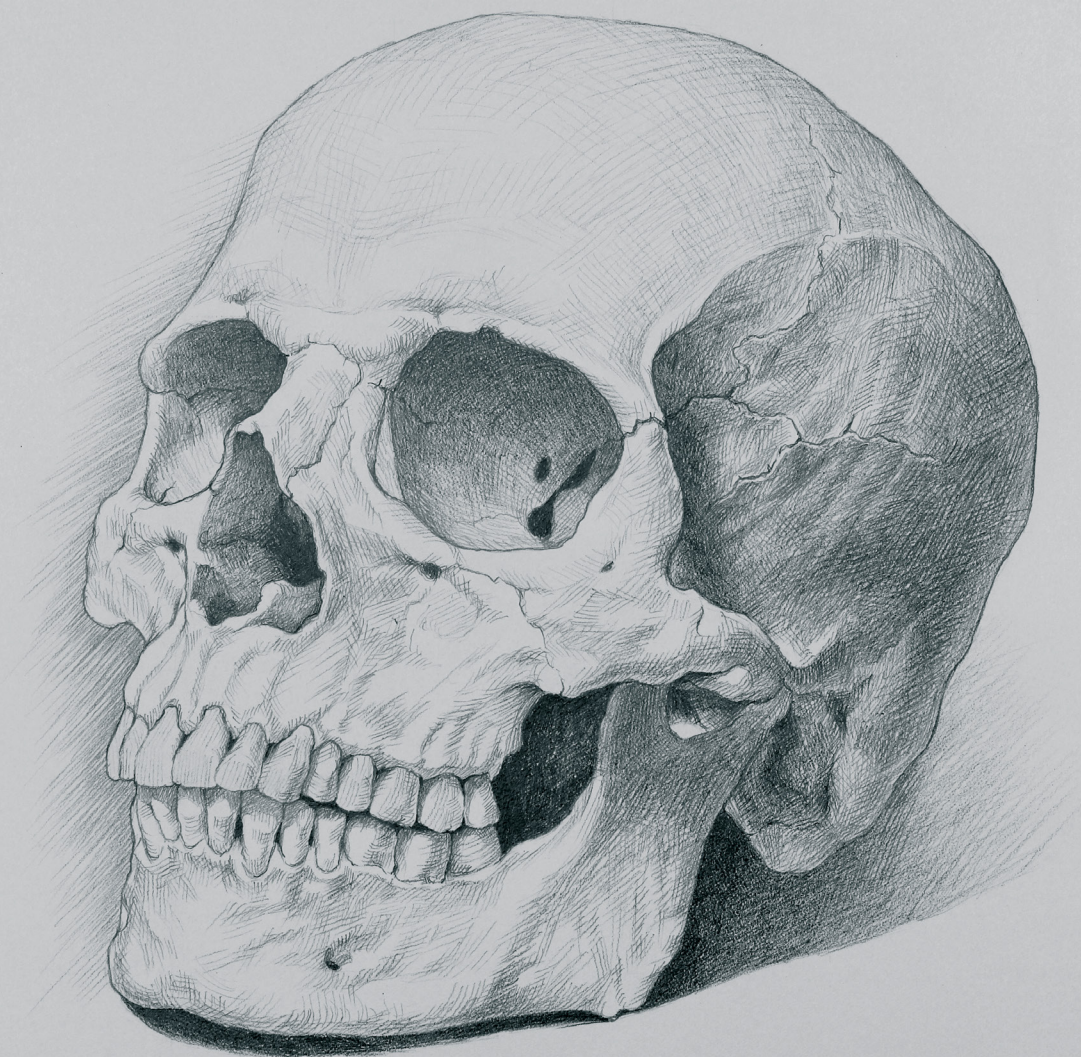




## Anatomy of the Human Head

*The Artist's Guide to the Anatomy of the Human Head* is an essential reference guide designed to help you not only understand anatomical forms and features but also to learn how to accurately and effectively portray emotion in any character-based artwork. Written and illustrated by leading artists from a variety of disciplines, including 3D modeling, illustration, and fine art, the visual aids and insight offered make this book a must-have for all artists looking to portray emotions and create relatable characters.

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CUSTOMER REVIEW

Artwork © Rita Foster



# Wings

“Instinctively touching her back, she felt coarse feathers bristling through her skin, like acupuncture needles she was once compelled to touch. That had been weird, but nothing compared to this. She pulled on one nascent shaft and felt her skin peel towards it. It was stuck, but she got the feeling that if she pulled a little harder, it would pop, and come out in her fingers.

In the mirror, she shrugged her shoulder blades and feathers, black – highlighting the opalescence of her pink skin – blossomed like a blast of sudden spring. They grew, forming wings, knocking toiletries from shelves and slamming like a fist against the window pane.

The window. The sudden urge to open it was overwhelming.”

**By Eliza Ivanova**

[elizaivanova.com](http://elizaivanova.com)

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Narrative by Adam J. Smith | [adamjsmithauthor.blogspot.co.uk](http://adamjsmithauthor.blogspot.co.uk)







**Left:** The tools used for this project

**Top near right:** Placing the first few lines

**Top far right:** Foundation elements

**Bottom near right:** Starting to craft the scene

**Bottom far right:** First background lines



## Drawing tools

For this illustration project, I have limited my choice of tools to the bare minimum, which is a mechanical pencil (I usually use HB or 2B), a couple of blending sticks, and an eraser. It's an easy set of tools that I can carry with me, and gives me enough versatility to achieve a highly detailed illustration almost anywhere.

## The first marks

After carefully choosing about ten different references for the torso pose, overall body position, props, and background, I begin by laying the first marks down. These initial lines are the most important for me. In this case, I want to capture the woman's worried face from the very beginning, to confirm that my references are suitable.

## Adding key elements

Once I am happy with the character's face and general pose, it is time to start building all the elements of the illustration mentioned in the narrative extract, the most important of those being the wings. They need to feel huge and powerful, yet painful. For now, I will just outline their basic shapes for scale.

## Setting the scene

The foundation of the illustration is laid out and now it's time to figure out the overall mood of the piece. I want to achieve a Victorian Gothic feel, and the mirror is the first prop to include elements from that time period.

Victorian furniture is very detailed, so I make sure to check some

references and pay extra attention to the smallest details, like the filigree on the mirror frame, and not just improvise them.

## Background composition

As a precaution against mistakes, I only draw a few lines for the window arch (the window being a pivotal piece of imagery in the story). This way I can visualize the entire design before committing to the finer details, in case I want to make major changes early on. Thinking back to some of my storyboarding classes in college, I decide to tilt the window frame to create a slightly diagonal layout. Diagonals in film and cinematography are used to enhance a dramatic moment, such as this one.







### Completing the base scene

At this stage, it's time to lay everything out and "mess up" the scene. In the description, the girl's wings knock over whatever is on the cabinets around her, so I pepper in some books, papers, and small objects to create the visual busyness I imagine. I also change the mirror from being propped against a wall to being on a stand in the middle of the room. This allows me to add some extra detail behind the mirror and hint that the room is large and continues beyond this illustration.

### Developing detail

Once all the props are added to the image, I decide to dive into the Victorian details I've been

anxiously waiting to do. The mirror is the most intricate prop and also a central point of the sketch, so I take extra care in making sure I stay true to my references. In the background, I leave the window frame simple as visual contrast to the mirror.

### The shading begins

Now that the foundation of the image is built and all the props are added and refined, it is time to shade. I always start with my biggest blending stick, which has enough graphite left over from previous drawings to build a first layer of tones. As with the line work, I begin with the girl's torso, which is one of the image's most important elements to establish first. I do pay close attention to

the anatomy in my references, but I simplify it into larger light and dark shapes while still being anatomically correct.

### The wings

The wings are the centerpiece of the story, so I want them to be the centerpiece of this illustration. I add an extra layer of graphite to them to make sure they are the elements with the highest contrast in the composition, guaranteeing that the viewer's eyes will go directly to them. I go through a process of laying a foundation of shading with the blending stick, then going over it with the pencil, then blending again. I add extra definition around the highlighted areas to make them stand out some more.



**Far left:**  
Adding all the props

**Near left:**  
Refining the details and line work

**Top right:**  
Shading with a blending stick

**Top right:**  
Shading the wings





### Finishing the shading

Here I have laid down most of the base shading. A mental note that I always have when making an intricate piece like this is not to overdo it. Throughout the years, the blending stick has allowed me to develop an eye for what to shade and what to keep simple, in order to not create visual clutter. Using the stick is a quick enough method to block out large areas of light and dark, and decide on the focal point of the piece from the beginning. The blending stick applies thin layers of graphite that are also very easy to erase if an image begins to look like it is overly shaded.

### Refining the details

The blending stick allows me to achieve a spontaneity of shading similar to using charcoal. This way, when I go back to focusing on the small details, I'm not exhausted by tedious crosshatching. I continue refining the Victorian filigree on the mirror, which is an almost meditative activity. Going back and forth between using the blending stick and the sharp point of the mechanical pencil greatly speeds up my illustrating process.

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**Far left:** Shading (is) everything

**Near left:** Working on some of the finer details





### Elements of design

Though I use references continuously, I try to have fun with the shapes and “design” within the anatomy of the body. This is a shorthand I have developed in the past five years of constant sketching, and is also a visual cue that this is an imaginary world. My intention is not to make a hyperrealistic illustration, but rather my interpretation of this imaginary scene, and it is the small designed details and stylized flourishes that give that impression. It’s a subtle but deliberate choice that I make.

### Visual balance

At this stage, it is very easy to overwork the shading, because tonally similar elements increasingly exist next to each other. Hence I keep the wall and window simple, even when adding more detail to them, while the girl, mirror, and floor remain visually busier to achieve a cluttered effect. A strong sense of value and silhouette is very important to me, and something I have learned to respect religiously through my experience in film and animation.

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**Left:** The overall design of the values and shapes adds to the fantastical nature of the scene

**Above:** Finding a balance with shaded elements





**Left:**  
Bringing the  
outlines back  
into the image

**Right:**  
The finished  
illustration ©  
Eliza Ivanova



### Revisiting the outlines

Some of the outlines have been lost after substantial smudging, so I take the opportunity to bring some of the details back to the forefront. I redraw the filigree patterns, the window pane, the messy curtain folds, and the books in the foreground.

It makes the whole image crisper and helps to make the elements

pop. If I need to blend something back out of focus – such as the stool in the foreground, which I feel is battling with the wings' contrast – I can always go back in with my trusted blending stick!

### The final image

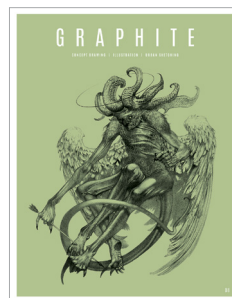
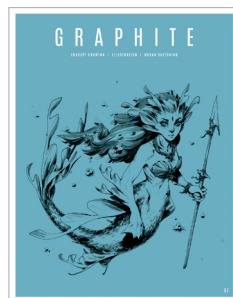
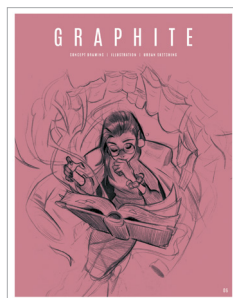
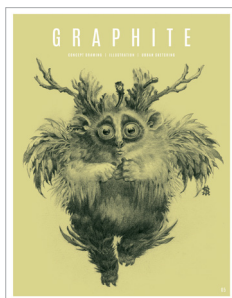
Above is the final result. My last pass is less about drawing and more about assessing the overall look. A little hint of detail here, a bit

of erasing there, until it feels that I will only overdo it if I continue. I stop the moment the image feels like the right balance between being detailed and sketchy, and also graceful and delicate. As a final check, I hold the drawing in front of my own mirror and judge it there, because seeing the reversed image is like seeing it with fresh eyes that haven't gotten used to each and every line.



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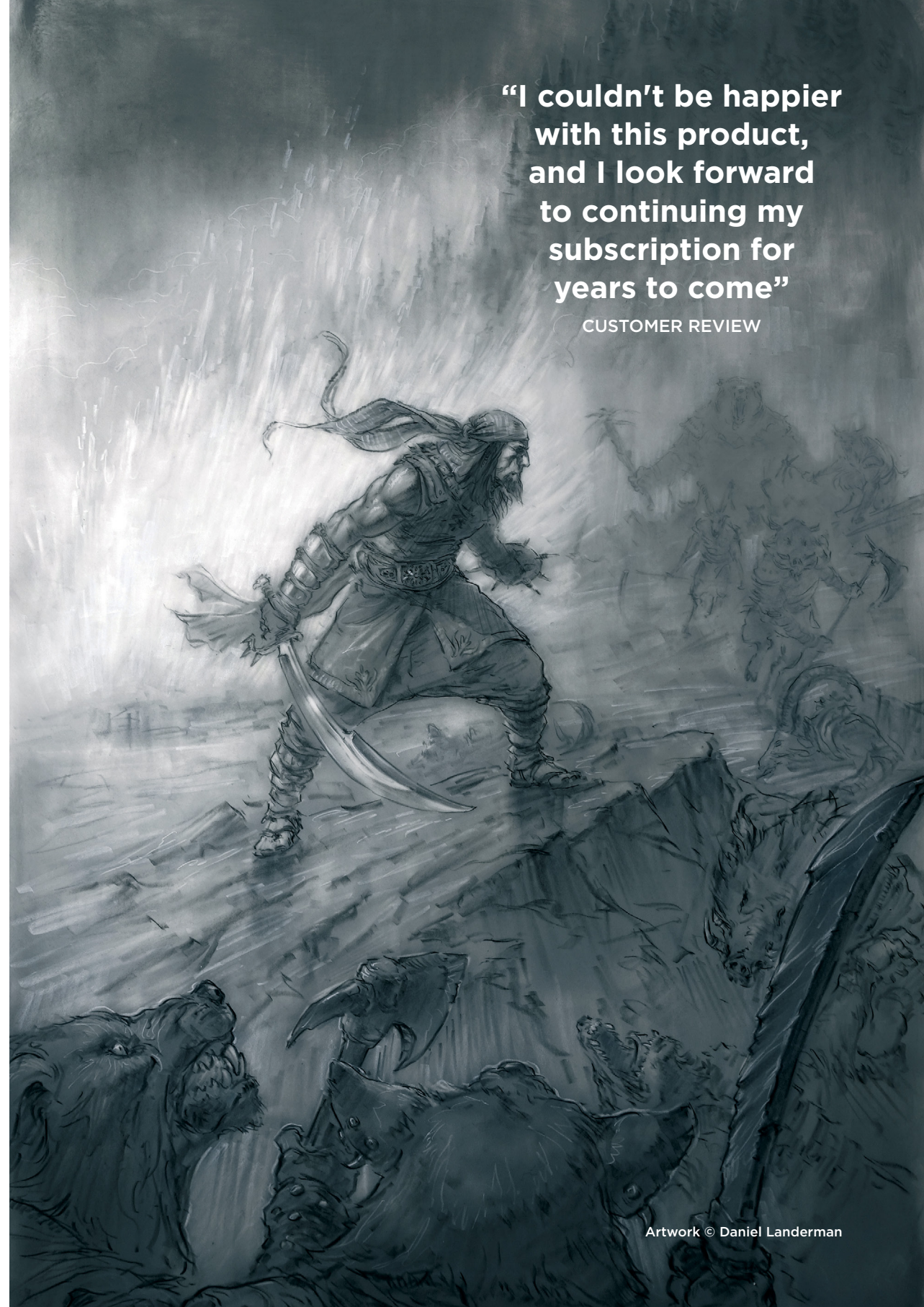


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