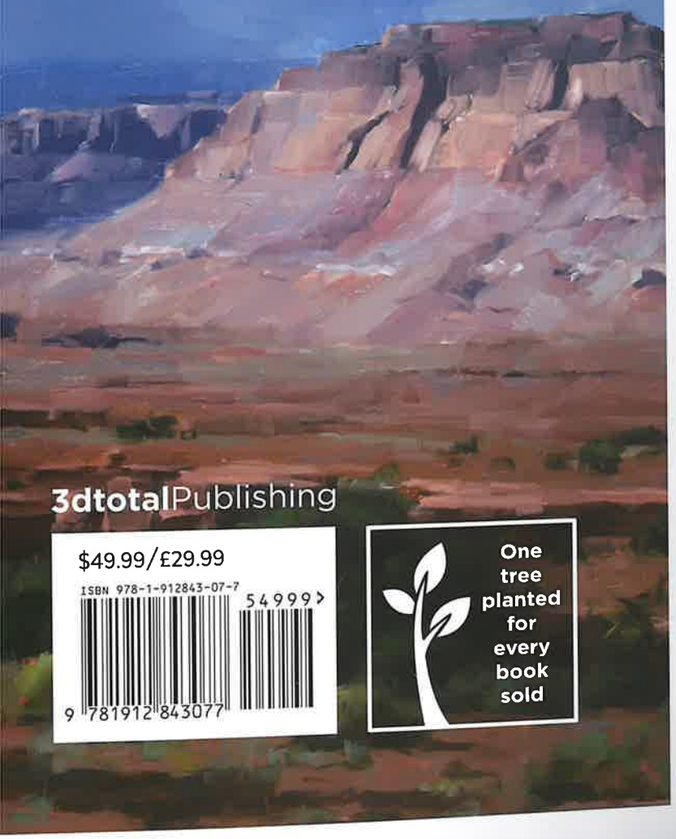
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· Light & shape
· Color
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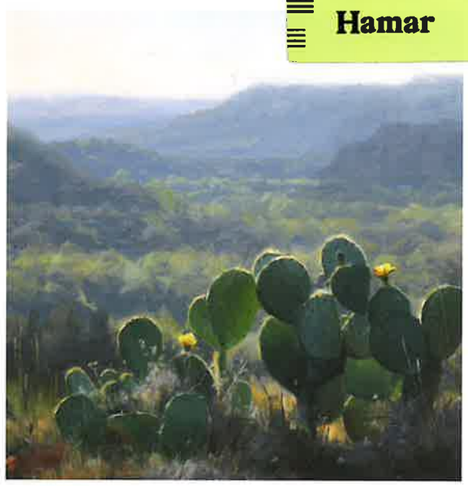












Art Fundamentals
2nd edition

























Light, shape, color, composition, perspective, depth & anatomy

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GLOSSARY

Ambient light The soft, non-directional lighting present in a scene, as if from an overcast natural light source. See also **diffuse light**.

Analogous colors Similar colors that sit beside each other on the color wheel, such as blue, blue-green, and green.

Atmospheric perspective The effect of distant objects appearing pale and hazy due to the natural scattering of light in the air. Also called "aerial perspective."

Bounce light Illumination created by light bouncing off a nearby surface and onto the subject. Also called "reflected light."

Cast shadow The hard-edged shadow created by an object blocking the light.

Color harmony This refers to the theories of color combination and how to achieve visually pleasing colors. **Complementary, analogous**, and **triadic color** combinations are common color harmonies.

Color palette The selection of colors present in an image, especially if chosen to create a specific effect.

Complementary colors Contrasting colors that sit opposite each other on the color wheel, such as red and green.

Composition The process of arranging the elements of an image, or the results of such a process.

Contrast The quality created by juxtaposing different or opposing elements in a scene, such as light and shadow or hardness and softness.

Core shadow The darkest part of a shadow.

Diffuse light Light that has the quality of being softened or scattered, either by environmental elements or matte surface materials.

Focal point Also called a "point of interest." An area of an image to which the viewer's attention is intentionally drawn.

Foreshortening The perspective effect of an object becoming shortened as it is pointed in the viewer's direction.

Form A subject that has shape or volume in an image.

Gesture A simple sketch that captures the essence of a subject's form, pose, or movement.

Golden ratio A mathematical formula that can be used to measure the "perfect" proportions for an image.

Grayscale The range of monochrome shades emcompassing black, white, and grays (or an image made using these).

Half-tone The tone that is halfway between light and dark on a range of values. See also **midtone**.

High-key lighting A lighting setup that is evenly illuminated and does not feature heavy contrast or very dark shadows.

Highlight The brightest area on an illuminated subject.

Hue A color's fundamental category or type, such as red, blue, or green.

Key light The main light source in a scene.

Local color The basic color of a subject when it is not lit or influenced by external sources.

Low-key lighting A lighting setup that features dramatic contrast and predominantly dark values.

Midtone The tone or range of tones that are neither bright nor dark.

Negative space The "empty" space around and in between the objects in an image.

Perspective The effect of objects appearing smaller as they recede away from the viewer.

Plane A flat surface with corners and edges.

Plein air Painting outdoors as a form of observational study. From the French *en plein air* ("outdoors").

Primary hue One of the three hues (blue, red, and yellow) that cannot be made by mixing other hues.

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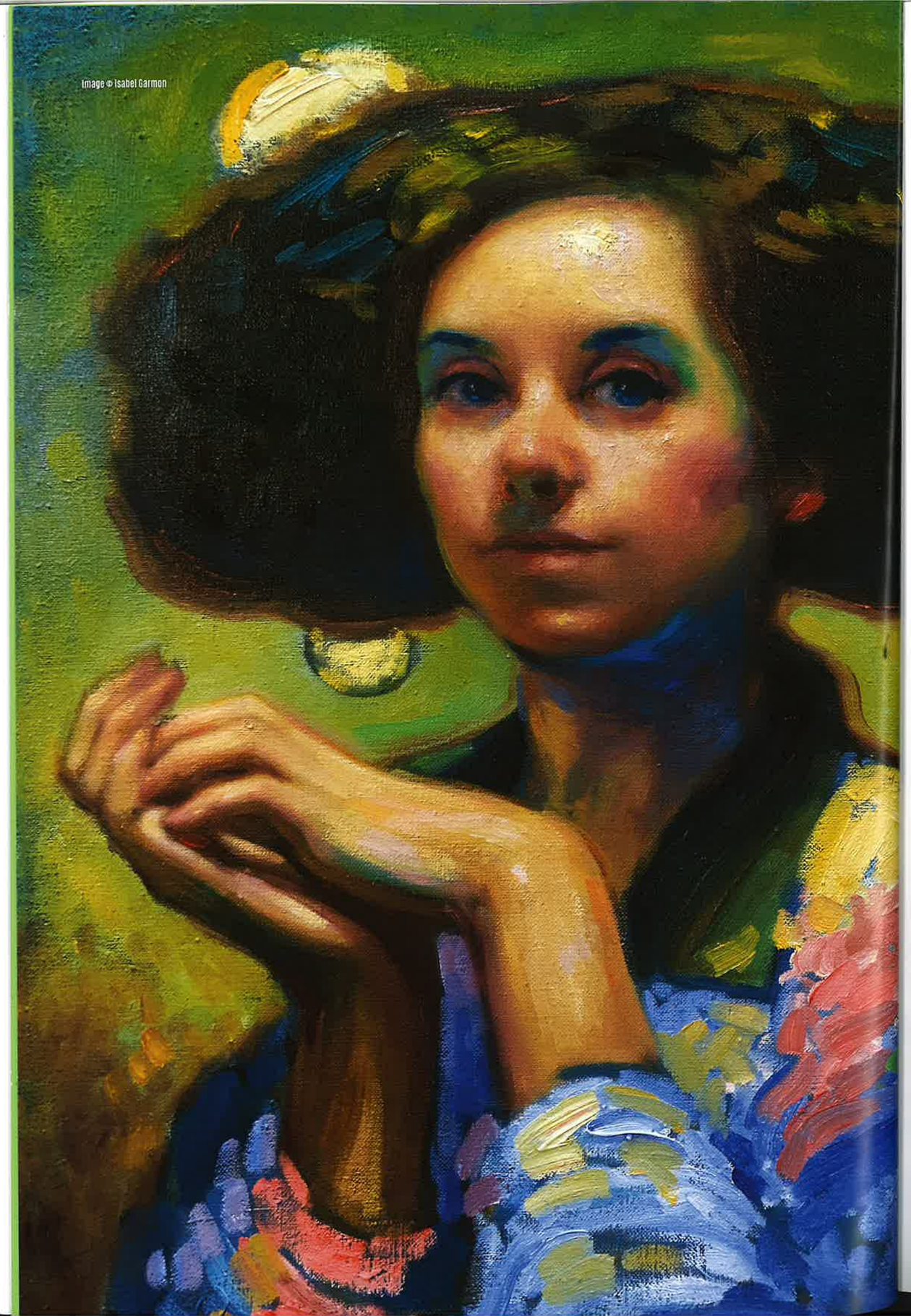
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INTRODUCTION

Welcome to the second edition of 3dtotal Publishing's bestselling *Art Fundamentals*. No matter your skill level, chosen medium, personal style, subject matter, and aspirations, understanding the universal theories of art is essential to your success. With this in mind, we've assembled yet more experts from the worlds of sketching and painting to demonstrate these concepts. Although the theories and fundamentals of art never change, there are always new ways to learn what they are and showcase them in action.

We begin with probably the most basic subject - light, without which we would be unable to create art at all. Learn how a strong understanding of light enables you to emphasize shapes, create a particular mood, enhance composition, and even influence the viewer's mood.

Of course, the vast topic of color comes next. With many updated diagrams in this edition, novice artists have the opportunity to work through the subject in an easy-to-understand and visual manner. Advanced artists will also find much to take away, thanks to detailed case studies of new artwork.

The theories behind composition involve sciences including mathematics, physics, and even biology. This chapter now features many cleverly annotated overlays that demonstrate not only how these disciplines work in the context of your work, but also how they can enhance your artistic intuition for impressive results.

Meanwhile, throughout history, artists of all skill levels have strived to convey our three-dimensional world on a two-dimensional canvas. The tools to help you achieve this are perspective and depth, both of which are discussed alongside updated and insightful diagrams and images. When combined with the other tools in this book, immersive scenes are always within your grasp.

Whether your style of art is fine, stylized, or even concept, a sound understanding of anatomy will serve you well. New artworks, including planar models for drawing the head and face, add even more practical information to the chapter for a more confident approach to dealing with figures in your art.

Whether read in order from cover to cover or dipped into for advice when needed, mixing the fundamentals with your own creative flair will result in art that continues to improve and impress.

Marisa Lewis

Editor, 3dtotal Publishing

FUNDAMENTALS APPLIED...

To take your knowledge from theory to application, look out for the "Fundamentals Applied..." pages throughout the book. These feature detailed, professional case studies of works in progress and finished pieces, discussed by the artists themselves.

























Light & shape

By Sean Layh & Gilles Beloeil

One of the first key concepts to consider when creating an image is the impact of light. It is not just another element in the construction of an artwork. It is the fundamental element – the fundamental of fundamentals. Without light, there is no image. It is what makes everything we see visible and forms the basis of our perception of color and shape. Lighting can be bold and striking, or a more subtle part of a composition. Either way, it is crucial to understand how to use, reproduce, and manipulate light to create different effects.

In this chapter, we will first explore some notable historical milestones in artists' use of light. We will then delve into the terms and principles that artists use to understand lighting, introducing you to essential visual concepts such as value and shape. By the end of this chapter, you should have a stronger understanding of light, how it can influence an image and the viewer, and how to strengthen your artwork by planning with light, value, and shape in mind.

Images © individual artists as listed throughout the chapter

ART HISTORY: LIGHT IN TIME

There are many lenses through which art history can be viewed, one of which is the use of light in art. Appreciating how light has been portrayed in different periods helps us, as contemporary artists, to make critical decisions about how we use light in our own work. We will begin our exploration of the topic by briefly considering two radically different approaches to light in the history of European art.

Caravaggio: bridging an old and new Europe

To look at a painting by Michelangelo Merisi da Caravaggio (1571–1610) is to be struck by his use of light. Luminous shafts cut through his paintings and focus the viewer on their dramatic content while plunging the surroundings into near-darkness, as shown in **image 01**, *Judith Beheading Holofernes* (c. 1599). In comparison to his contemporaries, Caravaggio's use of bright lights and pitch blacks was radical, and to our eyes can appear very modern.

So, what prompted this stylistic innovation? Although much of Caravaggio's life remains a mystery, some insights into his aesthetic development can be gleaned from the context in which he painted. The acceptance of his radically contrasted canvases by the public and the religio-political establishment indicates that some larger movement was unfolding at the time – one that allowed for bold departures from tradition. This movement would become known as the Protestant Reformation, an upheaval that sent violent shockwaves through Christendom and stimulated a Counter-Reformation in Catholic enclaves. In Italy, a Catholic stronghold and home to Caravaggio, the expectation and the challenge of an artist was to counter the advance of Protestantism by engaging the devout public emotionally in the drama of the Gospel. The pre-Reformation focus on didactic biblical scenes gave way to Caravaggio's visceral depictions of contemporary humans living the grit of the Christian saga.

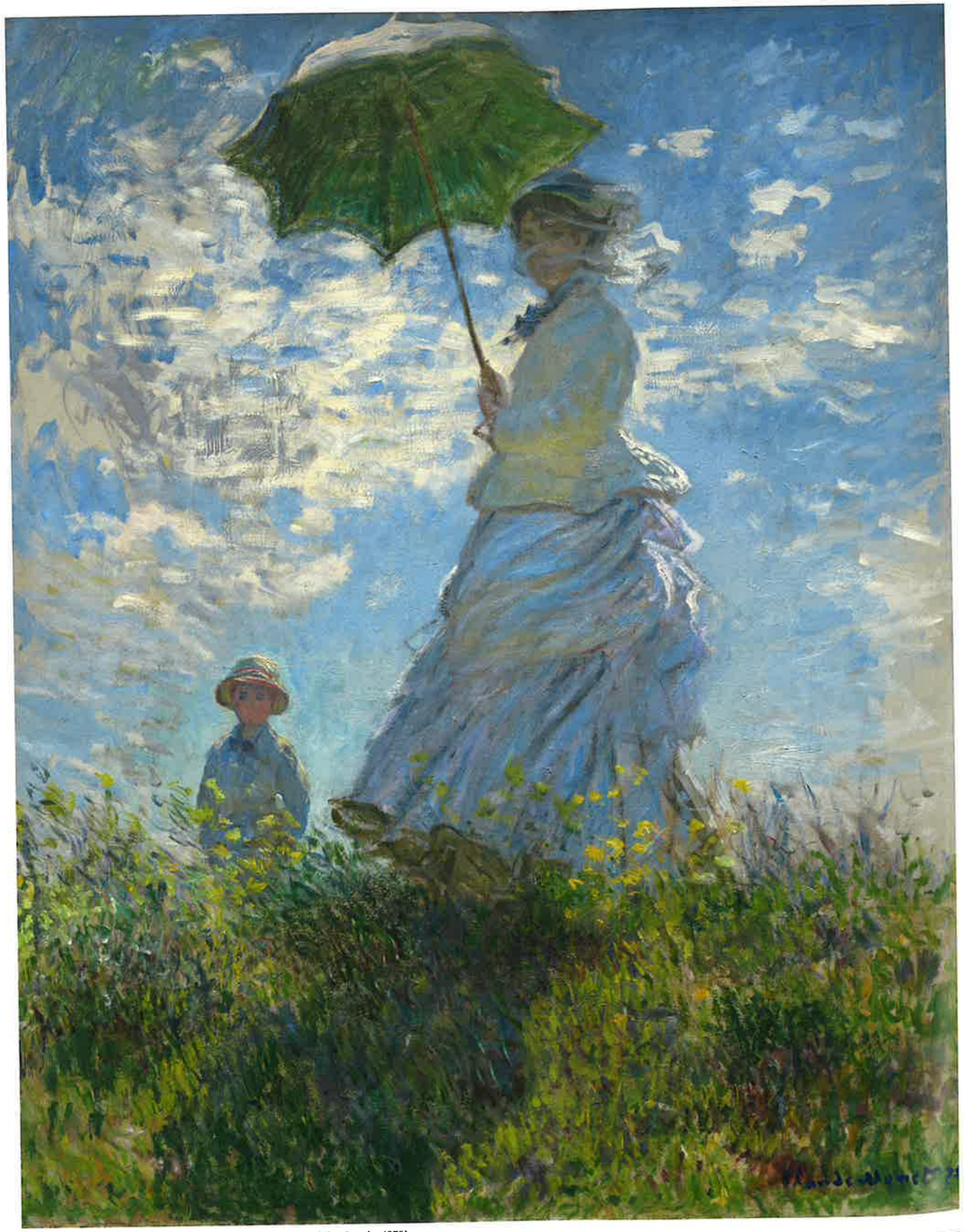
In this sense, the genius of Caravaggio's use of light, and its modern appeal, lay in his portrayal of the psychological drama of his human subjects (**image 02**). This approach stood in strong opposition to the timeless and somewhat detached works of his predecessors – a feat he would hardly have achieved so strikingly without an inspired use of light.



▲ 01 Caravaggio's *Judith Beheading Holofernes* (c. 1599)



▲ 02 Caravaggio's *Boy Bitten by a Lizard* (c. 1600)



▲ 03 Monet's *Woman with a Parasol - Madame Monet and Her Son* (c. 1875)



▲ 04 Monet's *Vétheuil* (1879)

Impressionism: an optical realism

Much like Caravaggio and his followers, the Impressionists divided opinion. When the movement emerged in the last decades of the nineteenth century, the trend of Paris's academy painters was to depict historical and mythological scenes.

The Impressionists, whose members included Claude Monet (1840–1926) and Pierre-Auguste Renoir (1841–1919), moved away from the controlled conditions of the studio to study and capture the nature of light and its ever-changing forms. Their focus led them to paint *en plein air* (outdoors), shifting themes from the grand and historical to the pastoral and everyday (**images 03** and **04**).

One way to appreciate this shift from the mythological to the everyday is to understand that the Impressionists belonged to a time that had been transformed by developments in the natural sciences. The nineteenth century saw a proliferation of hobby-naturalists investigating the world as it stood before them. The nature and behavior of light was another natural wonder to be observed through new eyes and dissected for new knowledge. In the case of the Impressionists, these investigations were undertaken with the paintbrush in place of the naturalist's toolkit.

Impressionism can be viewed as a paradigm shift for representational art; a shift where the artists, perhaps for the first time, applied a scientific level of scrutiny to light and how it illuminated the world around them.

Light in our time

Taken together, the two previous examples help us to appreciate that we also use light in a way that reflects our times, whether we are conscious of it or not. A good question to ask ourselves as we begin this chapter on light is, "What influences our own use of light?"

How might our smart devices and love affairs with cinema and photography subtly – or forcefully – influence how we represent light in our work? Much like the Caravaggisti and the Impressionists, the answers to such questions will be highly individual but may reflect larger trends in our world. **Image 05** (next page) was created with digital software for a video game, rather than with pigments on canvas, but the goal of immersing the onlooker in a scene through the engaging use of light and dark remains the same as ever.

To an artist, light is important both conceptually and practically. This chapter will consider both of these perspectives. You will learn how light can be understood in theory, how it plays into the practices of both traditional and digital artists, and the practical skills you need to apply these ideas to your own work.



05 Many painters today can be found working in various entertainment industries, creating artwork for film, animation, television, video games, and publishing

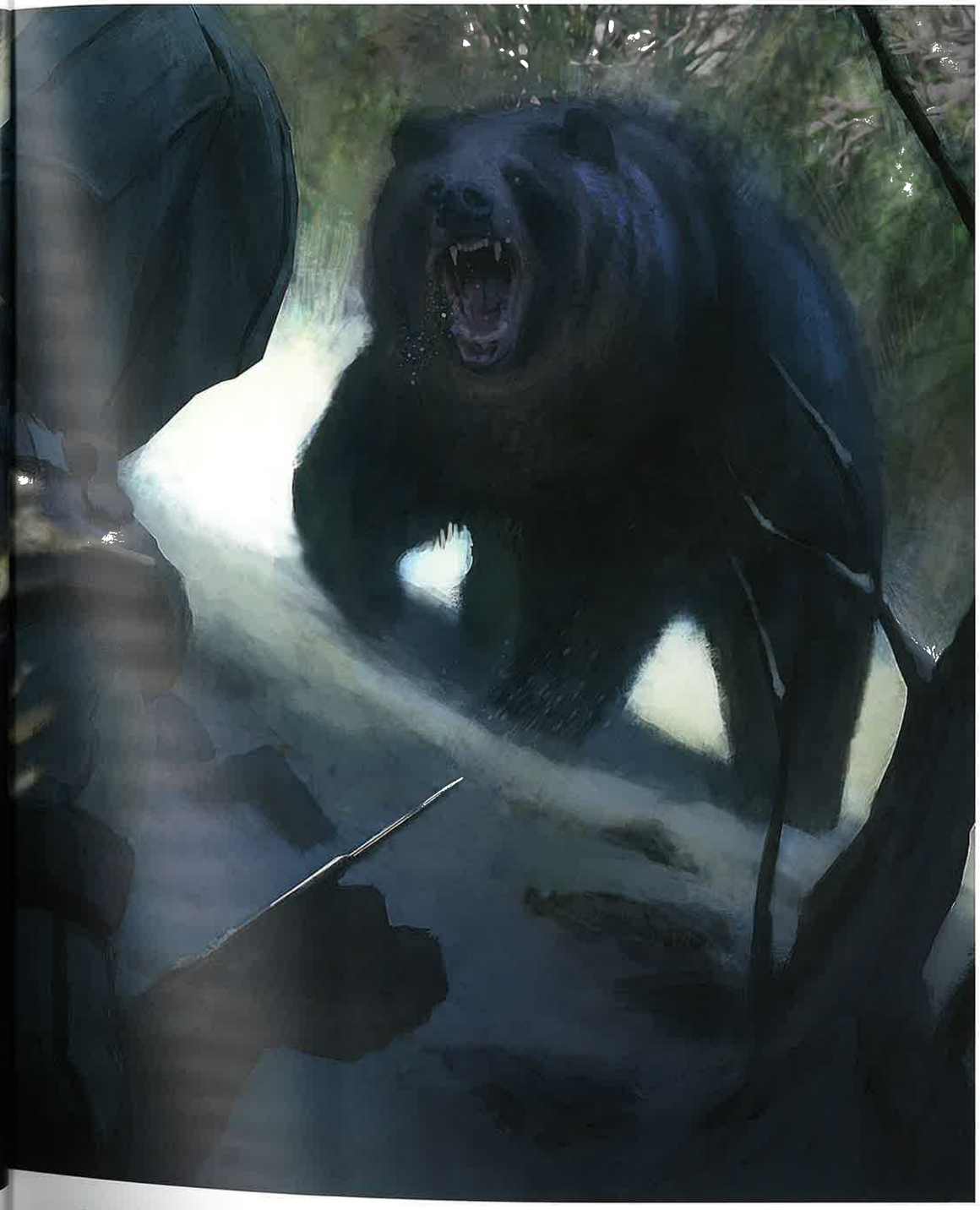


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▲ 06 An atmospheric landscape scene by Gilles Beloeil

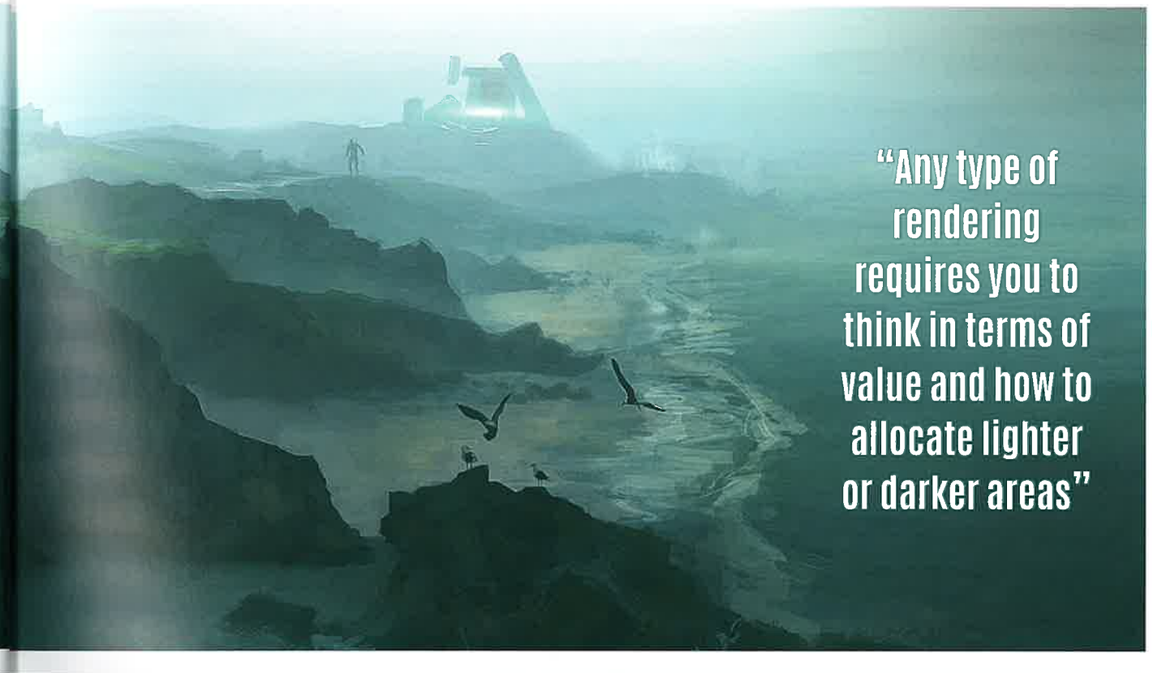
THE LANGUAGE OF LIGHT

While part of creativity is freedom from rules, there are general guidelines and universal concepts that can help artists to create stronger images. Knowing these guides and principles enables you to develop a better understanding of the creative process, and will become the basis for your artistic experimentation, helping you to achieve your own methods of thinking and painting. Before discussing any specific techniques, this section will define the common language used to describe light.

Value

The first concept we will consider is value. When discussing art, the term **value** describes the range of brightness and darkness within your image. In terms of describing light and creating an image, value is actually more important than color. You need to understand value to be able to paint an image, whether or not it is realistic in style. Any type of rendering requires you to think in terms of value and how to allocate lighter or darker areas.

If you take a colored image that features a clear value range (**image 06**), and remove all color from it, the image will still be completely readable in grayscale (**image 07**). Inversely, if you were to take away from the image's value range and leave only the color palette behind, it would be very difficult to distinguish its content (**image 08**).



"Any type of rendering requires you to think in terms of value and how to allocate lighter or darker areas"



▲ 07 When viewed as pure grayscale, without the color, the scene's values are still fully legible



▲ 08 Without a strong value arrangement, the scene would be illegible

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▲ 09 This illustration by Gilles Beloeil showcases a strong and distinct balance of light and dark

Light versus dark areas

Value is also essential regarding the overall design of your painting. You have to organize your subject matter into rational patterns of light and dark if you want to achieve a certain atmosphere or visual impact. **Image 09** shows a more complex example of a painting with a distinct balance of light and dark patterning. When this image is converted into grayscale (**image 10**), the scene is still fully legible. If the image is converted completely into black and white, the organization of light and dark becomes even clearer (**image 11**).

If the black and white version is simplified even further, almost into abstract shapes as shown in **image 12**, the use of light and dark masses is still clear, varied, and impactful. The dark areas are dominant, guiding the viewer to look toward the light, detailed areas.



▲ 10 The scene remains clearly readable with the color removed



▲ 11 The balance of values is even clearer in pure black and white



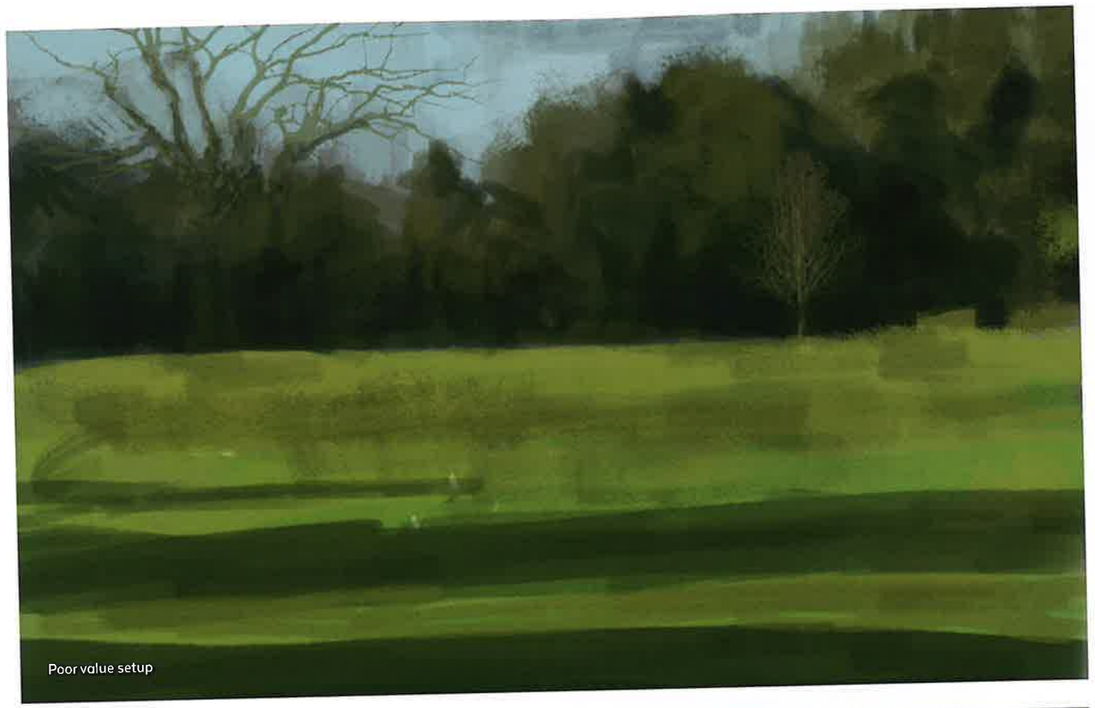
▲ 12 The scene's dynamic structure still holds up at a reduced level of detail



▲ 13 Introducing too many similar elements weakens the value shapes

In comparison, **image 13** contains light and dark areas that are similarly shaped and set out in a symmetrical manner. There is no dominant value or variety, so the whole image becomes too regularly proportioned and boring to look at. This highlights the importance of the relationship between value and shape, which we will explore further on **page 47**.

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▲14 A strong value setup can be the difference between a successful and an unsuccessful painting

Above images by Gilles Beloeil

How value affects an image

When starting an image, you should ask yourself the following important questions regarding the atmospheric conditions you want to depict with your use of lighting and value.

- What are the lighting conditions? Day or night? Is it overcast or foggy? Is there any dust or pollution?
- What is the light source? For example, is it a torch, or the sun?
- How strong is the light source?
- What kind of mood do you want to create?
- What kind of feeling do you want the viewer to have?

Answering these will allow you to develop a solid mental image from which to start your illustration. It is strongly recommended to create a few value studies of the image you wish to paint before starting to create the actual artwork. This will help you to understand and control the balance between light and dark, and allow you to test out different value relationships.

The human eye loves to be entertained with well-balanced value relationships, and incorrect or messy values have a massive impact on the believability and appeal of your artwork. It is important to clearly identify large, simple value shapes in your artwork – they will form the heart of your design and give it visual power.

Your value design should clearly identify the differences in light and shadow; a helpful rule to follow is that the lightest values in your shadows should still be darker than the darkest values in areas of full light.

Image 14 shows two versions of the same scene, with different control over its values. The top version has poor value control; the light areas are too dark, the dark areas too light, and the overall impression is dirty and disjointed, with a murky atmosphere that does not fit the well-lit outdoor setting. The bottom version is the same scene with more unified lights and darks; the shapes are distinct, the transitions between similar values are smoother, and the image is easier to read and more engaging as a result.

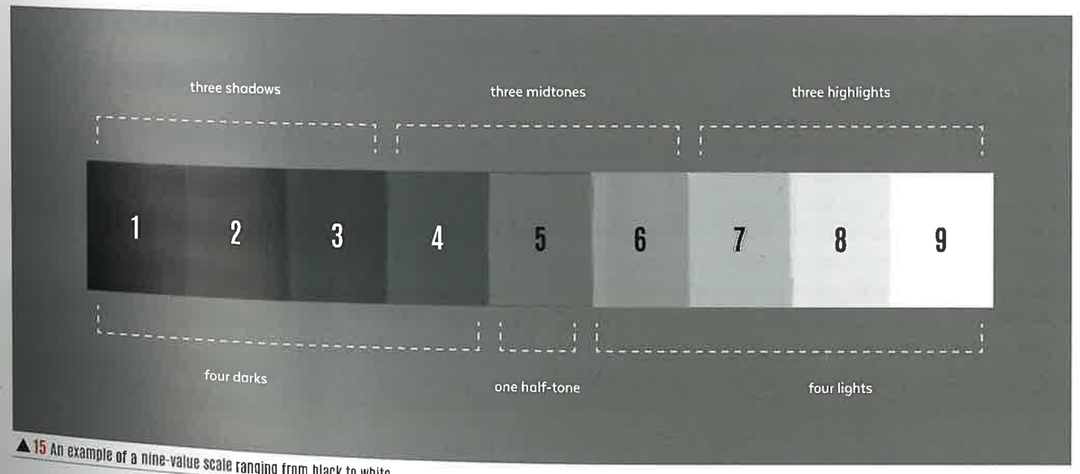
Value scales

As you will have gathered, it is imperative to choose your values based on the effect and mood you want to convey in your image. Therefore, it is useful to have tools and terminology at your disposal to measure and analyze values.

In reality, values exist along a gradient that shifts in imperceptible degrees from darkness to light, but when it comes to art we tend to discuss ranges of values that cluster along this continuum. These ranges can be thought of as **shadows**, **highlights**, and **midtones** – these being the darkest, brightest, and in-between values respectively.

To help visualize this, many artists use what is known as a **value scale (image 15)**. This is a useful tool when considering the range of values you will use in your image. Think of a value scale as setting the upper and lower bounds on your image's highlights and shadows, and in the process defining the range of your midtones.

A traditional value scale consists of nine values, ranging from the image's darkest to lightest values. These can be broken down into three shadows, three midtones, and three highlights, or four dark values and four light values with a single midtone at the center.



▲15 An example of a nine-value scale ranging from black to white

Color and value

The term "value" is not restricted to defining the gradient of tones between black and white – it is just easier to demonstrate this way. In fact, every color or object has its own value; for example, a lemon has a yellow color and a light value. When you paint with a color, you need to be aware of its value in order to ensure that it fits with the viewer's perception of reality.



▲ Examples of colors with values ranging from dark to light

High-key, low-key & variance

Let's explore how nine-value scales can be used to plan and analyze a painting. We will look at examples of images that feature **high-key** and **low-key** lighting, to borrow terminology common in cinema and photography. High-key lighting scenarios are brightly and evenly lit, without many deep shadows, while scenes with low-key lighting emphasize high contrast and dark, dramatic values.

These work in balance with **variance**, which is the amount of difference between the lightest and darkest values in an image. An image with high variance features both dark shadows and bright highlights in its value range, while an image with low variance uses a narrow window of values that are more similar. Variance is key to creating **contrast**, which is the use of opposite values or qualities in an image; an image with high contrast juxtaposes extreme opposites in value, while an image with low contrast has a softer feel and a less dramatic difference in value.

The following four illlustrations will show that by restricting the variance in your value scale and clustering the most common values into a high or low key, you can generate dramatically different moods and levels of contrast. The central power of this approach lies in defining which ends of the value scale you are going to omit from your work.

We will now explore some of the potential combinations of key and variance:

- High variance and high-key
- Low variance and high-key
- High variance and low-key
- Low variance and low-key

Each of these approaches creates a very different balance of light and shadow. Knowing which is which will help you to use value more effectively in your paintings, whether digital or traditional, to capture different moods or create different levels of drama.

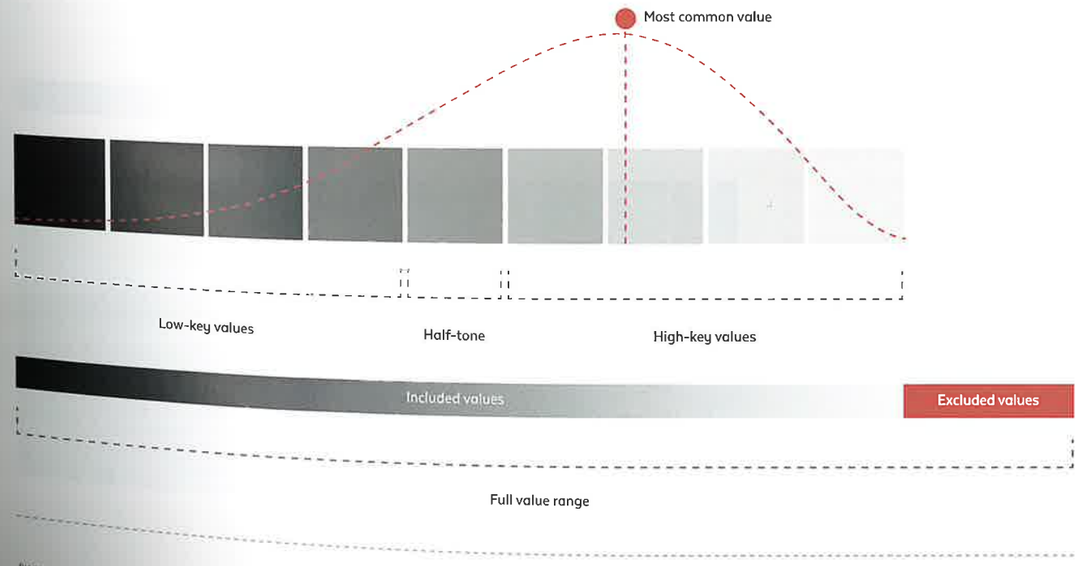
High variance, high-key

Image 16 has a high level of variance: its value scale has core shadows that are verging on black and highlights that are near to bright white, so nearly all possible values are available to use within the artwork. The image is also high-key, so the majority of its values are of the midtone or lighter, as indicated on the red bell curve.

The result of this value setup is an image with an overall bright appearance, but a few areas of intense dark value that are made all the more impactful by being limited in use.



▲ 16 The most common values in this image are light - as shown in the bell curve below - but limited dark values create a striking contrast



Ivanova © Sean Layh

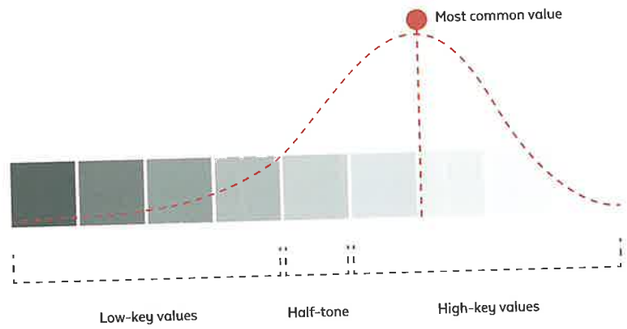




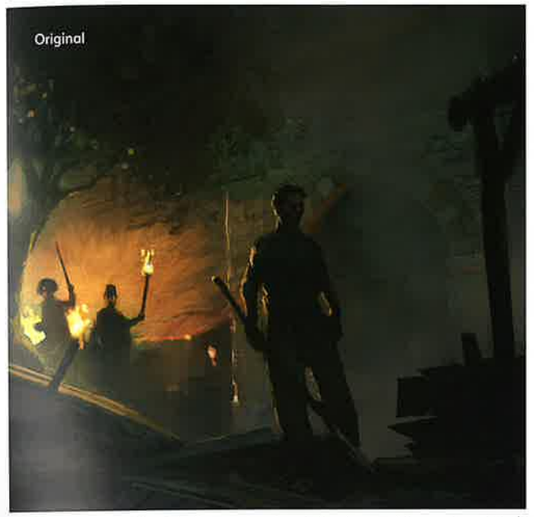
▲ 17 The entire spectrum of values in this painting is limited to a range of light grays, creating a bright but low-contrast scene

Low variance, high-key

In comparison, **image 17** has a lower level of variance. There are still nine values, but the shift between them is subtle; the darkest value is a middle gray and the brightest is a gray-white, excluding a large number of possible values from the artwork. The resulting image's values are bound between these two similar tones, creating a pale, misty appearance.



Mist © Sean Layh

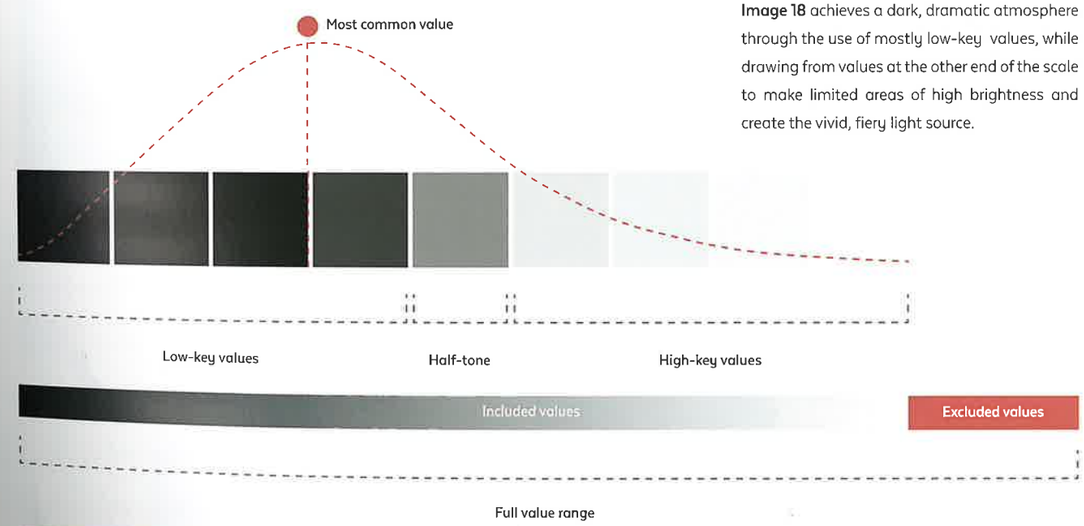




▲ 18 This image by Gilles Beloeil uses values from both extremes of the spectrum, but with a majority of low-key values to create an intense, shadowy scene

High variance, low-key

Image 18 achieves a dark, dramatic atmosphere through the use of mostly low-key values, while drawing from values at the other end of the scale to make limited areas of high brightness and create the vivid, fiery light source.



Plan your value scale

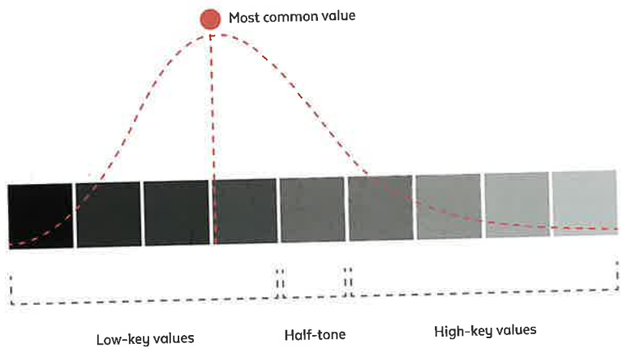
It is strongly advised to resolve your value scale as early on in your design process as possible, as setting boundaries on the values of your light will have a profound impact on the mood of your work. Try to draw out your chosen value scale before starting an artwork. It may be difficult at first, but it is great practice for sharpening your eyes to value. Using your medium of choice – pencil or charcoal give you the most control – block the highest and lowest values in positions one and nine of an empty value scale. Set down the midtone in the center, and then complete the scale by filling in the neighboring high-key and low-key values.

Image 18 by Gilles Beloeil © 2010 Ubisoft Entertainment. All Rights Reserved. Assassin's Creed, Ubisoft and the Ubisoft logo are trademarks of Ubisoft Entertainment in the U.S. and/or other countries.





▲ 19 The brightest value in this painting is a medium gray, so even the most contrasting areas feel overcast and dark



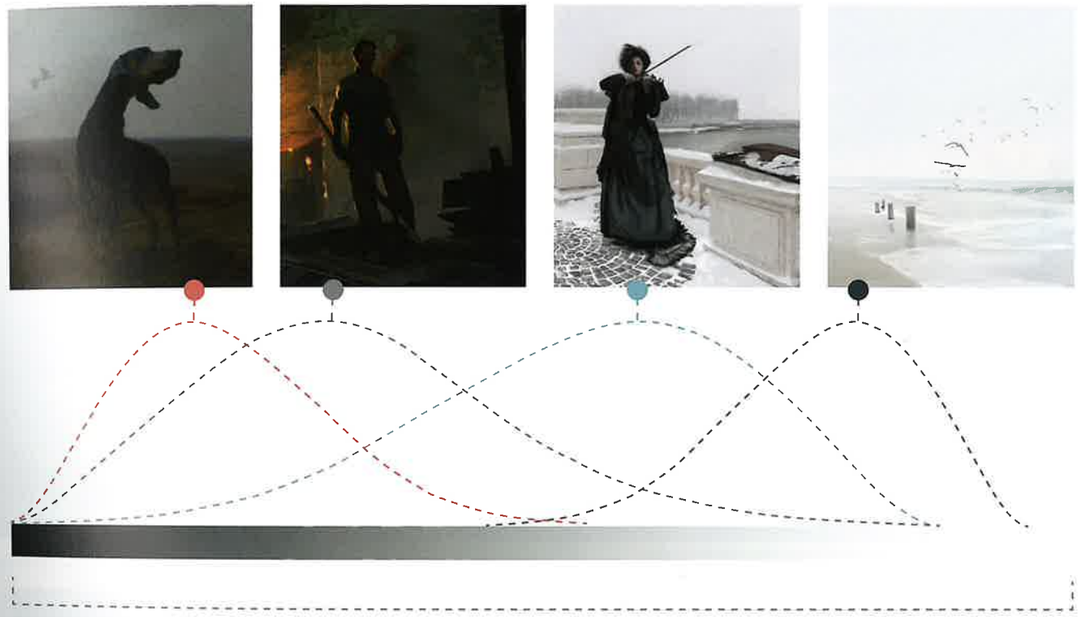
Low variance, low-key

Image 19 has a similar narrow range to **image 17** (on **page 24**) except the most common values are low-key. The darkest value is near black and the brightest is a fairly medium gray; values from the brighter end of the spectrum are excluded. This creates a dark value range that results in a brooding illustration with a heavily overcast atmosphere.

Baying © Sean Layh

Predominant midtones

In the previous images, you may have noticed how each piece uses values unevenly from across their chosen scales, as represented by the bell curves. The majority of values in a given artwork (indicated by the curve's bulge) will usually come from the middle range of the scale, roughly equivalent to the image's midtones. The extreme values on either end are usually used sparingly, as represented by the bell curve's long tails. Exactly how this bell shape is distributed will differ from image to image – for example, skewing to the left or right – and impacts heavily on the artwork's mood. You can see below where the value ranges of each image correspond with the full range of values from black to white.





▲ 20 Extreme light and dark values can be juxtaposed to create powerful contrasts that immediately capture the viewer's attention

High-impact contrast

While the most popular value scales involve a gradient of several values, you can use even fewer values for a powerful, stylized effect (**image 20**). You can make massive contrast a key feature of your image by choosing extremes of value, such as near-black and near-white tones, and use this approach to highlight and dramatize your subject.

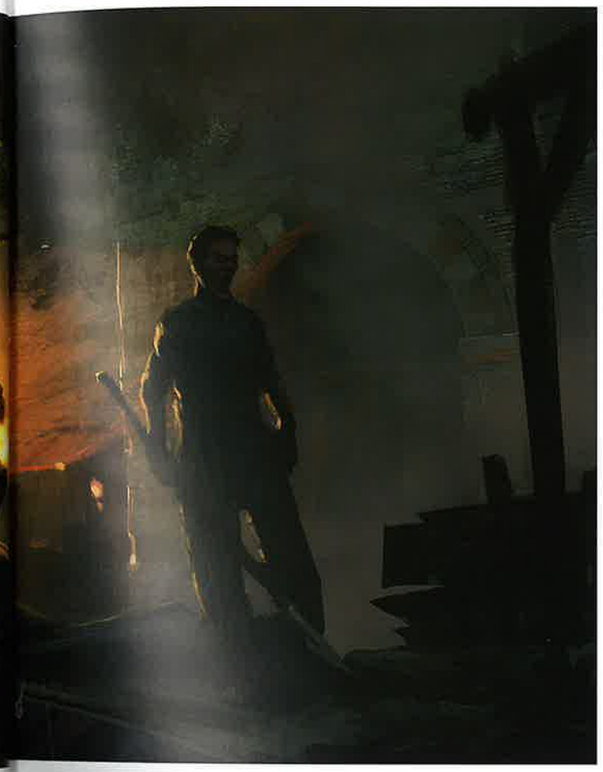
Second image above and image 20 by Gilles Beloeil © 2010 Ubisoft Entertainment. All Rights Reserved.
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▲ 21 Hard light casts dramatic shadows and stark silhouettes in this scene



▲ 22 Soft light falls gently on this landscape in a natural, flattering way



Lighting types

Different environments, lighting scenarios, and even aesthetic styles will often feature different qualities of light. As discussed on **page 21** (**"How value affects an image"**), these factors will influence the key and value range of the image, and will play into your depiction of shadows, highlights, and colors. We can draw on some common terminology used in photography to describe these lighting qualities. Depending on the scene, there may be more than one type of light source at work.

Hard light

A hard light source – such as intense sunlight or an artificial spotlight – casts dark, hard-edged shadows. This is ideal for creating high contrast and dramatic impact (**image 21**).

Soft light

A soft light source creates shadows with soft edges, unlike the starkness of hard light. It is a flattering lighting scenario that gives the subject an appealing glow (**image 22**).

Diffuse light

Diffuse or ambient light is very soft, non-directional light that seems to cast no shadows at all. Natural lighting on an overcast day is heavily diffused (**image 23**).



▲ 23 Heavily diffuse, overcast lighting gives this scene a bleak, muted atmosphere

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A STORM IS COMING

Axel Sauerwald

Tools: Adobe Photoshop

"*A Storm is Coming* is an homage to the great Russian realist painters such as Ilya Repin and Ivan Shishkin. I studied a lot of the Old Masters' images and tried to learn what made their work distinct and how I could add certain elements to my personal work. I tried to tell a little crime story using their visual vocabulary; a fisherman dragging a lifeless body through the wilderness while a storm is brewing in the distance was a promising start. There are so many ways one could continue this story, and I really liked the ambiguity of such a scene.

Light and mood should serve the story of the image and keep the viewer wondering and engaged. My main concern was to create a sense of believability, and one way to achieve it was to use light sources that could only exist in the scene. I tried to avoid the use of ambiguous light sources that would not really exist in the scene and are just there to light the subject in a certain way. Using just sunlight and ambient light from the sky creates the illusion that the viewer is part of the scene – a passive observer."





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PATH TO ENLIGHTENMENT

Jessica Woulfe

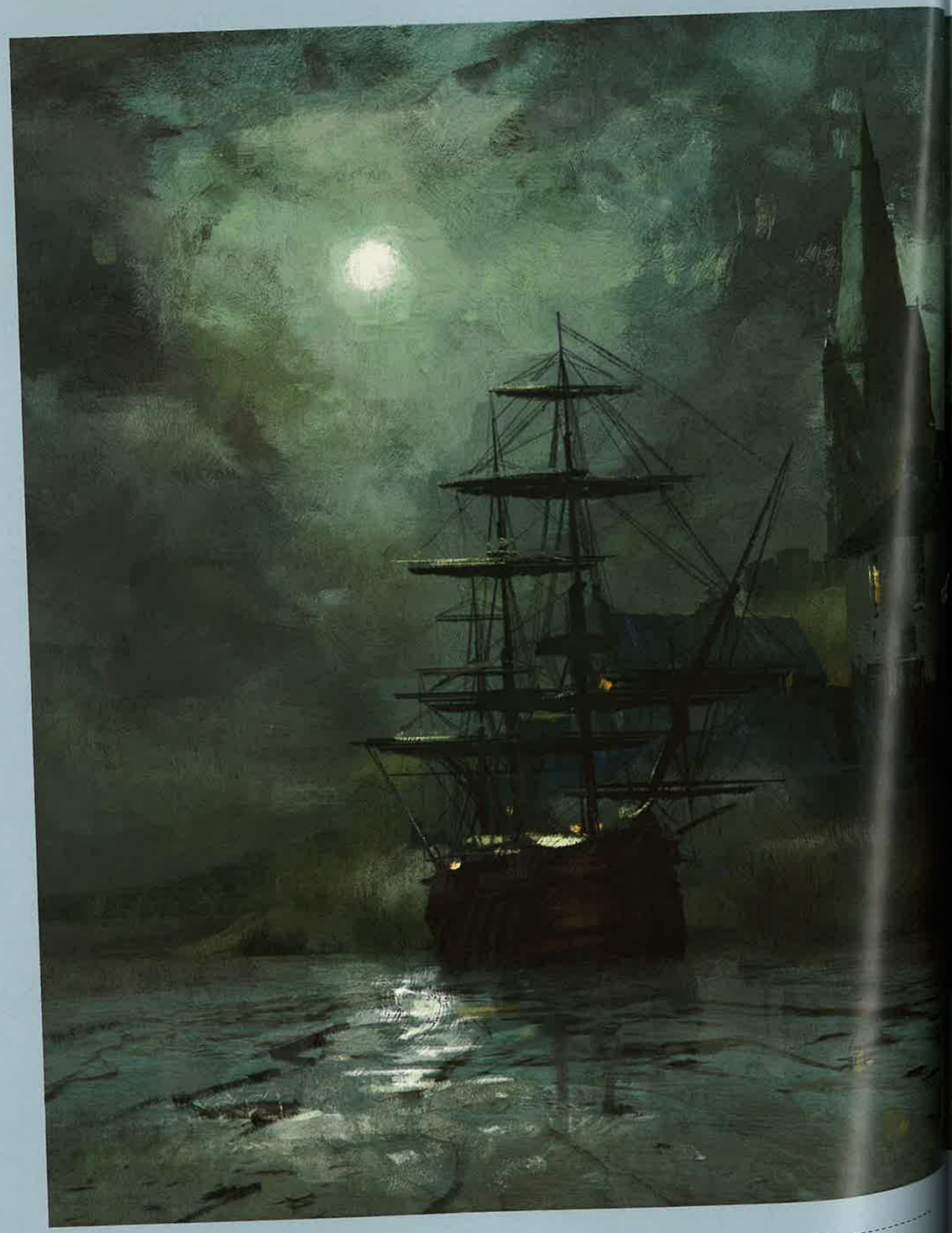
Tools: Adobe Photoshop

"I am deeply inspired by Buddhism and natural symbolism in my artwork. There are some amazing Hindu and Buddhist cave temples in India that are carved out of the basalt cliffs of the mountain, and they are some of the most ancient monasteries in the world. Monks often make pilgrimages to holy sites, to achieve enlightenment or for other religious goals. This image tells such a story. I wanted to portray a feeling of sacredness and harmony between humans and nature – a feeling both beautiful and epic, with great religious significance.

Composition can make or break an image, so a strong understanding of black and white values is important to begin with. I always start by choosing shapes, camera angle, and lighting before moving to color. I think of what the focal point is and how to make the characters stand out within the scene. I choose the lighting based on the point in the story, as well as the feeling that the viewer is supposed to have. In this case, this is a moment of climactic significance, the end of a journey, and the reward is this beautiful vista. Because of this, I chose sunset or the "magic hour" as the time of day, so the sun would be lower in the sky and create enormous cast shadows of the mountain ridges. A streak of light would cut through the mountains and highlight the focal point perfectly.

I made sure to keep the focal point the warmest and most saturated area in the image, while the surrounding areas were neutral and cool-toned. As the scene is set later in the day, with the sun shining through more layers of atmosphere, the light is orange-hued. The reason why artists like the magic hour so much is because it creates a natural complementary color scheme with the orange light and blue shadows – a perfect balance of warm and cool."

Image © Jessica Woulfe



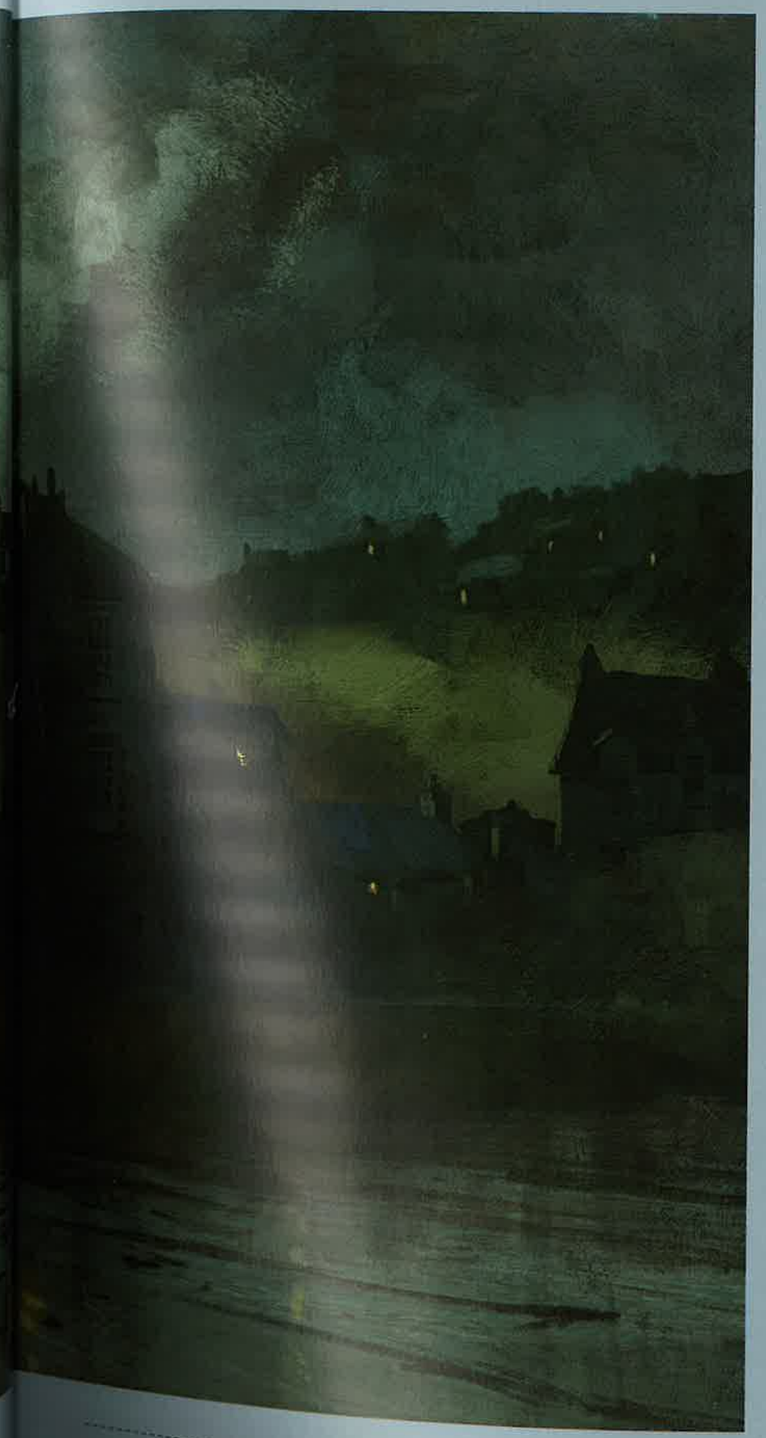


Image © Andy Walsh Art

FUNDAMENTALS APPLIED...

CTHULHU

Andy Walsh

Tools: Adobe Photoshop

"This is part of a personal project where I am trying to create my own Cthulhu story, set in a turn-of-the-century Cornish town or village, before *The Shadow over Innsmouth* but perhaps connected to it. I wanted this scene to look Cthulhu-esque or 'Lovecraftian' without showing anything but a shot of the harbor. I also wanted it to look like an old oil painting – I was quite inspired by John Atkinson Grimshaw, the Victorian painter. In general, my aim was to create something very moody and brooding that might set the tone for the rest of the project.

I did a lot of research before starting to paint. After my initial sketch, I thought, "That looks like a Grimshaw painting," and then I researched his work and focused on capturing a similar nocturnal mood in the final painting process. The setting is an eerie old fishing village tucked inside an estuary near the south-west coast of England, which provides many opportunities for atmospheric lighting and value details: the moon, reflections on the water, the silhouettes of sails and buildings, and lit windows in the dark. The strange fog rolling in helps to amplify the unsettling mood."

FUNDAMENTALS APPLIED...

THE KING

Lorenzo Lanfranconi

Tools: Adobe Photoshop

"This was an image I made for my art book, *Evolution*. Volcanoes, wide environments, animals – I could paint these subjects for my entire life. In this scene, I wanted to show an animal, an ibex in this case, admiring the sunset. The dead tree is not a random choice, but chosen to create the feeling of a special and ancient place that this animal wanted to visit – a kind of natural shrine for the local fauna.

After painting *Paradise Shore* (page 176), I was trying to evolve into a more pictorial style, taking inspiration from some contemporary and classic traditional oil painters. I researched many oil paintings and wanted to capture the same feeling; I do not think I have fully succeeded in this goal yet, but this illustration was a key point in my artistic growth.

I painted this scene in sunset light for two reasons. The first was that I envisioned a palette with dominant yellow hues contrasting with the light blue shadows of the background mountains. The second was that this type of low light would help with the composition. As you can see in the final result, the image's values lead the eye to the ibex and tree, using light and shadow and the curved shape of the rocks."

Image © Lorenzo Lanfranconi

LIGHTING SHAPE

We now have a vocabulary for how to describe light itself in terms of value, and we also understand why we might wish to constrain our values or adjust an image's tonal variance. The next set of useful terms are interconnected and help to define the content of an artwork itself. These terms are **object** and **form**. Light reveals the objects (such as people, buildings, or mountains) within our artwork. Form describes how light falls on the object's surface, giving it visible depth and shape. In this section we will explore how light and shape work together to represent objects with three-dimensional form.

Lighting a sphere

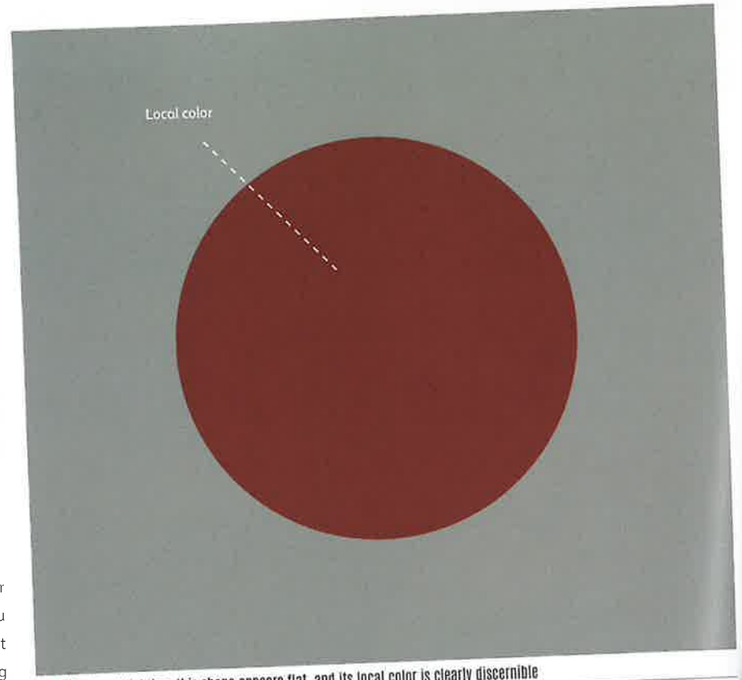
If you wish your artwork to be a naturalistic or realistic representation of a scene, then you need the objects within the image to interact rationally with each other and with the lighting scenario. Here, "rationally" simply means that the objects behave in an intuitive, believable way in response to light. Let us explore how light conveys form using a simple sphere as an example object, and break down the terminology used for each aspect of the light and shadow.

Local color

The local color of an object is its flat, unlit color, as we will cover in the **"Color"** chapter (**page 53**). Without lighting, this sphere appears as a flat circle with a red local color (**image 24**).

Shadow

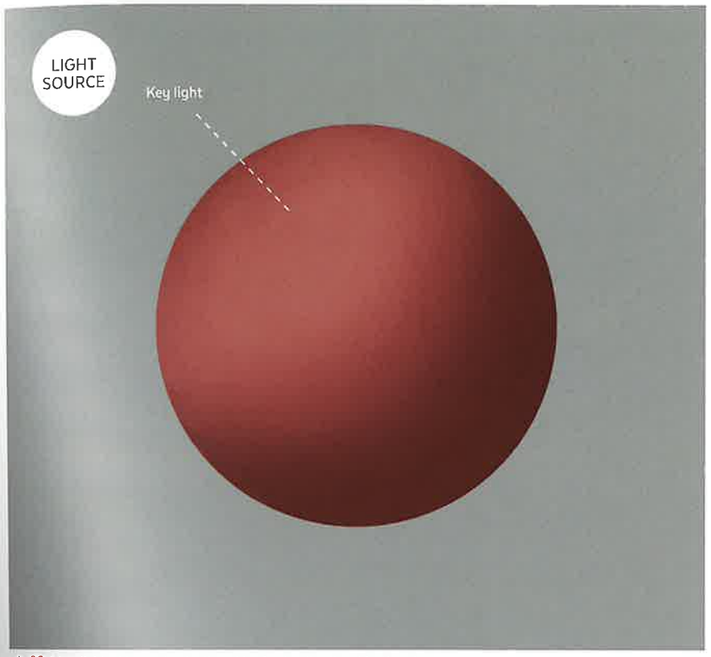
Applying a slight shadow to the circle instantly makes it more three-dimensional. The shadow is the area of an object that is not directly affected by light. Every value in the shadow must be darker than the darkest value of the light source, and the difference between the light and shadow should be obvious for a better reading of the image (**image 25**).



▲ 24 Without lighting, this shape appears flat, and its local color is clearly discernible



▲ 25 Adding a shadow immediately brings the shape into three dimensions



▲ 26 A key light adds greater depth and begins to alter the object's color



▲ 27 A cast shadow is the shadow created by an object blocking the light

Key light

The key light is the primary light source in a scene. The value of this light will depend on the nature of the light source itself, such as rays of sunlight in a daylight scene or lit windows in a night-time city scene. It is important to identify and establish this light as soon as you begin, to ensure you have consistent lighting in your image. The color of the key light will affect the object's color, as you can see here, but the sphere's local color is still visible in the midtone (**image 26**).

Cast shadow

This is the shadow cast from a lit object onto another surface. The shape of a cast shadow is particularly important because it hints at the shape of the object it is cast on. In this example, the sphere is sitting on a smooth, flat surface (**image 27**).

Reflected light

Reflected light or "bounce light" is an indirect light source created by the key light being bounced off one surface and reflecting onto another. The value of this bounced light is determined by the shape and texture of the object that is reflecting it; for example, a bright, mirror-like surface will reflect a stronger light than a coarse, dark surface. In the case of this sphere, the reflected light illuminates its darker side, lightening the value of the shadow and introducing some more color into that area (**image 28**).

Core shadow

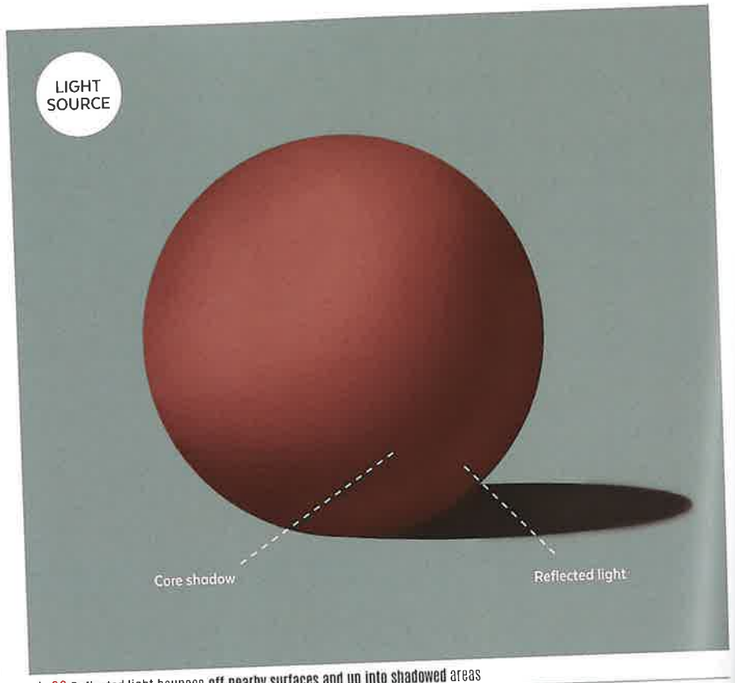
This is the darkest part of the shadow, where the shadow is not affected by the presence of reflected light (**image 28**). Its value is sampled from the darkest end of the value scale, and it is usually used sparingly.

Highlight

This is the brightest light on an object or in a scene. This bright value may be used to depict the light source itself, such as the sun or a bulb, but more commonly it is used to indicate where the light source touches or reflects off a subject. How sharp or diffuse the highlight is depends on the texture of the object. For example, **image 29** depicts a shiny, yet diffuse highlight with some indication of rough texture; **image 30**'s small, concentrated highlight suggests a smooth, glossy surface; and **image 31** has a very diffuse, non-reflective highlight that gives the surface a dull, matte finish.

Midtone

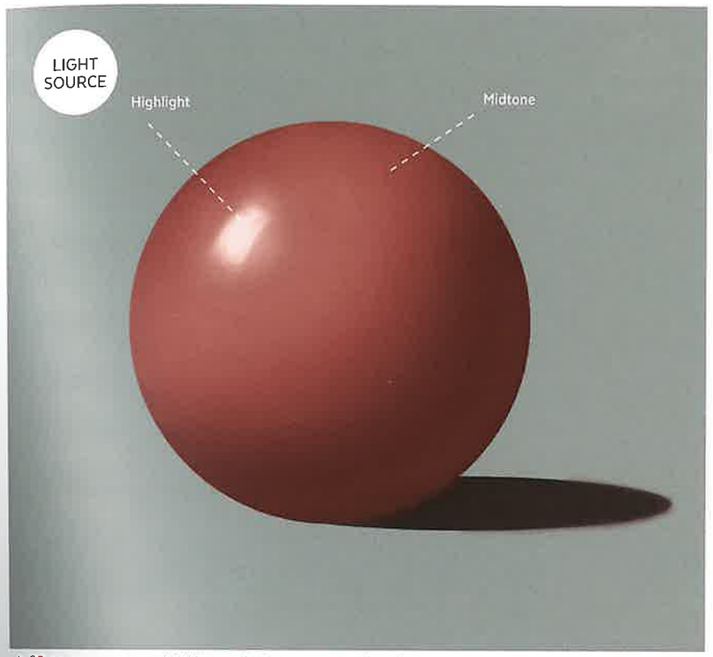
These values are sourced from the middle of the value scale. In **image 30**, the midtone starts immediately after the highlight, as the surface of the object pans away from the light source. The midtones are usually where you see the local color of the object, between the highlight and the shadow.



▲ 28 Reflected light bounces off nearby surfaces and up into shadowed areas



▲ 29 The highlight is the brightest area and helps to indicate the object's texture



▲ 30 A bold, concentrated highlight can indicate a smooth, shiny object



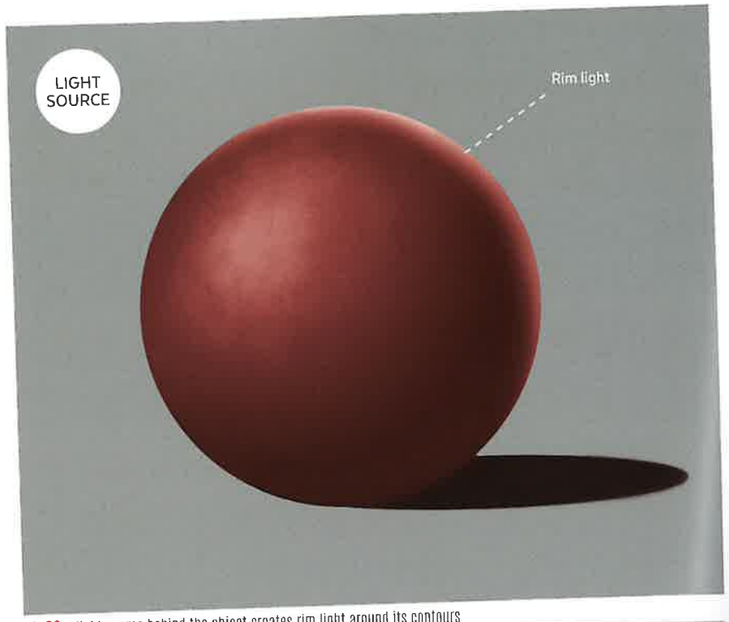
▲ 31 A soft, diffused highlight suggests an unreflective, matte surface

Lighting considerations

Light does not just illuminate the shape and texture of an object; it also affects its perceived color. Always consider the qualities of the light source itself, and how these inevitably affect its interaction with the object. For example, as well as different lighting types (see **page 29**), a light source will also have its own color. This color may be subtle or intense, such as gentle sunlight or a vivid neon light, but it will alter the local colors of the objects it falls on. You can learn more about the interplay of light and color on **page 70**.

Rim light

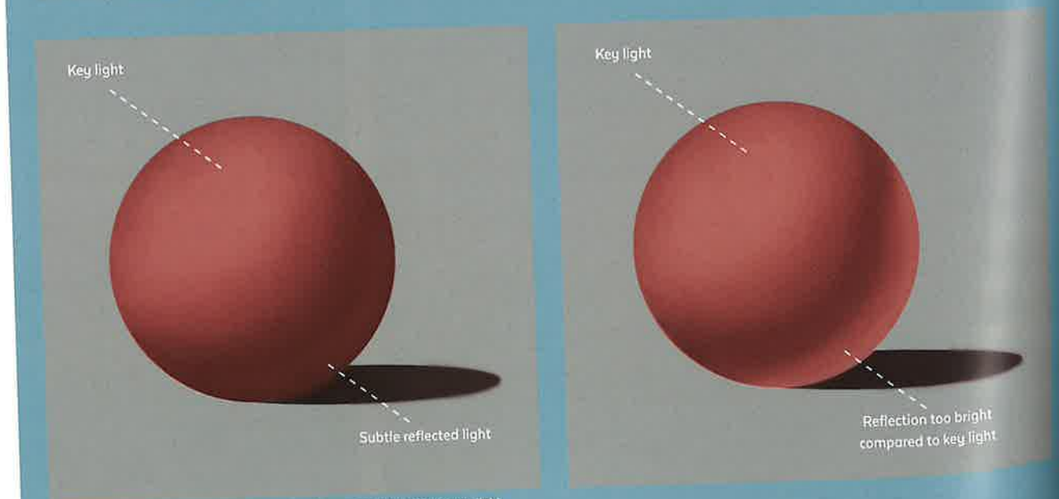
Rim light or "edge light" is a highlight created by a light source behind the object, illuminating a contour around the exterior edges of the subject. If it is used well, the effect is very powerful. It helps to create a three-dimensional feeling and is very useful for lighting a subject in the dark, or for differentiating two overlapping objects that share the same values (**image 32**).



▲ 32 A light source behind the object creates rim light around its contours

A note on reflected light

Adding reflected light is very important in a painting, as the delicate highlights it creates contribute toward the subject's sense of form and reality. Be subtle and only paint them in logical places, or you will lose the balance of lighting in your image. Avoid making the bounced highlights as bright in value as the lit side of the object, or the authority of the key light will be compromised.



▲ Reflected light should always be subtle and never as bright as the key light

Lighting angled forms

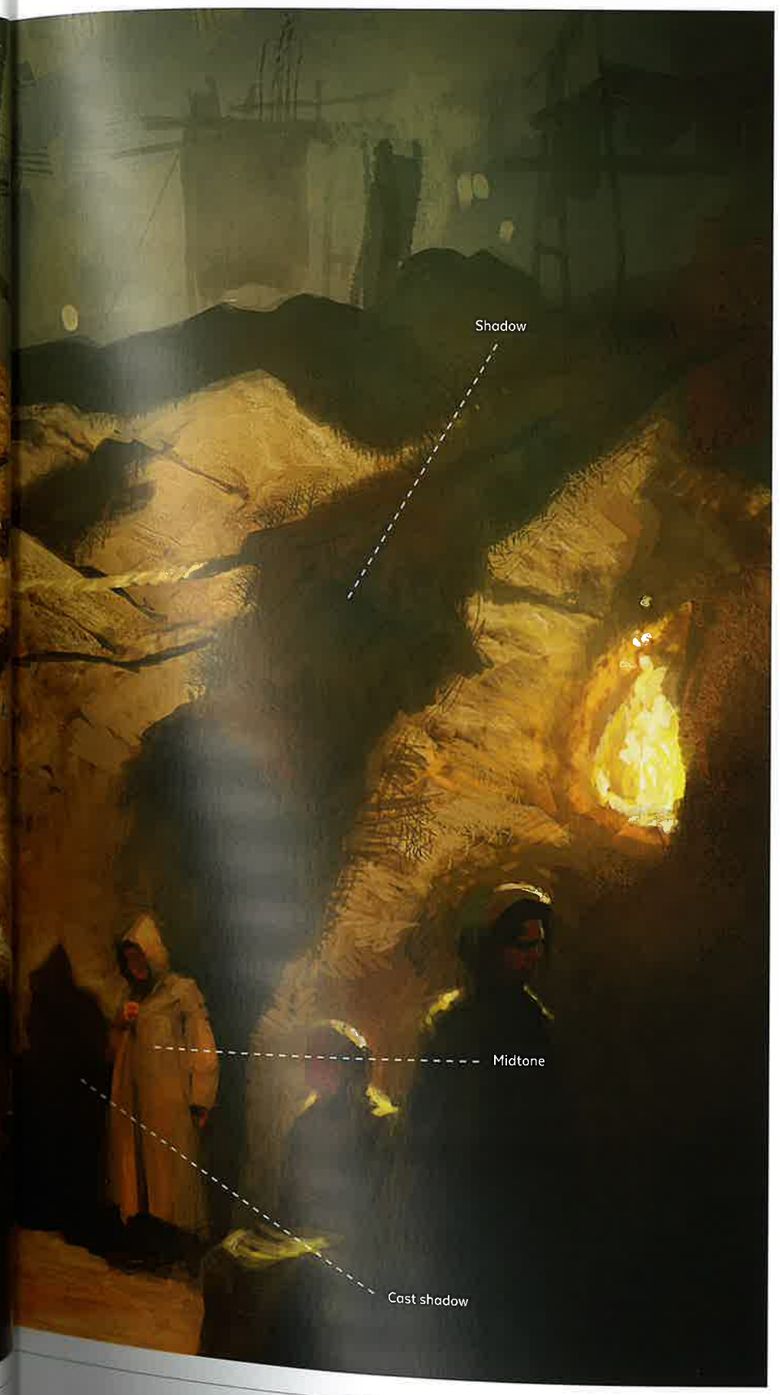
When painting objects with flat planes and angles, remember that all planes that face the light source should be lighter in value than the planes that face away from it. **Image 33** shows three objects lit by a key light from above. Every plane facing the light source has the brightest values (1), the planes oblique to the light source have mid-range values (2), and the surfaces facing away from the light – in the absence of reflected light – have the darkest values (3).



▲ 33 Here you can see the distinct difference in value between the planes of angular shapes



▲ 34 Elements of light and shadow in an atmospheric digital painting by Gilles Beloeil



Light and shadow at work

Now that you are able to identify and name the key elements of light and shadow, let's see them at work in a scene. **Image 34** is set in a cavernous underground space with firelight as the main light source, giving the scene a warm glow with long cast shadows and many deep, dark crevices that the light cannot reach. The main character is almost in silhouette, with some reflected and rim light to expose the details of his costume and make him stand out against the environment. The lighting is high-contrast in the foreground, near the key light of the burning torch, but the values in the far background are hazy and less varied, creating the illusion of distance and keeping the viewer's focus around the character.

The void

Consider, for a moment, your favorite painting. Try to identify the light sources within the image: is light suffusing the image from above, like the sun on an overcast day, or is it coming from a neon bulb or a candle? Extinguish these light sources in your mind's eye and consider how the image would change in composition and mood. Once the last light source is gone, what would remain? A void. The objects would still inhabit the world, but they would no longer be available to your sight. That is the primary utility of light: illuminating the contents of an image. The "void" is a useful idea to remember when constructing or deconstructing an image and the objects within it.

Image 34 © 2019 Ubisoft Entertainment. All Rights Reserved. Assassin's Creed, Ubisoft and the Ubisoft logo are trademarks of Ubisoft Entertainment in the U.S. and/or other countries.

35 Sean Layh creating a Gian Lorenzo Bernini study in Conté and charcoal

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A BERNINI MASTER STUDY

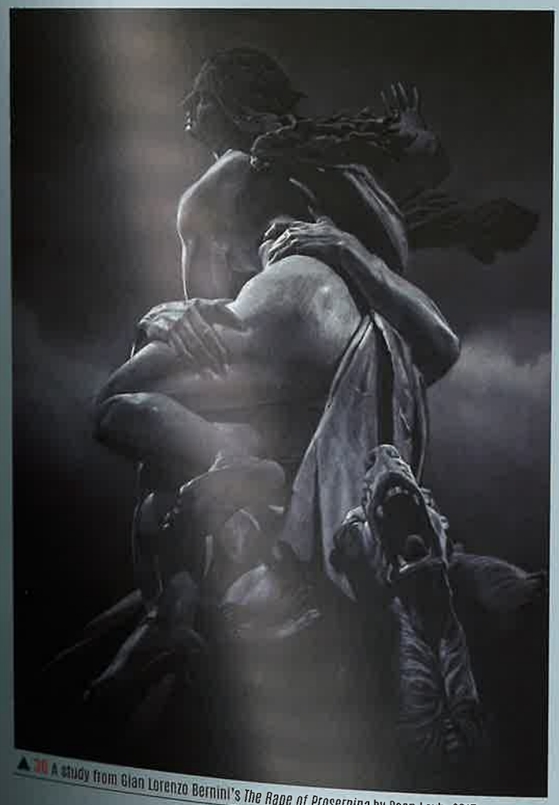
On page 38, we touched briefly on object and form, and how these are key to portraying a lit subject; on page 18 you also saw how essential the shape and distribution of light and dark are to creating a strong composition. Let's delve deeper into how the concept of light is inextricably tied to shape, and how to plan the shapes of an image.

When approaching any practical application of light, you must consider what the light is interacting with. It is the objects that populate any image that make light sensible to us. Whether they are tables, mountains, or human figures, they can be interpreted visually as a compilation of different abstract shapes.

Studying from Bernini

Images 35 and 36 show a charcoal rendering of Gian Lorenzo Bernini's famed marble statue, *The Rape of Proserpina* (1621). Image 37 shows the statue in situ in the Galleria Borghese, Rome, where there are two light sources directed onto the statue, which constitute the drawing's primary light sources. The first source of light comes in from the top left, striking the hands of Pluto and the thigh and shoulders of Proserpina. The second light source comes from the top right, filling out most of the image with a soft midtone and an occasional concentrated highlight courtesy of the marble's silky finish.

Let's consider this drawing in terms of the shapes that make up what we see, breaking the subject down into its smallest and most easily sketchable elements. To start with, let's focus on a small section of the drawing.



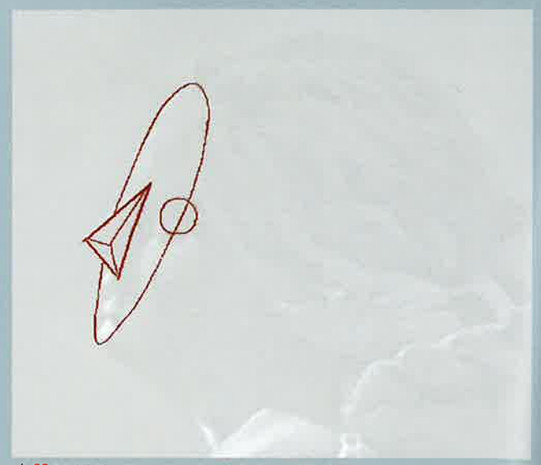
▲ 36 A study from Gian Lorenzo Bernini's *The Rape of Proserpina* by Sean Layh, 2017



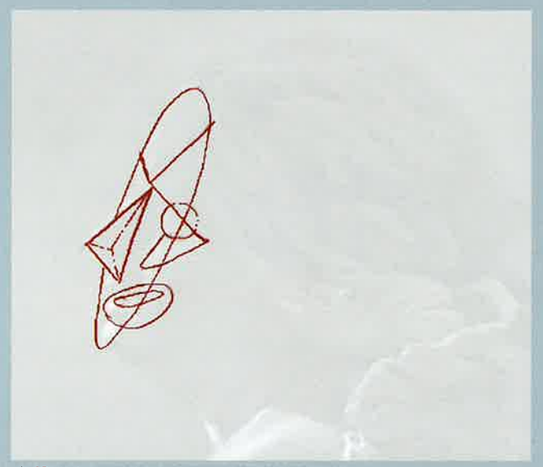
▲ 37 *The Rape of Proserpina* by Gian Lorenzo Bernini



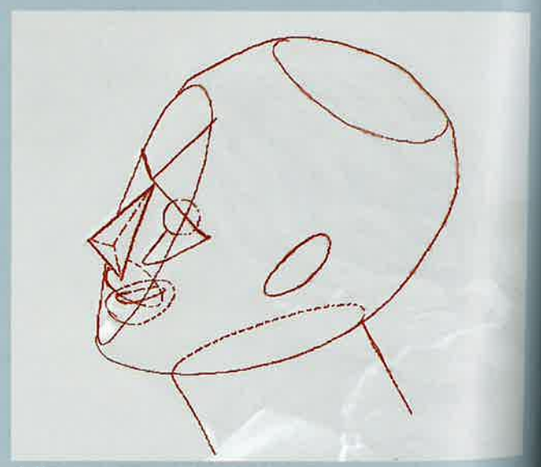
▲ 38 Focusing on the head of the charcoal study



▲ 39 Establishing the angle and main features of the face



▲ 40 Placing secondary features such as the cheek and lip



▲ 41 Blocking out the rest of the head with basic shapes

Proserpina's head

In image 38 you can see the final version of Proserpina's head sketched in charcoal. The head features several nuanced forms that can be lit more easily if considered as simple geometric shapes, as we will explore here. You can learn more about the forms of the head on page 176.

In image 39, the face can be visualized as a simple flat disk, an oval, rotated to match the angle of the head. On that plane, a triangle represents the nose – the most prominent feature of the face – and a circle intersects with the disk to indicate the eyeball.

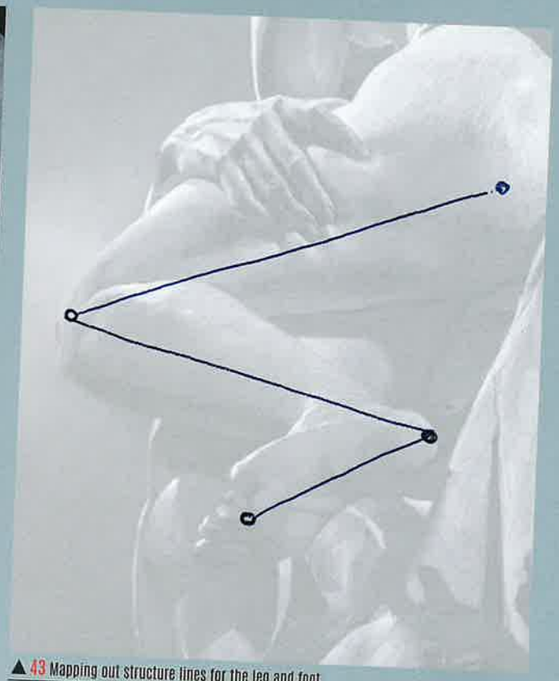
Image 40 builds up the face with some additional shapes. An oblique line describes the point of the forehead, where it dips down toward the ear. A flattened semicircle corresponds with the upper cheekbone, with the eyeball resting at its apex. Below the nose is a small bowl, like a tiny mortar without a pestle – a very useful shape for giving form to the bottom lip.

Finally, image 41 adds the main bulk of the head in the form of an oblong. Though the ear is not visible in the actual statue, it is useful to add it here, just as a reminder of how the head is tilting. A cylinder is added as a placeholder for the neck, and another oval shape under the nose indicates the curve of the upper lip.

The rest of the drawing can be built up in the same way, using as many or as few shapes as you wish. The aim is to define the form, or mass, of your subject before you introduce light into the scene. Next we will scale this process up to a larger, more complex area of the figure.



▲ 42 Moving on to a larger area of the study

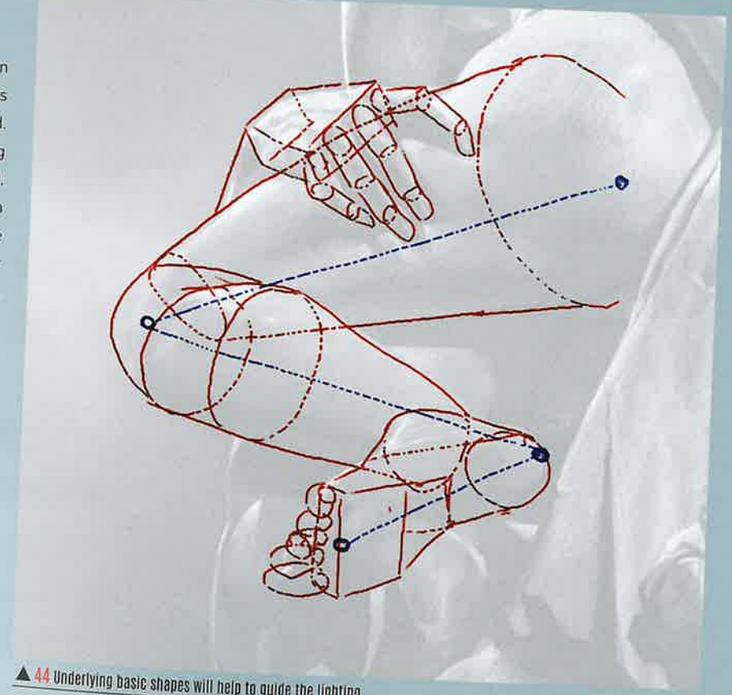


▲ 43 Mapping out structure lines for the leg and foot

The thigh & lower leg

The larger section of the drawing focuses on Proserpina's leg (image 42), which features more complex forms and angles than the head. Therefore, the process of planning the lighting begins with some structure lines (image 43). These can be thought of as a simplified skeleton around which the shapes are arranged. They are the internal scaffolding which helps give your arrangement of space its internal logic – again, analogous to a skeleton. Structure lines are very useful for planning foreshortened shapes, as we have here in the case of the lower leg; you can learn more specifics of drawing the hand and leg in the "Anatomy" chapter (page 174).

Taken together, we can see that Proserpina's leg and foot, as well as Pluto's hand, can be broken into a series of small, interlocking shapes. As with the head, these are a mixture of squares, circles, cones, cylinders, and rectangles (image 44). During the earliest stages, constructing a full image is just the sum of all these shapes – shapes that interact rationally with a common light source.

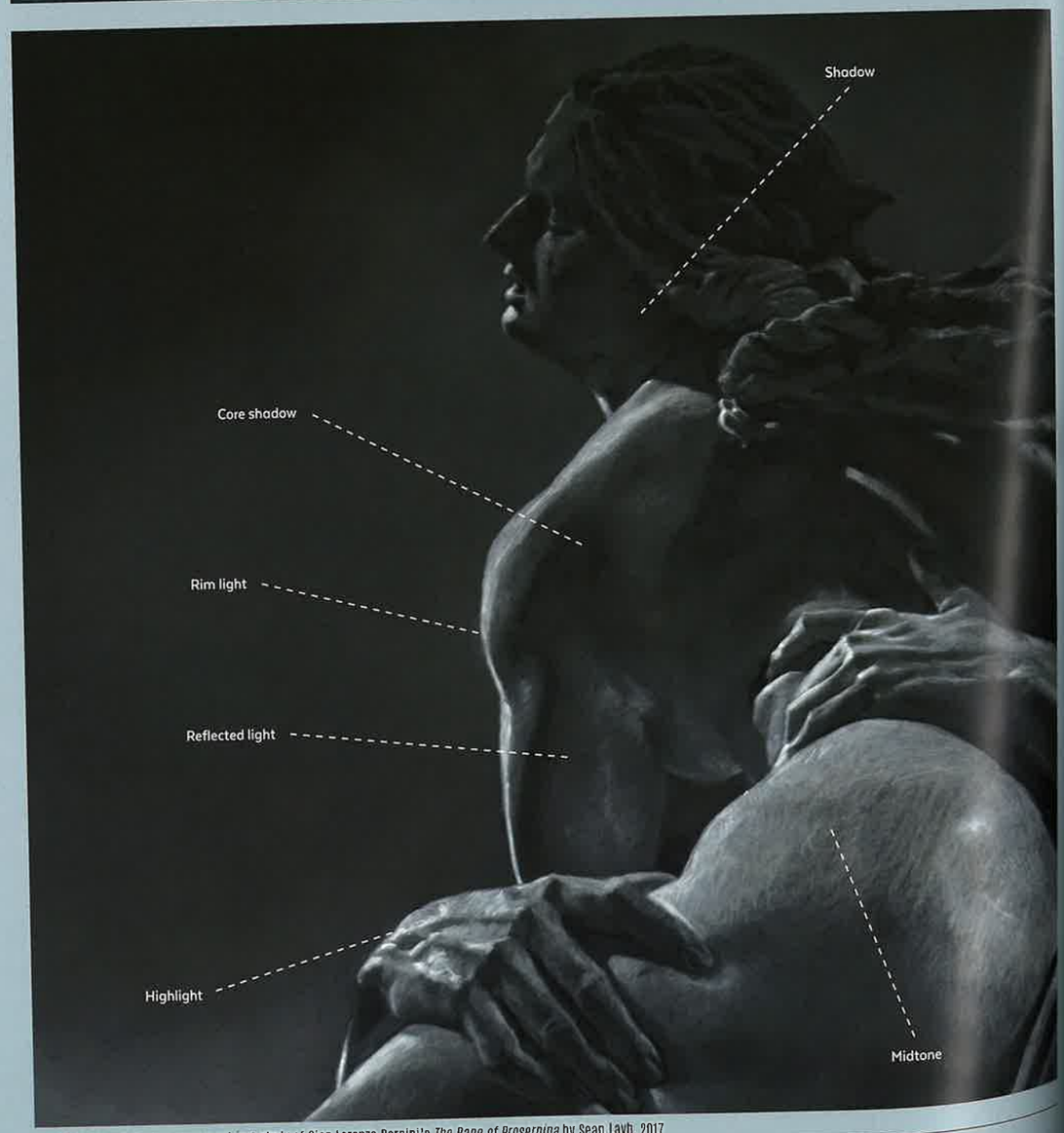


▲ 44 Underlying basic shapes will help to guide the lighting

Planning midtones

Judging midtone values can be challenging, and beginners can have a tendency to render them too darkly. A good way to prevent this from occurring is to have your value scale prepared in advance.

When mixing real paints in particular, you can test your values by painting swatches and comparing them to the relevant tones on your value scale.



▲ 45 Light and shadow placement in a study of Gian Lorenzo Bernini's *The Rape of Proserpina* by Sean Layh, 2017

Light interacting with shape

Now that we have seen how shapes can be used to build an image, let's consider how light gives them form and life in the final drawing, referring back to the lighting terminology introduced on page 38. As mentioned earlier, Bernini's statue is illuminated by two light sources when seen in real life; we will explore the effects created by that lighting in images 45 and 46.

Highlight

This is the brightest value and it is used sparingly, concentrating the light on points facing the light source, such as the details of Pluto's hands.

Midtone

These values generally correspond to angles that are oblique to the light source and sit adjacent to the highlights. These tones help to convey the light color of the marble material, even though the drawing is created on a base of black charcoal.

Rim light

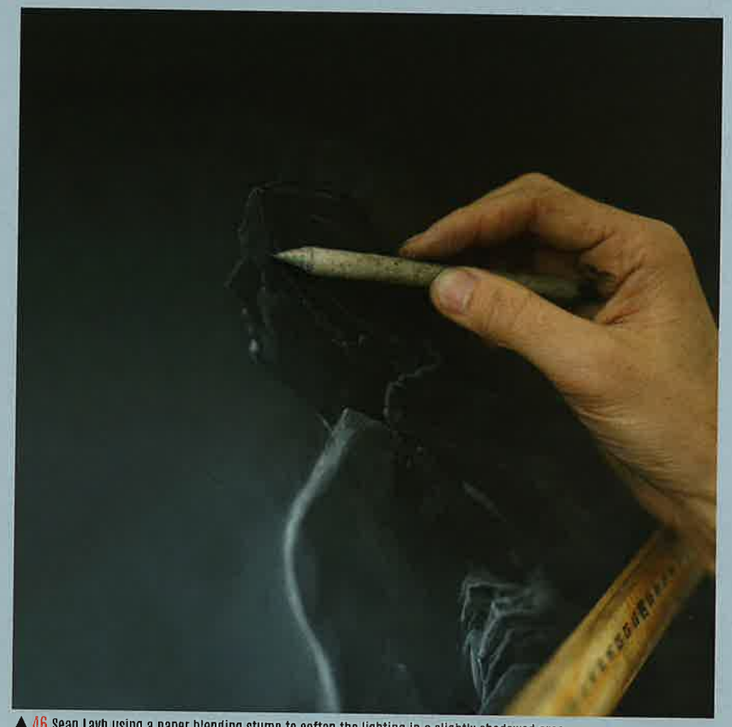
It is easy to run amok with rim lighting, so always try to use it with restraint. In this drawing, the rim light comes from the back left of the statue and helps to define its contours against the dark backdrop.

Reflected light

Reflected light can become very complicated very quickly, depending on how many light sources and objects are in an image. The smooth marble of the statue reflects quite a strong light that lends form to its shadowed areas.

Shadow

The strength and angle at which light strikes an object will define the length and perimeter of the object's shadow, and whether it is sharp, diffuse, or both. Much like midtones, there can be a tendency to darken shadows too much – having a value scale pre-determined and close at hand will save a lot of time and difficulty. This study includes many deep shadows that lend drama to the piece.



▲ 46 Sean Layh using a paper blending stump to soften the lighting in a slightly shadowed area

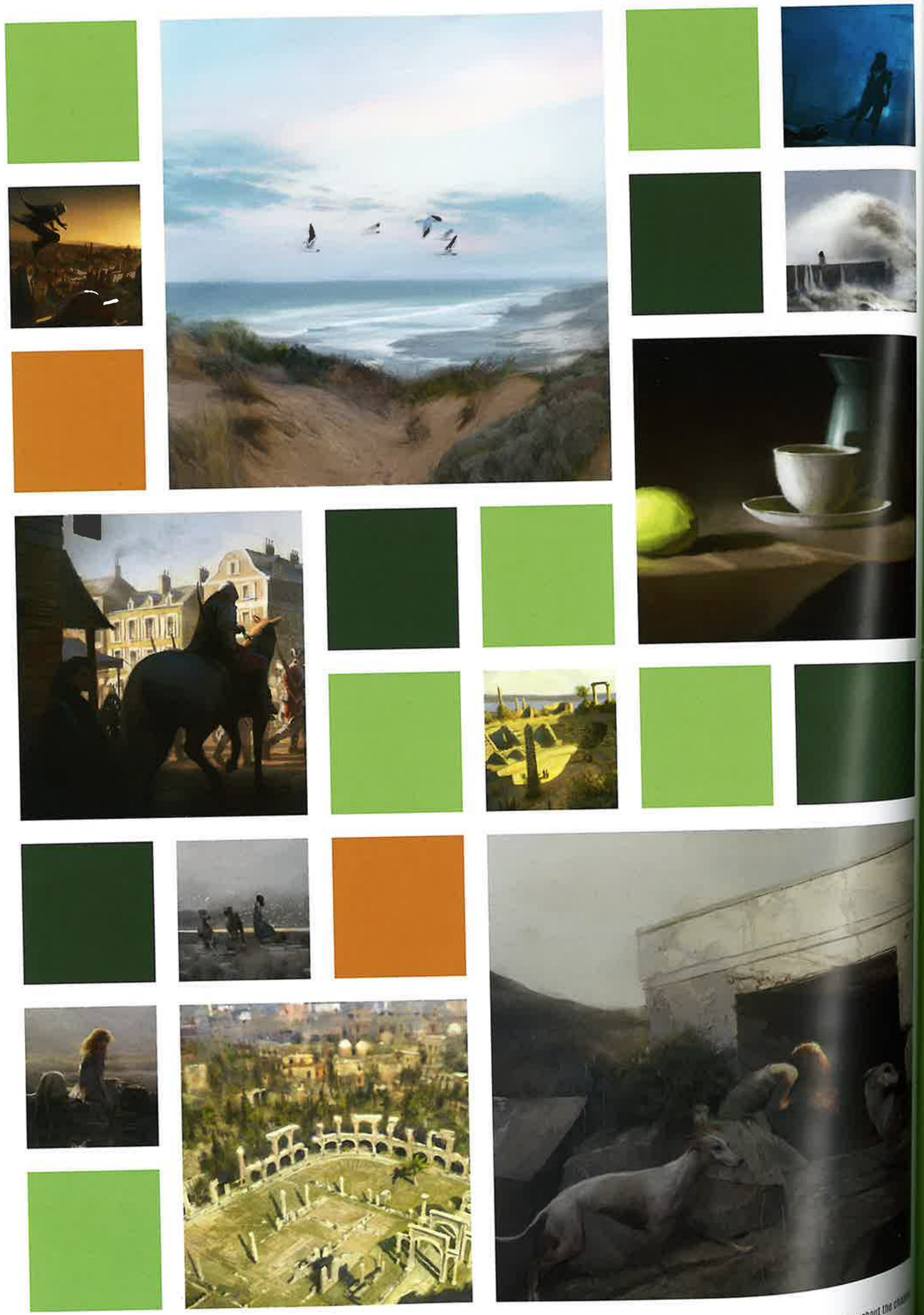
Core shadow

Like the highlight, the core shadow is used sparingly, and is mostly sampled from the lowest value in your scale. The core refers to the darkest part of the shadow that is not affected (or lightened) by the presence of reflected light.

Conclusion

Light is the fundamental element in every two-dimensional artwork that seeks to create the illusion of three-dimensional space. This chapter has demonstrated the role that lighting plays in creating an image, and has provided you with a vocabulary – both visual and linguistic – for understanding how light is used in art. You have learned how to describe the character of light using values, and how these values create contrast between spaces and objects. If these elements conform to the simple laws of how light and objects interact, then a rational, naturalistic result can be achieved.

Try to apply the concepts and processes from this chapter throughout your work, from your first sketches to your final pieces. There are as many individual approaches to light as there are artists, both past and contemporary, but these general guidelines will give you food for thought and help you in your own practice. In the next chapter, we will expand into color, including the close relationship between color and light.



Images © individual artists as listed throughout the chapter

Color

By Sean Layh & Gilles Beloeil

In the previous chapter, light was described as "the fundamental of fundamentals." In this chapter, we could extend that category to encompass color, because light and color can be viewed as one and the same thing. This was first demonstrated in the seventeenth century by Isaac Newton, who showed that light, when refracted through a prism, separates into the full color spectrum. More precisely, a portion of white light resolves into the visible spectrum, or the narrow bands of wavelength that the human eye can perceive: red, orange, yellow, green, blue, and violet. Color *is* light.

Color is the richest and most rewarding of the art fundamentals, but learning about it can be an overwhelming experience. However, there is a way to progress through the topic in methodical pieces, as we will do in this chapter. These pieces, when reassembled, should be directly applicable to your work in any medium.

ART HISTORY: A COLOR PRIMER

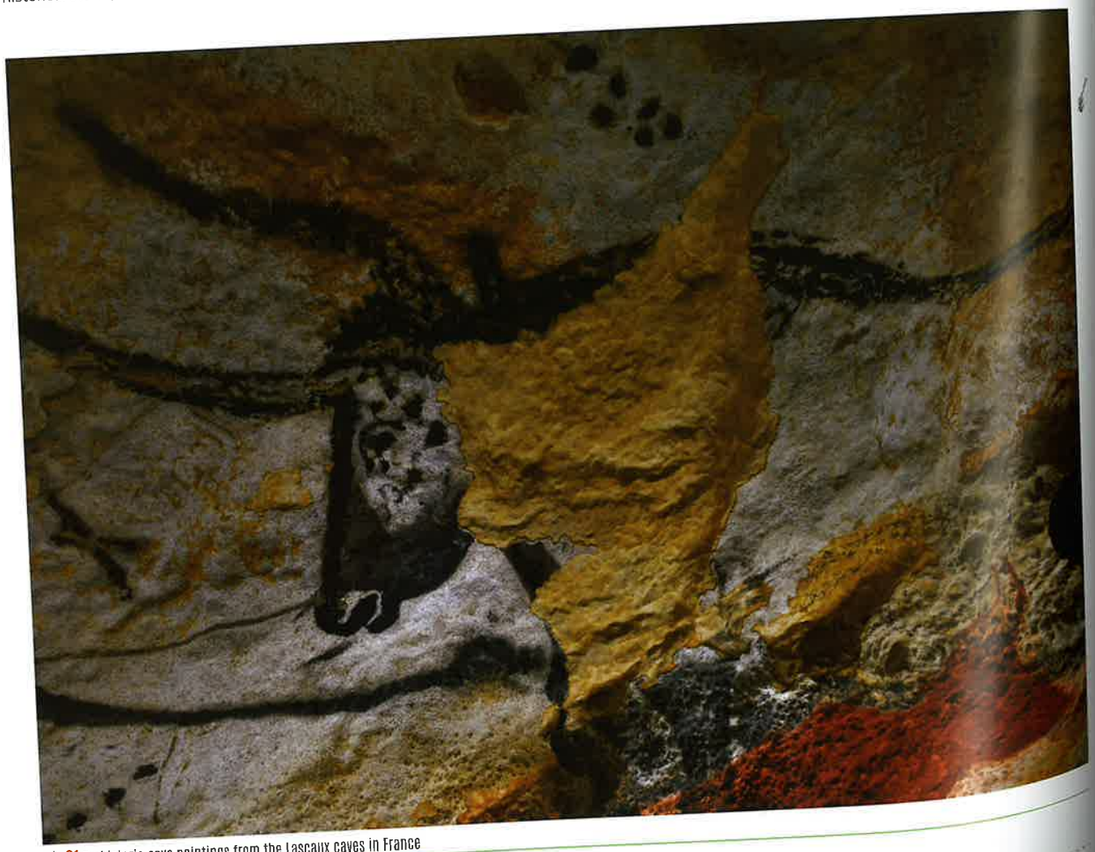
The history of art can be seen as a pageant of colors, building in complexity as time goes by. Prehistoric artworks from the caves of France or the escarpments of the Australian Outback were rendered in earthy ochers and burnt blacks. The artists of antiquity added azure and malachite to this staple of earthy tones, reserving the vibrant blues and greens they produced for depictions of royalty and the gods. But not until the Industrial Revolution, more than twenty thousand years after prehistoric artists painted the caves of Lascaux, did many of the colors that contemporary artists covet come into existence. Before we enter into a discussion about the use of color in art, let's consider color from a historical standpoint.

The color palette of prehistory

Prehistoric paintings are awash in earth tones for a very good reason – the materials used to create them were abundant and easily manipulated. Red and yellow ocher, umber, and lime-white were all sourced from mineral deposits, ground-up clays, and other commonly found rocks. Complementing this red-brown palette were the stark and enduring blacks of the epoch. Both carbon and bone black, as their names suggest, were products of fires and charred animal remains. These pigments were ground up using rocks or animal bones fashioned into pestles, and mixed with water, saliva, or animal fat to make workable pastes. The artists of prehistory used this limited palette to paint human figures and their animal counterparts, or to spit onto sheltered rock walls to leave ghostly handprints. These vivid artworks are some of the only heirlooms left to us from another time in human history, and the color palette is of a people close to the earth.

The color palette of early civilization

As civilization and the structuring of society became more complex, so did the materials that the ancients used to create their artworks.



▲ 01 Prehistoric cave paintings from the Lascaux caves in France

Image 01 by bobdu11 / stock.adobe.com



▲ 02 The ancient Egyptians were likely the first to use blue and green pigments

Although the palette of the prehistoric artists remained (as it remains today) a staple of most art, a number of new colors became accessible. The Egyptians, as far as we can tell, were the first to add blue (azurite) and green (malachite) to the palette by scraping off oxidized layers of copper and ore and synthesizing them into textile dyes and paints. Over the Mediterranean and Aegean seas, the Greeks were also using their newfound interest in metals to discover the colors of white lead and red lead – two colors that typify early Grecian earthenware.

Metals were not the only source of new colors. The ancients also set to work extracting vegetable dyes, which gave the world of textiles and paints colors such as alizarin crimson and crimson lake – the word "lake," when used as a suffix to a color, denoting its origin as a plant extract. But this was not all; new colors were still being found in the rocks, though these rocks were rarer than those that created the ochers so abundant to the prehistoric artists. Lapis lazuli, for example, was exported from the mountainous mines of Afghanistan, to be ground up and made into one of the most sublime colors in the ancient and modern world: ultramarine blue.

The modern revolution in color

Many of the metal- and plant-based colors of the ancients, which augmented the mineral colors of the prehistoric artists, remained rare and hard to acquire until modern times. The speed of discovery and the global circulation of pigments accelerated from the fourteenth to the eighteenth century. This period, bookended by the Renaissance and the Industrial Revolution, saw a flourishing of chemical investigations driven by the demands of the textile industry. In the world of color, this frenetic atmosphere lead to the discovery of the cobalts (blue, green, yellow, and violet) and the beautiful but toxic chromes (both orange and yellow).

Alongside the new pigments came the invention of the paint tube, and with it a sweeping change to the world of the visual arts. Up until this stage in the early eighteenth century, painting had largely been conducted in the studio, but now it took to the streets and hills. With *plein air* (open air) painting came a new appreciation of and demand for a range of more natural colors.

Since that fevered time, much of the innovation has come in the form of the mass-production of pigments, with the twentieth century only adding one giant color to the field of traditional painting: the indomitable titanium white.

Present-day artists now have access to an infinite color palette thanks to the availability of digital tools, but whether you paint traditionally or digitally, the following concepts will apply.

Image 02 by Alenas / stock.adobe.com

HUE, SATURATION & VALUE

Color, like light, exists on a continuum; our names for colors are simply shorthand for describing sections that exist along that continuum. As one of these sections gives way to another – from green to blue, for example – it is impossible to tell where one color ends and the other begins. In situations like this, simply calling a color by name is too vague and open to confusion. Instead, a color can be broken down with three descriptors:

- **Hue**
- **Tone**
- **Value**

This section will define those qualities and introduce you to the **color wheel** – a useful tool for any artist.

Hue: a color's family

Hue is one of color's most useful attributes. It is its identity, its family. Often the term **"hue"** is used interchangeably with "color," but in color theory it has a more specific meaning. "Color" can be thought of as an umbrella term that covers all of a color's characteristics, including its tone and value, which we will define shortly. "Hue," on the other hand, is a measure of how similar that color is to a reference point on the color spectrum.

The color spectrum can be split into twelve hues. Traditionally, there are three **primary hues**: red, blue, and yellow. They are "primary" as they are not created by mixing any other hues. Following these are the three **secondary hues** – green, orange, and violet – which are achieved by mixing the three primary hues. For example, mixing yellow and blue creates green. Lastly, the **tertiary hues** are created by mixing primary and secondary hues (**image 03**). For example, blue and green combine to make blue-green.

The color wheel

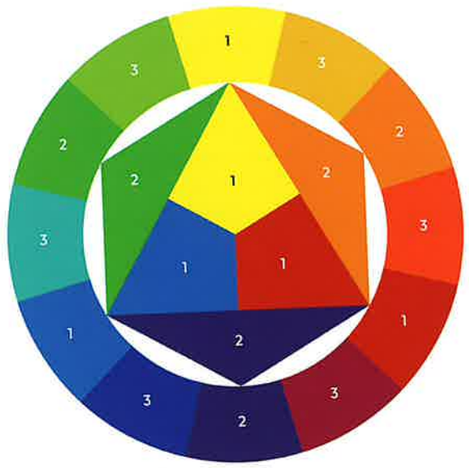
When arranged in a radial pattern, these twelve hues make the color wheel shown in **image 04**. A color wheel is a visual representation of the color spectrum that is particularly useful for identifying similar or contrasting colors, which we will explore further in the section on color harmony on **page 62**.

The wheel could be divided into fewer or more slices, but dividing by primary, secondary, and tertiary hues is sufficient for discussing most artwork. You can find many examples of color wheels online or in books, but you may find it beneficial to try creating your own wheel by hand. It is a good way to get a strong grounding in hues, while also familiarizing yourself with your medium of choice.

Tone: a color's intensity

The term **"tone"** is most common in the world of traditional painters. In the world of digital media it is usually discussed as "saturation." When we adjust an image's saturation in a program such as Photoshop, we are either increasing or decreasing the image's tone, giving its colors more or less richness and intensity.

In traditional media, a color's intensity is decreased by mixing it with gray – a mixture of white and black. The portions of white or black determine if the tonal shift makes the color lighter or darker. Caution is advised here if you are working with a traditional medium such as paint. Adding too much gray, white, or black tends to dull a color's luster and give it a deadened look. However, when done in moderation, you can mix some of the most subtle and mature colors by adjusting a color's tone. In **image 05**, there are areas where the colors approach full saturation, with a gradual shift into heavily reduced tonal variants.



▲ 03 A color wheel representing the primary (1), secondary (2), and tertiary (3) hues



▲ 04 The color wheel is a valuable reference for visual artists

Image 03 by elenabo / shutterstock.com



▲ 05 There are areas of saturated yellow and red, but the majority of this painting uses heavily desaturated tones of those hues



▲ 06 In the crashing wave, you can see how a yellow hue has been reduced to a pale, near-white tint

Value: tint & shade

The last of the three color descriptors is "value." Akin to what you learned in the chapter on light, value refers to a color's brightness or darkness. There are two further terms you can use to describe a color's value: **tint** (a color's lightness) and **shade** (a color's darkness).

In traditional media, adjusting a color's tint involves lightening it with pure white (**image 06**). Mixing the base hue with anything that is lighter but contains another hue, no matter how subtle it is, will change the hue as well. This is not a bad thing, but for this image, imagine changing a color's tint with pure white, not shifting its hue at the same time.

In contrast, to change a color's shade, you mix the hue with black. However, this is not advisable in practice, as pure black will often choke the original hue. Instead, to achieve a more nuanced shade, painters often mix with dark colors such as Payne's gray, burnt umber, or Prussian blue. Knowing how these mixes will affect your color can only be learned with practice. If mixing with pure black, do so carefully and monitor how it is affecting the luster or liveliness of your color.

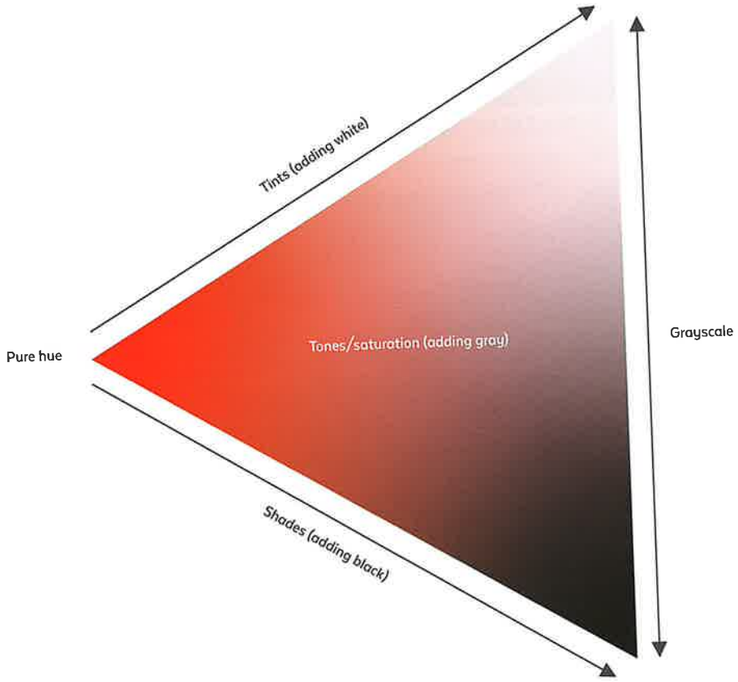
Emergence with The Waterwall © Sean Layh

Visualizing hue, tone & value

You may already have gathered that tone and value are not discrete categories, but instead they describe how to arrive at different coordinates on the same map. In **image 07**, you can see how tints and shades simply describe how to make your starting hue traverse the top and bottom edges of the triangle. Adding pure black or pure white would move the color along the triangle's top or bottom sides. However, to navigate within the triangle, you would need to add a mixture of both black and white to adjust the color's tone.

This is where the categories merge, so it is best to remain flexible with your understanding of tones and values when determining your color's characteristics. Try not to think about what is described above as a series of rules – they are intended to be an aid to thinking about the practical application of color in the process of making an artwork.

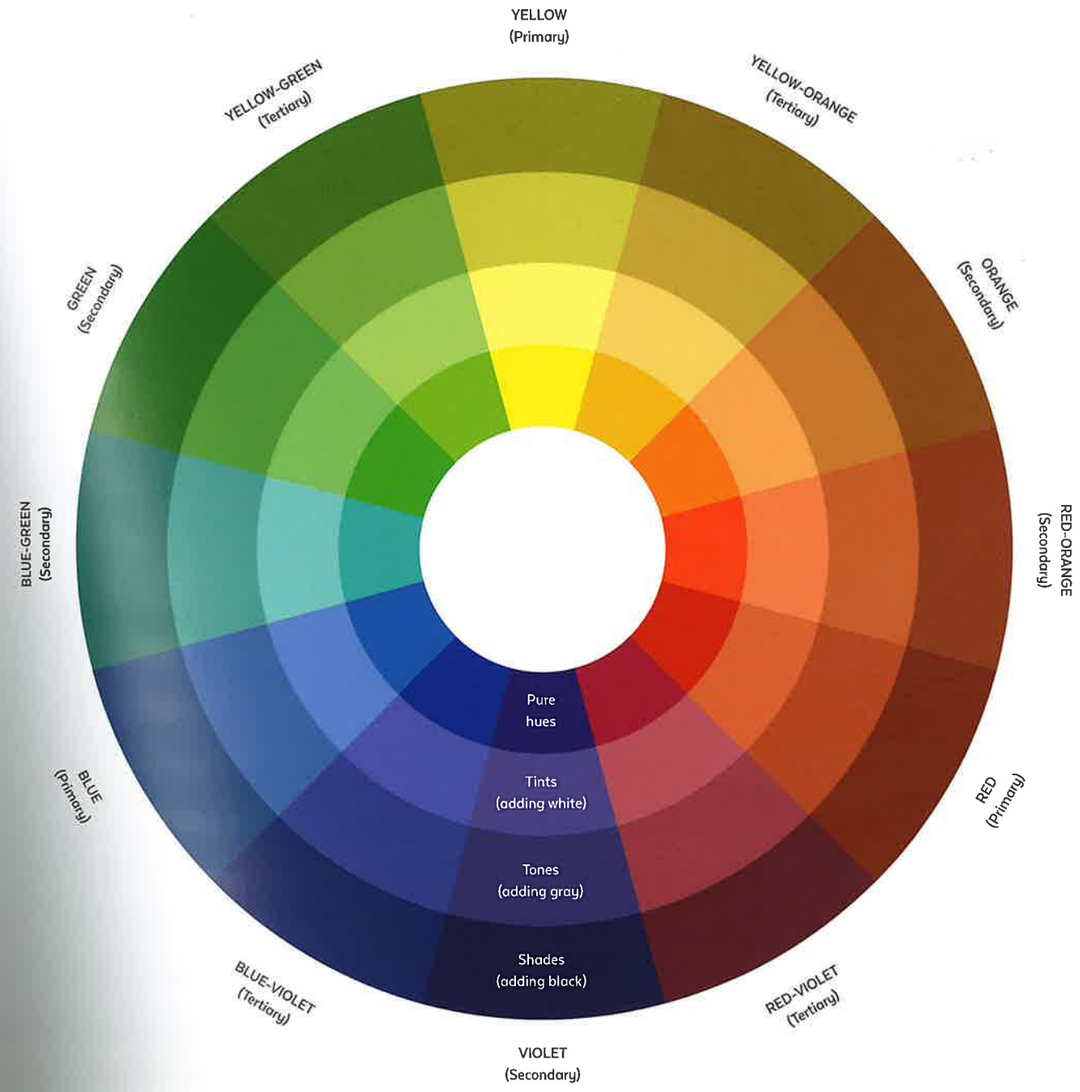
The color wheel in **image 08** summarizes the terminology and color types shown so far.



▲ **07** This diagram illustrates how hue and value interact to create a wide range of tones

Color symbolism

The moods and meanings we associate with colors are dependent on culture and context, but will inevitably affect the palettes you choose. Every color comes with psychological and cultural connotations that can affect how you convey emotion and meaning to the viewer. Common examples are red being the color of anger or passion, green being the color of vitality and nature, and blue being a cold or tranquil color. These meanings are not absolute, and you may even wish to subvert the viewer's expectations in your choices of color, but some research and consideration of color psychology and symbolism can help to make your visual choices more impactful.



▲ **08** This diagram shows examples of tints, tones, and shades applied across a 12-hue color wheel, summarizing the ideas covered so far

FUNDAMENTALS APPLIED...

UNLIKELY FRIEND

Jacob Duncan

Tools: Procreate

"The idea for this piece was based on a painting I made many years ago. I wanted to take that idea and see how much I could improve upon it with the skills I have learned along the way. In terms of lighting, I was hoping to bring some of the beautifully subtle light I have observed while *plein air* painting into a personal piece. Regarding the brushwork and overall feel, I looked at James Reynolds' work a lot while painting this, just trying to capture some of the magic he created in his work. I am nowhere near the painter he was, but maybe someday I'll get there.

For professional color work, I usually design the lighting around the emotion that I am trying to convey with the scene. However, for this personal piece I chose a lighting scenario that I really wanted to paint purely for the sake of it. I did still remain conscious of designing the light in such a way that the viewer's eyes would naturally land on the focal point of tree's head. I saved the highest points of contrast and saturation for that area."



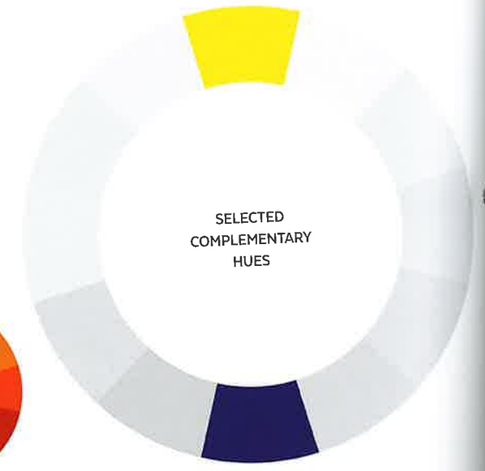
COLOR HARMONY

Color harmony refers to the principle that certain arrangements of colors are more pleasing to the eye than others. There are three broad categories of color harmony: **complementary**, **analogous**, and **triadic harmonies**. These categories do not represent hard-and-fast rules, but they are useful for analyzing a finished work to learn why it is pleasing to the eye, even more so than for building an image from the ground up. Use these concepts to guide your work, but do not adhere to them too slavishly. Nonetheless, when left to their own devices, artists who are interested in representing naturalistic scenes tend to converge on these three types of harmony.

Color harmonies work on the basis of a dominant hue, or set of dominant hues, complemented by hues from the opposing end of the spectrum. This juxtaposition tends to add depth and dynamism to an artwork. Keep in mind that it is very easy to overdo such contrasts, with the results becoming a little kitsch or over-calculated. The ability to avoid this and strike a good balance of hues comes with practice and observation. The following pieces will have their color harmony and hues indicated on color wheels and round swatches beside each image.

Complementary colors

Complementary colors occupy opposite sides of the color wheel. Opposing hues, such as violet and yellow, are considered to complement each other. If juxtaposed, they jump out in vivid contrast to one another while not being displeasing to the eye. Among the most masterful historical uses of this concept were the complementary color daubs used by the Impressionists (see **page 13**) to create the effect of shimmering, moving light.



Example palette: purple and yellow

This illustration by Gilles Beloeil uses a palette that is predominantly yellow with a complementary violet hue. Note how the violet is not used in its purest form, and is used in the shadows and background areas, so that it does not overpower the overall golden cast of the scene.





Above image by Gilles Beloeil © 2010 Ubisoft Entertainment. All Rights Reserved. Assassin's Creed, Ubisoft and the Ubisoft logo are trademarks of Ubisoft Entertainment in the U.S. and/or other countries.



Example palette: blue and orange

This coastal scene by Sean Layh also features a complementary palette that is balanced and pleasing to the eye, with the warmer orange hues of the foreground dunes complemented by the cyans and blues of the background sky and distant cliffs. Elements of mauve in the dunes and pink in the sky add further complementary nuance to both areas.





Avoiding muddy colors

You may sometimes find that your painting has a monochrome feeling, or that your colors look "muddy" and indistinct. The most likely cause of these issues is inappropriate color temperature, such as putting a cool red into a warm shadow. Always check these aspects of your painting when in doubt, and be aware that for every shift in angle, you should also have a change of color temperature or value. Consider these pointers when you find that something looks murky or flat.

Rye © Sean Layh

Analogous colors

Artworks with analogous harmonies use a range of hues that sit side by side on the color wheel. A minor complementary hue may be included as well, but a limited range of immediately adjacent hues will dominate the palette. This is a straightforward way to find a color scheme that is harmonious and vividly captures a particular mood.



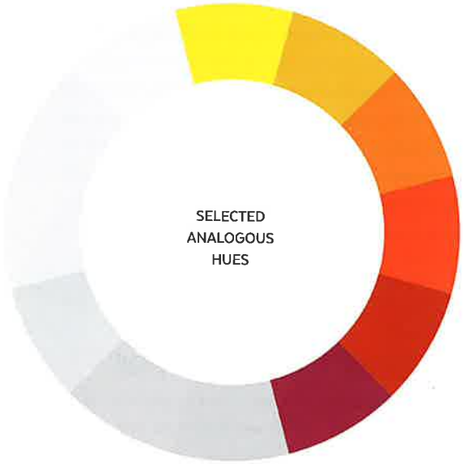


Example palette: cold hues

In this example by Gilles Beloeil, a purely blue-based palette creates a chilling nocturnal atmosphere. The blues vary in both hue and value, with the darkest shadows verging on black and the lightest hue moving toward bright aqua-blue.







Example palette: warm hues

In this illustration, a hot, dusty, golden-hour atmosphere is created with the use of yellows, oranges, and browns. Dabs of cool shadow add subtle depth to the palette, but the overall impression is one of warm, sunlit hues.



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Triadic colors

Triadic harmonies come in a variety of forms, each following the same basic formula. You can have primary, secondary, or tertiary triadic harmonies. In any of these arrangements, there will be three dominant hues within the artwork, sitting oblique to one another on the color wheel, forming a triangle. A primary triad would have mainly red, yellow, and blue hues, while a secondary triad would have orange, violet, and green. Tertiary triad harmonies, as you might guess, feature more of the mixed hues, such as plum or terracotta. Secondary and tertiary triadic harmonies are used most in naturalistic artworks, as they give greater weight to hues that are more complicated and subtle.





Example palette: secondary hue triad

This painting by Gilles Beloeil features a triad of secondary hues: green, orange, and purple. The green foreground and orange buildings give the scene a predominantly warm palette, while a cool, light purple tint simulates atmospheric perspective (see **page 158**) in the distance. This secondary triad harmony is often used in landscape painting to recreate the feeling of warm light, cool shadows, and green foliage found in nature.



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Example palette: dark secondary hues

Sean Layh's painting *The Passage* uses the same secondary triad harmony to a very different effect. The muted violet and green tones of the landscape are offset by the areas of warm light and the relative vividness of the character's orange hair.



The Passage by Sean Layh

FUNDAMENTALS APPLIED...

THE READER

Jacob Duncan

Tools: Procreate

"The story of this image is of a child possessed with a love for the natural world around him. It is a bit of a self-portrait, as I was and still am that child, constantly amazed at the beautiful world around me. For this painting, I wanted to paint a child's bedroom filled with books and critters and all of the things I thought were fun and interesting at that age. I also wanted to try out some lighting that I had recently studied from life on an imaginative piece.

It is definitely a challenge to paint a room with a myriad of differently colored objects and yet somehow maintain harmony with your colors. For this very busy scene, I chose a single warm light source - the golden light of the lamp - as a means of unifying all of my colors."



COMBINING COLOR & LIGHT

Light and color are particularly fascinating elements in the process of image-making. In reality, light allows us to see color and the world around us. In art, light and color allow us to express a certain mood or atmosphere. Color is a powerful way to depict feelings and emotions and, if used well, can be one of the first things people will talk about when looking at your illustration. At the same time, it can be a daunting subject for a painter; color is both subjective to the viewer and relative to its environment. Depending on the room and how it is lit, an object may appear as yellowish-blue to one viewer and turquoise to another.

Because color and light are so important in interpreting reality, it is crucial for artists to learn about both. For new artists, the use of light and color can appear magical and mysterious in well-developed paintings, but it is possible to break down all of these processes and decisions simply, enabling you to reproduce them in your own work.

Local color

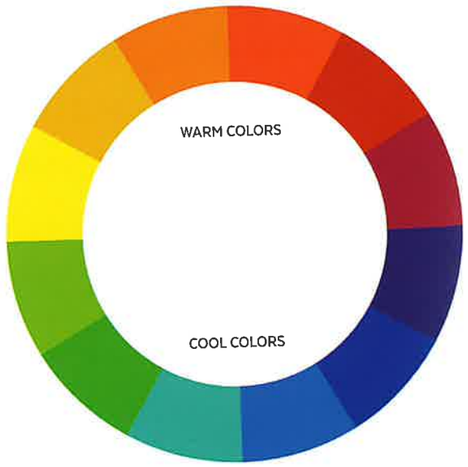
As we first encountered on **page 38** of the **"Light & shape"** chapter, an object's **local color** (or "native color") is its base color without the influence of any others. For example, the local color of a lemon is yellow, but simply painting a lemon with any yellow will not create a realistic result, as there are other material attributes and lighting conditions that will define how you paint it. As a simple example, **image 09** shows two spheres with blue and yellow local colors. You cannot discern their forms or surface textures, as they are unlit, but keep the concept of local color in mind for what follows.



▲ 09 Two unlit spheres showing blue and yellow local colors

Color temperature

The color wheel that was introduced on **page 56** can be further divided into two hemispheres, as shown in **image 10**. One side contains what are generally considered "warm" colors (such as reds and yellows), while the other side contains "cool" colors (such as blues and greens). Being aware of color temperatures will help you to achieve very different atmospheres in an image.



▲ 10 The color wheel can be divided into colors that are broadly warm or cool in temperature

While it is good to be aware of warm and cool colors when comparing hues on the color wheel, it is important to remember that hues do not have absolute warm and cool characteristics in an image. Instead, they have relative characteristics that can make them appear warmer or cooler than their surroundings or other colors with which they are interacting. Any color can have a cooler or warmer variation.

You can alter the temperature of a color by moving clockwise or counterclockwise around the color wheel (**image 10**). If you wanted to paint with a cooler red hue, for example, you would add some blue to it. The more blue you add, the cooler the red would appear, until it ceases to be red and becomes violet. Likewise, if you nudged the red toward yellow, it would appear warmer, until it eventually changes hue.

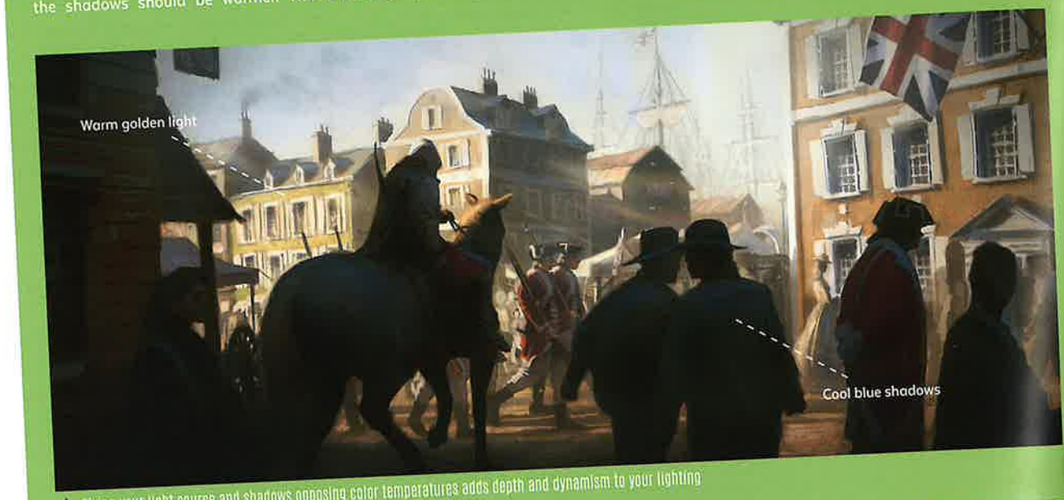
To demonstrate how environmental colors can influence the temperature of a subject, **image 11** shows the "cool" blue sphere lit by a warm yellow light, and the "warm" yellow sphere lit by a cool blue light. The lighting has the effect of warming up the blue sphere and cooling down the yellow sphere, moving both colors toward a greener hue.



▲ 11 Color temperature is not absolute - our perception of an object's color is affected by environmental factors such as lighting color

One "rule" to follow

If there is one rule you should try to follow, that can be applied to any medium, genre, or lighting condition, it is this: if your light source is warm, the shadows should be cooler, and if your light source is cool, the shadows should be warmer. This knowledge will completely change your understanding and application of color, and can change a painting from dull and monochromatic to colorful and engaging from the instant you understand it. It is simple, but will help you to achieve a harmonious color palette every time.

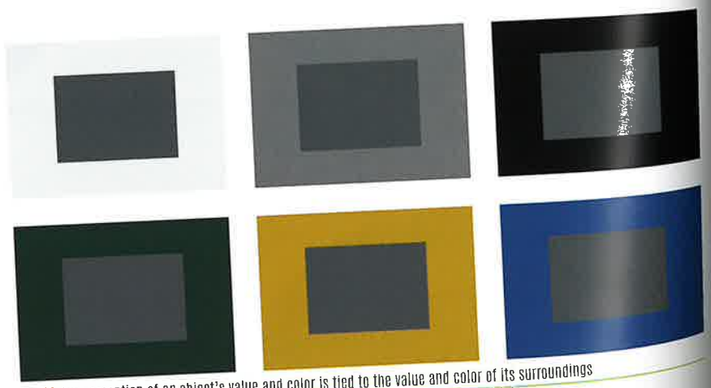


▲ Giving your light source and shadows opposing color temperatures adds depth and dynamism to your lighting

Applying color harmony to light and shadow

When beginning an image, whether from reference or from your imagination, you should try to allocate the colors that you think the illustration should have. Imagine the color of the key light and use this to decide the temperature and palette of the scene; for example, a night scene might have a variety of blues, while a daytime scene might have a warm, welcoming color palette.

There is no pressure to decide every aspect of light and color immediately, but as with values, planning and testing out potential colors at an early stage is valuable. You are more likely to have good color harmony in your final piece if you begin with it. Try to ask yourself these questions:

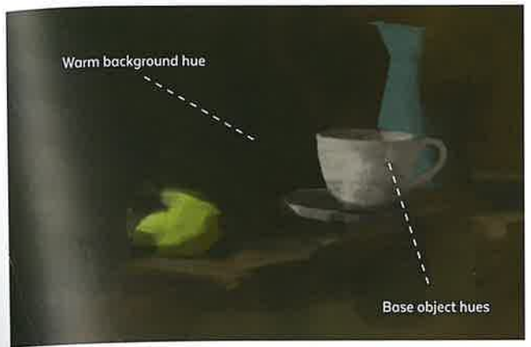


▲ 12 Our perception of an object's value and color is tied to the value and color of its surroundings

- What and where is the light source?
- What is its color and intensity?
- What colors and surface materials are in the scene – such as warm wood or cool metal – and how will the light affect them?

Whatever medium you are working with, it is also helpful to start your image on a base with some color and tone. It is very difficult to judge a color against a pure white background – everything will appear too dark compared to white, making your choices inaccurate. **Image 12** shows the same neutral gray value against a range of different colors and values to demonstrate this.

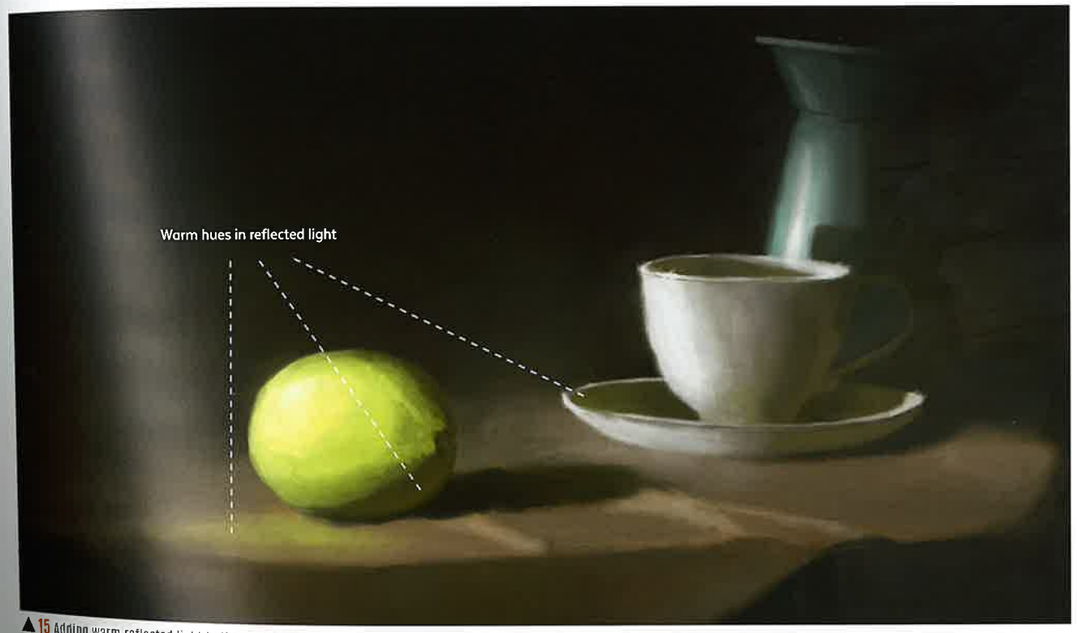
Top image by Gilles Beloeil © 2010 Ubisoft Entertainment. All Rights Reserved. Assassin's Creed, Ubisoft and the Ubisoft logo are trademarks of Ubisoft Entertainment in the U.S. and/or other countries.



▲ 13 Having a background color makes it easier to choose colors for the subjects



▲ 14 Compared to the warm background, the key light is cool and stark



▲ 15 Adding warm reflected light to the shadows creates realism

Image 13 shows a canvas with a warm, dark base color that is ideal for a scene with a cool key light. This background makes it easier to judge the rough base colors for the still-life scene, judging the value and color for each individual shape. Imagining how each object's local color would be affected by the scene ensures that they feel part of the same world.

In **image 14**, the cold, bright key light has been introduced. The light is almost white, which gives the impression of washing out and cooling the objects, and dramatically heightens the contrast between the light and dark areas. **Image 15** shows the final still life with some refinements to the objects and shadows, with warm reflected light bouncing into the shadows to complement the cool light source. Darkening the sides of the image focuses the viewer's attention on the most vibrant subject – the lemon – and adds to the mysterious, subdued feeling of the scene.

Conclusion

Color is a deeply personal thing. Your use of color will ultimately come down to your tastes, your influences, and what you are aiming to achieve. Worrying about technicalities and theory can cloud the fact that color is highly intuitive – the best way to learn is simply to practice and enjoy the fun that color can offer. This chapter has supplied an introduction to the subject that can be immediately applied to your own work.

Above images by Gilles Beloeil

FUNDAMENTALS APPLIED...

MARGARITA

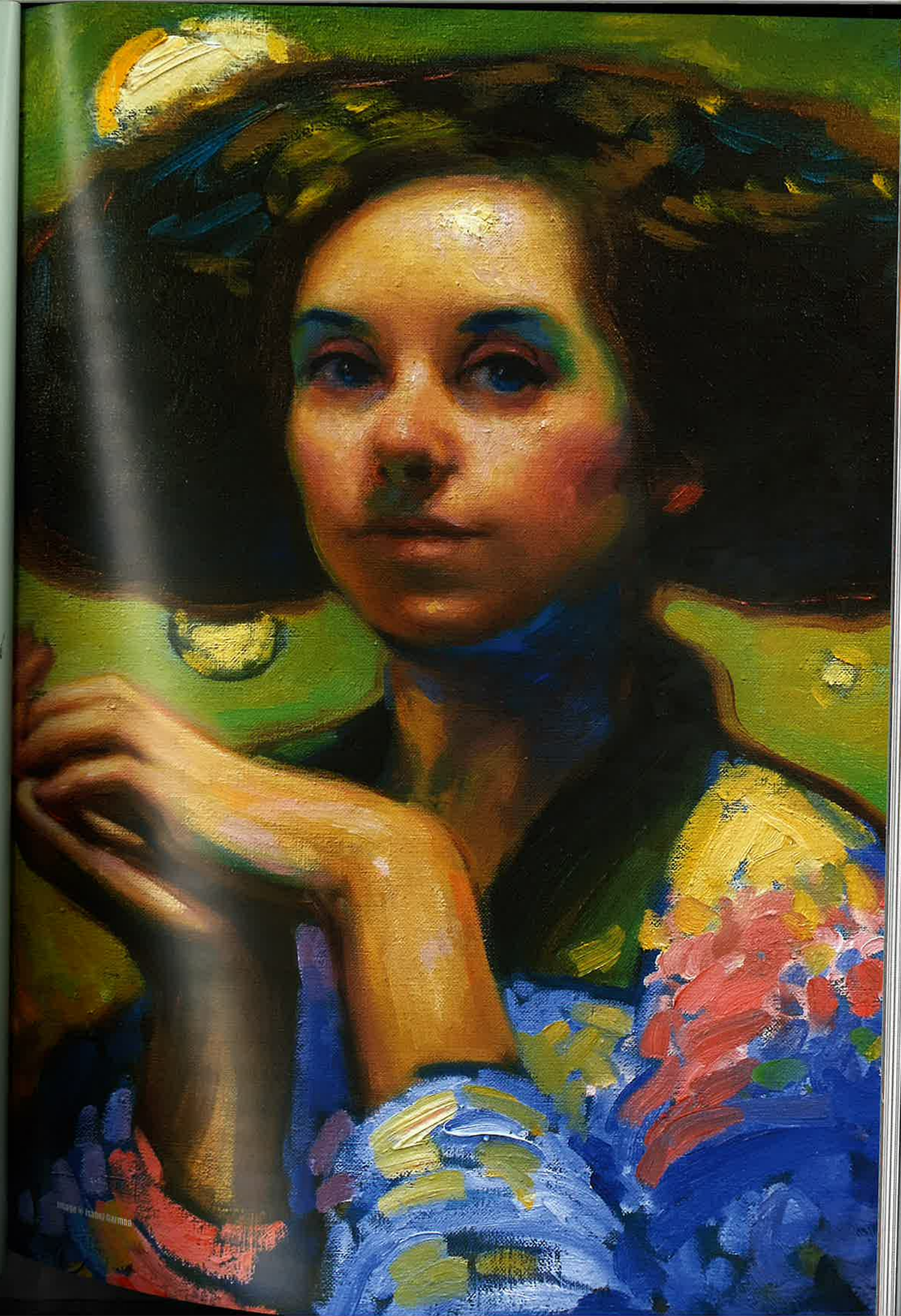
Isabel Garmon

Tools: Oil on linen

"I painted *Margarita* – based on the daughter of King Felipe IV – as an exploration of how colors react closely to each other. Color produces emotions in us; the color palette used for a painting will give the viewer a feeling in itself. It is important to think about what we want to say in our work and what story we are telling with the scene.

Most of the time, I paint through instinct. Sometimes the work ends completely differently than how it started. At the beginning, I wanted to convey the fragility of the human being; I began a beautiful painting with soft transitions and a very atmospheric environment. But one day, everything changed. The painting took a different direction, and all the soft transitions were transformed into a more expressive application of paint where the viewer could 'see' me directly in action. As a painter, I am constantly exploring the expression of my brush marks and I want to have a connection with you when you look at my pieces.

Experience and developing an understanding of color gives you power. For this painting, as always for me, I thought about one of the discoveries of the Old Masters: how to work with light combining cold and warm tones. I always think about the color of the light and how it affects everything in the painting. This painting is primarily yellow, but I also like to add blue in my paintings. Blue makes me feel closer to nature because it is the color of the sea and sky – I think the viewer unconsciously feels that relation to nature when blue is used in a piece. The energetic combination of yellow, orange, blue, and green makes it feel as if the particles of the scene would be moving, even if only a snapshot of the moment is captured in this painting."





FUNDAMENTALS APPLIED...

FLOODED TEMPLE

Jessica Woulfe

Tools: Adobe Photoshop, Modo, 3D-Coat



"I came up with the idea of an old Cambodian temple that had been flooded and was overgrown with plants and lily pads. There is an old fisherman that has made this temple his home, and in this image, he is rowing towards it. The boat is inspired by colorful Thai fishing boats.

I wanted to achieve a feeling of peacefulness and calm. I wanted the image to feel serene and atmospheric, but still epic. The temple has a strong, monolithic presence, and the boat seems small compared to it.

As this is a moment of peacefulness, I wanted to create atmospheric lighting and fog rising from the water in the early morning. The focal point is the fisherman in his boat, so I made the light cast down to hit the columns and draw the viewer's eye toward him. The background is fairly dark, so it makes the streak of light stand out in the composition.

I decided on a complementary palette of turquoise and orange. Though the water in jungle temples is typically brown or green, I made an artistic decision to create turquoise water and bright green lily pads to contrast with the warm, neutral stone temple. This is a fantasy image, so I was able to exaggerate the color in that way, though I still tried to make the turquoise look natural within the scene and not artificial or garish. I combined the use of light and color to make the boat a bright orange, contrasting with the darker blue and turquoise colors surrounding it."

Image © Jessica Woulfe



▲ 16 This painting features subtle tones of orange and purple, with the subjects illuminated by a faint key light on the upper left of the scene

FUNDAMENTALS APPLIED...

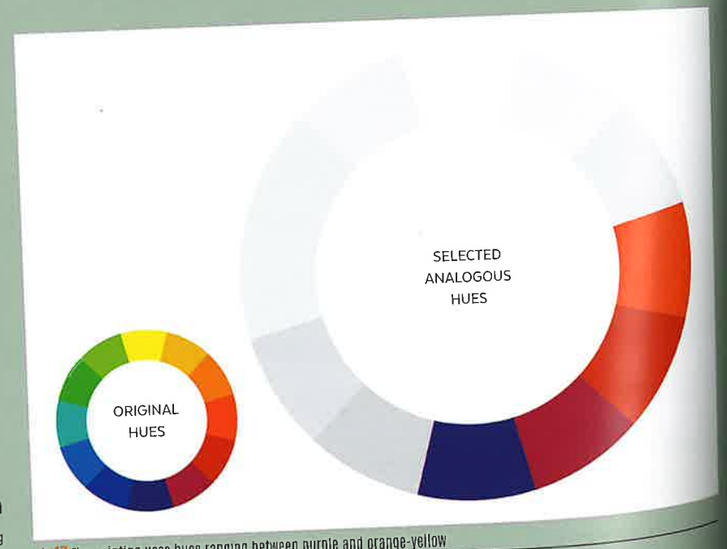
THE CALLING

The Calling by Sean Layh is a traditional painting featuring a misty, dream-like palette and lighting, requiring a careful and restrained use of hue and tone. Let's explore how this effect was achieved.

Planning a color scheme

The process begins by deciding the position and hue of the key light. If the key light is coming from the sun, for instance, where is it in the sky? Is it the morning or evening, is the sun low in the sky, and is it direct or diffused by clouds or objects? Even the hemisphere an image is set in can influence the quality of the light.

In the case of *The Calling* (image 16), there is a cool, weak key light slanting down from the top left, illuminating the central figure of a girl sitting on a rock. This could be a late-afternoon autumnal light with shafts breaking through a low bank of clouds, suffusing the whole landscape with a dull golden hue.



▲ 17 The painting uses hues ranging between purple and orange-yellow

In terms of color harmonies, this image's palette would fall under the analogous category, where the majority of hues cluster around a narrow range on the color wheel. In this case, the range spans mostly violet, with an orange-yellow accent around the main character (image 17).





▲ 18 The hair and clothing colors are affected by the ambient light but are still visibly different



▲ 19 Mixing grayer tones helps to unify the violet and orange hues into a more subtle, misty palette

Unifying local colors

The next thing to consider is the local or native colors of the objects in the scene, as discussed on page 70. When creating an image with a strong dominant color, the colors of the objects will change relative to the light source that illuminates them, as well as any other colors in the environment that they might interact with.

The girl's orange-red hair and pink-purple dress, for example, are heavily suffused with the ambient color of her surroundings (image 18). Although her dress and hair have their own distinct color attributes, mixing them with a medium gray changes their tone to match the atmosphere of the scene, giving the palette a unified look and feel (image 19).



▲ 20 The girl's hair requires a subtle mix of colors in order to pop without looking out of place

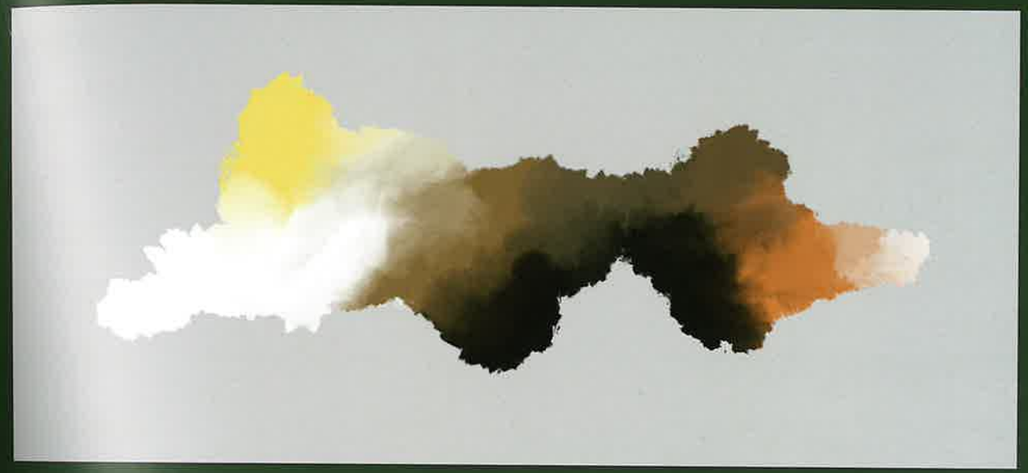
Lighting the hair color

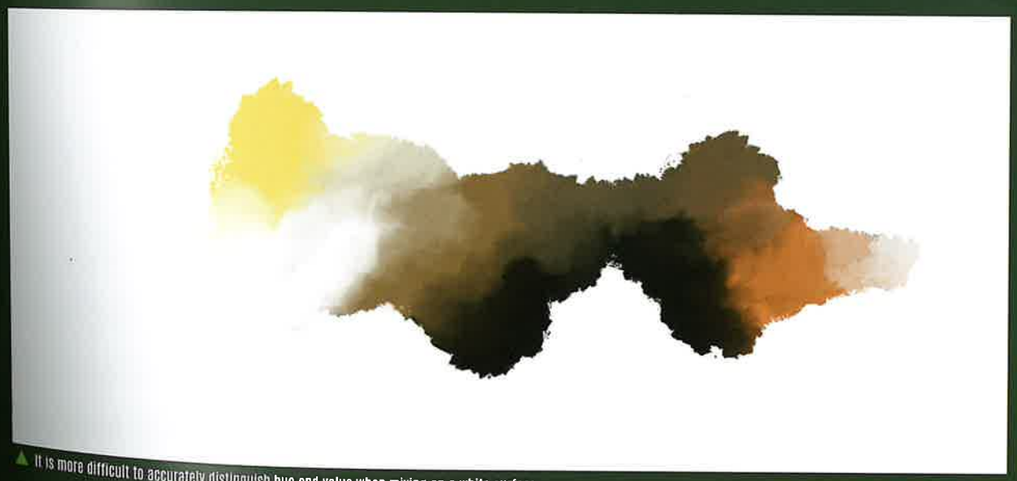
Narrowing in further still, we can see that the orange color of the girl's hair needs to interact coherently with the light itself. The figure is backlit by a burst of sun, making the side of her head that faces us darker than the rim of her hair (image 20). In order to represent this, a wider range of values is needed.

The main hue for the girl's hair is a medium burnt brown, the tint and shade of which need to be adjusted to achieve the required values. To achieve this, the brown is mixed with white and black paints to create a wider spectrum. To counteract the deadening effects of using pure white and black, hints of lemon yellow and coral orange are introduced from nearby on the color wheel (see opposite). These will give the hair colors a rich variety of hues, as well as the required lightness and darkness.

Mixing on gray

As a last note, you can see that these colors have all been mixed on a neutral gray background. This is a valuable trick to learn when choosing and mixing your colors. As you can see below, and as we covered on page 72, it is very difficult to judge the appropriate values by eye against a white background – it makes the tints seem too dark, when the opposite may in fact be true.





▲ It is more difficult to accurately distinguish hue and value when mixing on a white surface

FUNDAMENTALS APPLIED...

COMFY SHIRT

Peter Polach (Apterus)

Tools: Adobe Photoshop & Corel Painter

"This image is a simple portrait with an element of motion. It started as a practice drawing with no particular goal, but when I decided that it could be something more than an everyday sketch, I wanted to keep it simple, focusing mainly on the colors and materials, and rendering the few shapes as well and believably as I could.

The color palette is the result of an experiment I was conducting as the picture was being made. The brush I used to paint the base values used 100% random hues, instead of just pure grays, so it created a base containing the entire color spectrum without being too distracting.

After the shapes were more or less in place, I gradually added subtle color overlays that accentuated a specific color in a few key areas, but otherwise I kept the pearlescent effect of the materials. Towards the end of the process, a warm color overlay was used to unify the palette more."



Image © Peter Polach

FUNDAMENTALS APPLIED...

SEABED

Iris Muddy

Tools: Adobe Photoshop

"I had wanted to try my hand at an underwater scene for a while, but avoided it out of fear. The day came when I decided I would allow myself this experiment, and I knew it would be as challenging as it would be fun. I could picture the several elements and the feeling I wanted to capture. The freedom and looseness it would allow, compared to illustrating anything above ground, was exhilarating. There is something otherworldly about marine life, whether animate or inanimate – not only the coral, fish, and other beings, but also the rocks, water, textures, erosion, maybe even ruins, and feeling of the absence of gravity.

It is that magic that inspired me and still awakens in my imagination whenever I daydream of such scenes. Back when I made this, I had a loose grasp of the various technical ideas at play. In some ways, I think that adds to the image (giving it some naïveté), and in some ways, detracts. I followed my intuition strongly, and still do, but now I definitely think more about what scenes like this involve, and how to improve on those concepts.

For me, this image works because it relies on a nebulous blend of grouping, ratios, and hierarchies to manage the chaos. An image like this can get quite visually noisy, so you need to know where to hold back, and how to tie things together. The flattened value ranges for each 'island' of color are a huge contributor to this being pleasant on the eyes. The image relies less on form and lighting, and much more on shape, texture, and color. The viewer's eye can hop around because of the shapes and flows in the image, and because everything is rendered with a coherent treatment, this is not jarring. The saturation of the colors, as well, has some 'world logic' to it, despite the stylized approach.

That is something I think each image we create is strengthened by. We create a set of rules, and the reality portrayed suspends disbelief when we follow that structure. That may sound boring to some, but I promise it is not! Images like this one have loose, fun rule sets."





FUNDAMENTALS APPLIED...

STRANDED LONG AGO

Iris Muddy

Tools: Adobe Photoshop

"I imagined a shipwreck site that looked nothing like it did at the time of the wreck itself. The world around it went on changing with time and nature. First, it was going to be more closed off, and have more normal staging, around eye-level. I really enjoyed the mental image of the shape of the ship; I thought of how awe-inspiring it would be to come upon something like that. You would wonder, 'What is this doing here?' The upright shape inspired the feeling of looking up at something from below, and having other similarly energetic shapes in the image. For this reason, a jungle made sense to me – the vines, trees, overgrowth, and density.

The color palette was originally much more 'literal.' I maintained greens and blues for most of the process, and then realized I was being boring and not making any sort of mood decision. I am always fighting against my tendency to start things out with a plain palette. I would begin with, 'I'm painting a jungle, so it should be quite green...' However, it matters more to me that I paint something that is an exaggerated depiction of some mood, air, light, or idea, than paint something that looks accurate or true to life. This is inspired by the type of art I enjoy. Visual development for animation is an especially strong example of that; every aspect is designed to be a part of the whole. I love and aspire to that, as it is so effective and expressive.

Every once in a while during the process, I stop and ask myself, 'Could this say something more, if I pushed it in a different direction?' In the end, this purple and yellow color palette felt best. To me, combined with the values and light I wanted for the image, it felt warm, whimsical, and romantic somehow. In addition, it is a complementary color scheme that I had enjoyed using in a few other paintings."

FUNDAMENTALS APPLIED...

SECOND SUN

Maxim Kozhevnikov

Tools: Adobe Photoshop

"*Second Sun* started as a simple photo study, but as always, I very quickly got buried under a huge pile of references. I began by exploring old ziggurats and other ancient ruins, and at some point I designed a couple of concepts that merged into one composition. My goal was to explore a new setting that I was fascinated by. I do a lot of that kind of research and exploration on a daily basis, sometimes resulting in a finished image like this one. Most stay in my folders forever, or until the day I rediscover them and use them for some new tasks.

The most difficult task for me was to translate my initial black and white sketch into color. It is easy to design using only line or value, but I then faced the challenge of translating those shapes and values into a finished painting. I experimented with different techniques for this piece. For example, I tried to colorize the sketch with blending modes in Photoshop, and put photographs on top, but none of these approaches worked.

In the end, a classic approach produced the best result. I simply started the color painting from scratch using my grayscale sketch as a guide for the forms and lighting. The complementary color palette of oranges and purples created a sunset atmosphere, with the cool shadows forming a striking contrast with the warm rocks and sky. The bold, stylized shadow shapes added to this contrasting effect. Slowly, everything came together, and I ended up with an image worth showing. Every painting is a battle for me and there is no single solution. I simply use all the tools that are available to me, until I produce a desirable result."

Image © Maxim Kozhevnikov









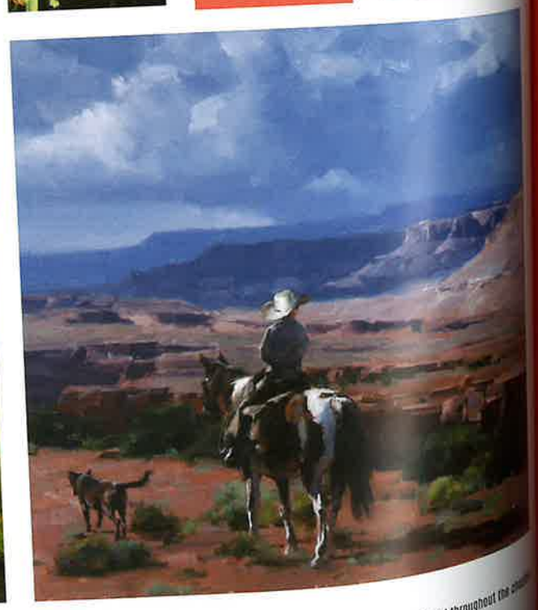












Images © individual artists as listed throughout the chapter

Composition

By Andrei Riabovitchev & Dave Santillanes

To be able to understand composition, you must know about the theories behind it. Composition is built on a scientific basis: mathematics enables us to calculate geometry and perspective; physics determines color and light; biology and physiology operate our eyes and brains; and psychology drives our perception of what we see and how it affects us. All of these elements dictate whether an image looks successful or unsuccessful to us.

It is important to understand how our perception dictates the laws of proportion, symmetry, and rhythm, which are the cornerstones of composition. Some artists are reluctant to study the science behind fine art for fear of hindering their intuitive flow of free thinking, but the natural world is the greatest teacher of composition, and we should be comfortable being its students. Taking note of these theories will enable you to add a realistic, pleasing aura to your images that feels immersive and "right" to the viewer.



▲ 01 The focal point in this image is **placed** according to the golden ratio, **giving** it greater **compositional weight**

COMPOSITIONAL TOOLS

Before we look at all the visual elements that can be used to strengthen your compositions, we will first look at some specific devices that can be applied to the process of creating an image: the golden ratio and the rule of thirds.

Since the days of Leonardo da Vinci, tools like these have served as guides for placement of important items in a painting, such as focal points and other design elements used to direct the eye around the canvas. All of these compositional tools are set up to avoid static or boring compositions. One weakness of these "perfect" systems is that there is no "perfect" way to use them, and the "how" of using them is open to a lot of interpretation. Nonetheless, studying the origins and applications of these tools is crucial for adding an extra level of strength and believability to any composition.

The golden ratio

Throughout history, artists have sought ways to reproduce the beauty found in nature; seeking in particular to apply some level of standardization to compositional forms. Several key ideas emerged from this study of proportion and composition, involving division and symmetry. It was found that artists could create better reproductions of nature through the use of continuous division, seeing the subject both as a whole and in parts.

This is the basis for the golden ratio theory, the history of which is both interesting and vast. In its early days, the secrets of the golden ratio were zealously protected, stored in secret letters that were only accessible to a select few. It can be applied to many structures in our environment, and architects, designers, mathematicians, and other specialists have researched its use.

The human brain instantly and unconsciously measures what we see and gauges whether it has a pleasing quality. Using the golden ratio to harmoniously divide your canvas into unequal yet proportionate parts (**image 01**), and placing points of interest along those lines, creates a far more appealing result than an unequal division with no underlying logic. There are many ways to do this, applicable to a wide variety of shapes, but in the following pages we will focus on two of the most useful shapes for an artist: finding the golden ratio on a rectangular canvas, and finding the golden ratio using the time-honored "golden spiral."

Image © A. Ryabovichev

Art history: origins of the golden ratio

The history of the golden ratio is intertwined with the Italian mathematician Leonardo of Pisa, or Fibonacci, whose book *Liber Abaci* ("Book of Calculation") detailed all the known mathematical problems of the Middle Ages and brought Hindu-Arabic numerals to Europe.

One of these problems asked how many pairs of rabbits would be born from one pair over the course of one year. Working from this, Fibonacci built an infinite series of numbers that began with 0, 1, 1, 2, 3, 5, 8, 13, 21, 34. Each number was created by the sum of the previous two numbers in the sequence. Dividing any of the larger numbers by the one before it yields the golden ratio number: 1.618. This formed the beginnings of both spatial awareness of numbers and the theory of the golden ratio.

Researchers in other academic fields began noticing similar sequences in nature. Interest in the golden ratio grew and it began to be used as the basis for scientific, geometric, and even architectural projects.

The Italian mathematician Luca Pacioli published the book *De divina proportione* ("The Divine Proportion") featuring illustrations by Leonardo da Vinci, which helped to dispel a great deal of the mystery surrounding the golden ratio. At the same time, the German artist and mathematician Albrecht Dürer began to introduce the first treatise about proportion and scale, furthering this new connection between art and mathematics.

The golden ratio in a rectangle

The rectangle is the most commonly used shape for a canvas, so let us begin by outlining how to calculate the golden ratio for it. It is one of the easiest combinations of equations and measurements, so it forms a good base before attempting more complex shapes.

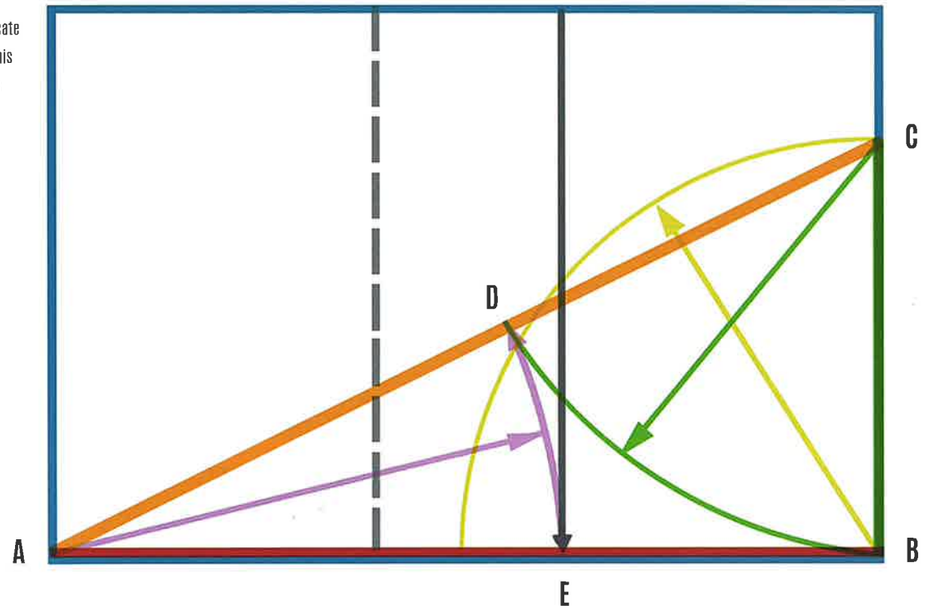
Image 02 shows a rectangle divided according to the golden ratio by finding its proportions along the red line from A to B. The process shown in **images 03** to **06** appears complex but actually consists of quite simple measurements.

- Measure half of the length between A and B, indicated by the dashed red line (**image 03**).
- Draw a perpendicular line of that length at point B, forming a right angle. This creates the green line from B to C shown in **image 04**. Create a triangle by drawing a line from point A to point C, indicated in orange.
- Swing the green C-B line to find a point where it intersects with the A-C line (alternatively, swing half of the A-B line, shown in yellow). This creates point D in **image 05**.
- Swing the A-D line down to reveal the golden ratio mark on the red A-B line. This is point E in **image 06**.

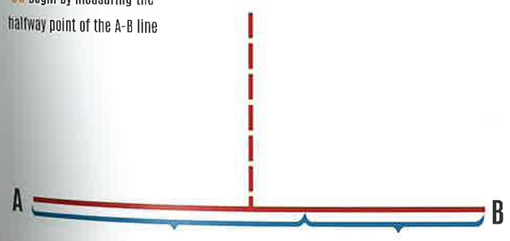
If the golden ratio line were on the left of the picture, it would be located at the same distance from the left side as the right-hand line is located from the right side, as indicated by the solid and dashed gray lines in **image 02**. This measurement works well for an image in a rectangular landscape format; for a portrait-oriented rectangle, simply begin by halving the canvas's height instead of its width.

In **image 07** on the following page, you can see these principles applied to a painting on a rectangular canvas, which will help you get a feel for how the golden ratio affects an image in practice.

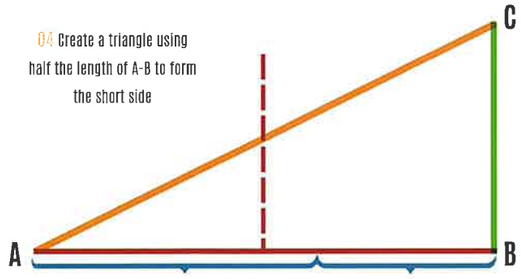
02 The gray lines indicate the golden ratio on this rectangular canvas



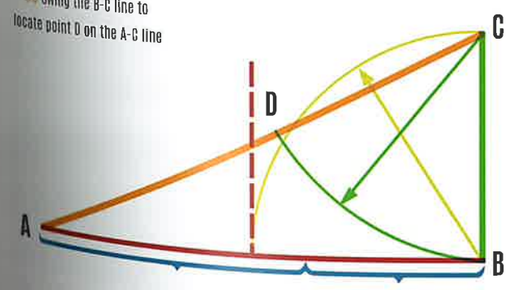
03 Begin by measuring the halfway point of the A-B line



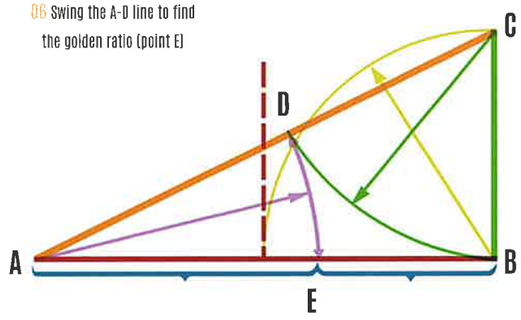
04 Create a triangle using half the length of A-B to form the short side



05 Swing the B-C line to locate point D on the A-C line

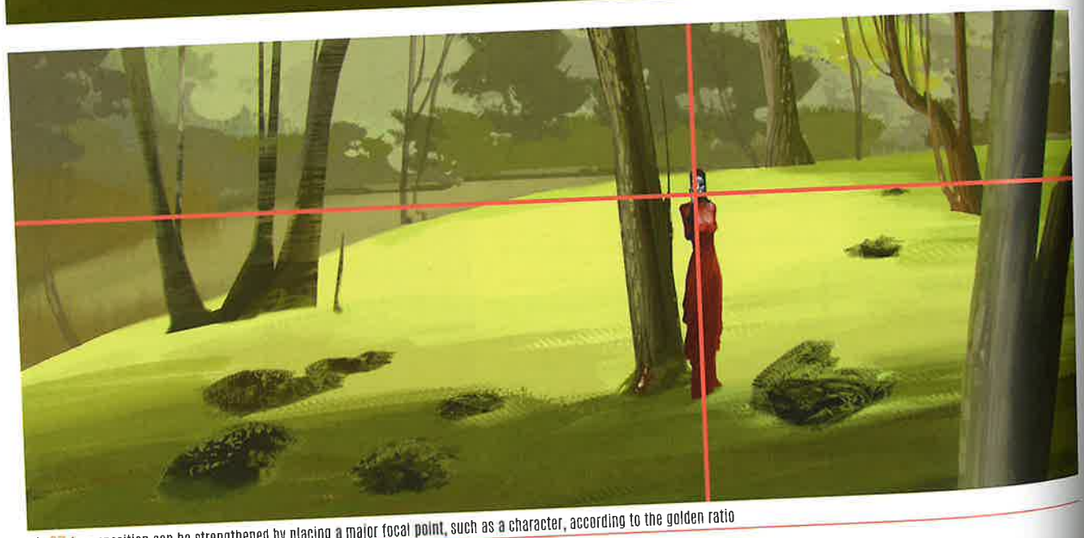


06 Swing the A-D line to find the golden ratio (point E)



Images by A. Ryabovichev





▲ 07 A composition can be strengthened by placing a major focal point, such as a character, according to the golden ratio

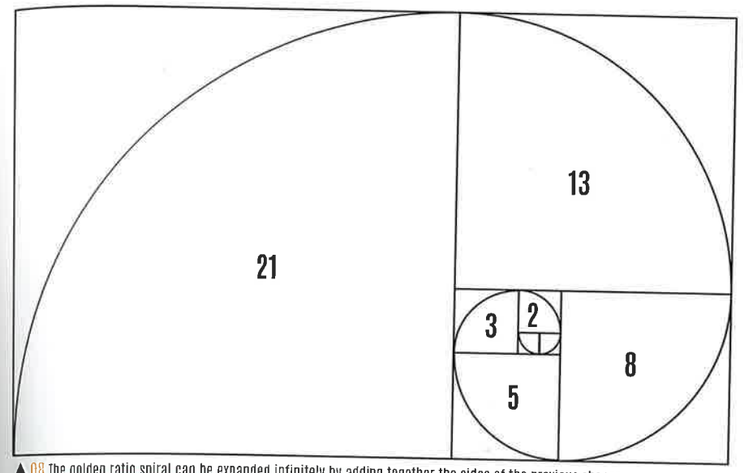
When you first see **image 07**, your eye is drawn first to the woman standing by the tree. This is because she is located on the line of the golden ratio, forming a proportionally pleasing composition with a clear focal point.

This was achieved by measuring the golden ratio early in the sketching process, using the method previously shown, and positioning the figure and tree over the line. The figure in the resulting image, aided by contrasting light and color, holds a strong presence in the environment.

The golden ratio in a spiral

The golden spiral, or Fibonacci spiral, is often what comes to mind when artists think of the golden ratio. It is a spiral that increases proportionally according to the growth of numbers in Fibonacci's infinite sequence. The sides of each square in **image 08** match the Fibonacci numbers mentioned on **page 94**; the sums of the squares create rectangles, and an ever-increasing spiral shape can be extrapolated by drawing a curve through the resulting squares and rectangles.

Image 09 shows the spiral pattern present in a painting, where it subtly guides the pleasing curve of the landscape and is used to locate the image's key focal point.



▲ 08 The golden ratio spiral can be expanded infinitely by adding together the sides of the previous shapes

"The golden spiral, or Fibonacci spiral, is often what comes to mind when artists think of the golden ratio"





▲ 09 A composition can be strengthened by placing a major focal point, such as a structure or character, according to the golden ratio

Images 07 and 08 © A. Ryabovichev
Image 09 by o_a / stock.adobe.com

The rule of thirds

The rule of thirds is another mathematically derived tool used for composing images. The golden ratio is said to be the perfect proportion and the rule of thirds is a sort of abridged version – an easy-to-estimate approximation of it. Ultimately, composing a painting is about balancing shapes and other design elements without placing the fulcrum directly down the middle. Shifting the weighted elements according to the rule of thirds or the golden ratio, as we have seen already, enables you to balance them on the canvas in a much more dramatic way (**image 10**).

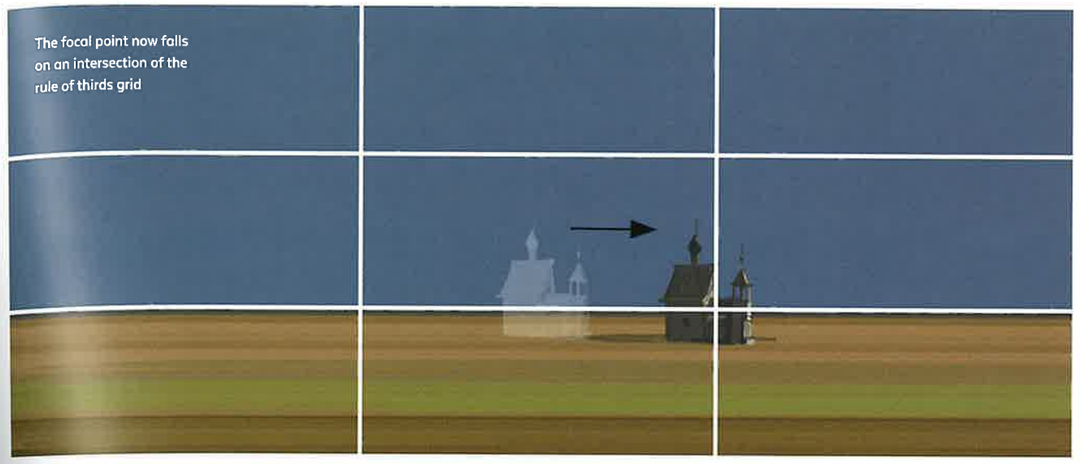
To create a guideline for the rule of thirds, simply divide the canvas into equal thirds horizontally and vertically, resulting in a grid of nine squares or rectangles. Placing your focal points on an intersection of these lines will create a dynamic composition.





Practicing composition

The best approach for implementing these compositional tools is not to lay them down as a grid on your canvas to serve as a roadmap to a "perfect" composition, but instead to use them as a way to analyze your designs afterward – especially designs that fall short. In this way you are trusting and developing your own instincts for design and do not become over-reliant on systems that might not work as a blueprint in all of your images.







▲ **10** The final composition has a much more pleasing and natural appearance than the first version

Images by A. Ryabovichev

COMPOSITIONAL DEVICES

Now that you are acquainted with the tools and formulas that can be used for planning a composition, this section will explore the broader visual elements and features that can form a composition. Some or all of the following elements can be found in any image; being able to identify them, and discern whether they are successful, will help you to make dynamic, effective compositions that entice the viewer into the scene you have created.



▲ 11 Organic landscape elements such as the tree and stream balance the composition of this image

Balance

In terms of composition, balance refers to the visual equilibrium created by the placement of the major shapes within the four corners of the canvas. The ideal is to have visual weight evenly distributed across the canvas. In order to achieve this, it is important to understand what constitutes a shape in a painting and what gives it "visual weight." We often confuse "shape" with "object"; while every object has its own shape, three distinct objects when grouped together might merge into one shape rather than three. Grouping separate objects is one way to increase visual weight.

Visual weight

The visual weight of each shape is determined by its color, value, and size. Regarding value, higher-contrast areas will carry a heavier visual weight. For example, a small, dark shape on a white background will have a heavy visual weight. Conversely, a larger shape that is similar in value to the background would have a much smaller weight.

A shape with highly saturated color, surrounded by desaturated colors, would have more visual weight than a desaturated shape on the same background. A larger shape, all other things being equal, will have a heavier visual weight than a smaller shape.

Achieving balance does not necessarily mean grouping the same size and number of shapes on both sides of the canvas. While this might create a balanced composition, it would probably not be a very interesting design, as no single element would dominate, resulting in an image with no focal point. Instead, balance is better achieved with different-sized shapes grouped together on one side and one large, light shape on the other. Or perhaps one small, heavy shape can be balanced by the large negative shape it creates. Combining shape variety with visual weight offers infinite ways to create a balanced composition.

Images 11 and **12** show a fairly uniform example of balance, but you will notice that the elements are not identical or static. The stream cuts through the canvas to create two large shapes on either side that share equal mass. The stream flows slightly off-center to the lower right but is balanced in the upper left by the shape of the trees in the distance.

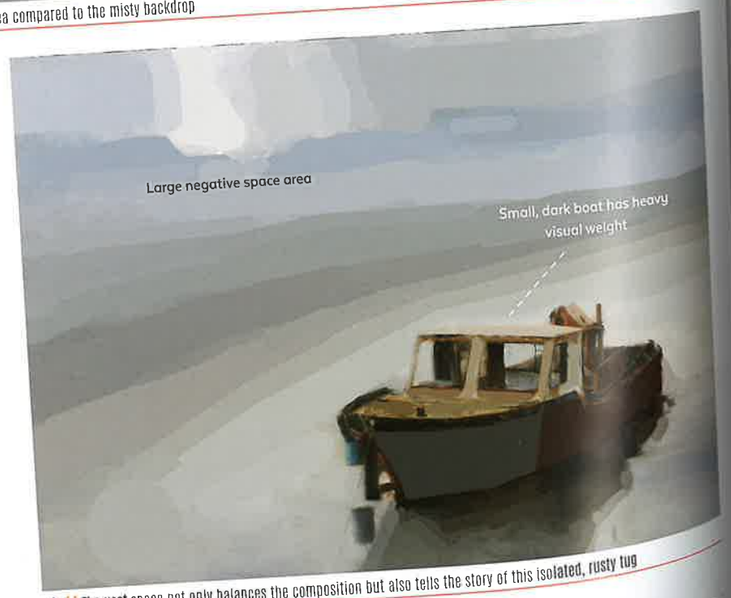
The Coming Rain © Dave Santiago

12 The left and right sides of this landscape seem similar but are balanced by a variety of environmental details



▲ 13 The old boat in this scene occupies a relatively small area compared to the misty backdrop

In **images 13** and **14** the heavy shape of the boat is balanced in the composition by the vast negative space around it. This space is made slightly heavier with some value changes at the horizon and the focal point of light breaking through in the upper left.



▲ 14 The vast space not only balances the composition but also tells the story of this isolated, rusty tug

Moored at Ballachulish © Dave Santillanes

Focal points

Focal points are centers of visual interest in a painting. While there may be multiple focal points in a composition, ideally one will be dominant while others take on more supportive roles. If you have too many focal points, it will be difficult for the viewer to distinguish between their levels of importance in the scene, as the eye cannot look in two or three places simultaneously.

Types of focal point

Focal points are created in a variety of ways using the elements of design – particularly shape, value, color, and edges. The human eye tends to focus on differences – or contrasts – in an image. When we create such differences in an object relative to its surroundings, we have created a visual focal point.

For example, if all the edges in a painting are soft and you paint an object with a very hard edge, it will become a focal point. If you have a light-valued object surrounded by dark values, or a vertical shape among horizontals, you will create an immediate focal point, intentionally or not. Color can also play a role – if you have a colorful object surrounded by muted grays, it will demand the viewer's attention.

Positioning a focal point

The position of a focal point within the four corners of the canvas further describes its visual importance, according to composition guidelines such as the golden ratio and rule of thirds (see **page 92**). Focal points can be used in conjunction with other compositional devices to guide the viewer's eye through the canvas and help tell the story.

In **images 15** and **16** the main focal point is obvious – the barn to the right contains several contrasts that help draw the eye. Its dark value contrasts with the bright sunlight behind it. Its reddish hue contrasts with the muted colors beyond. Its sharp edges contrast with the soft edges around it. The size and weight of its shape set it apart from any other shape in the scene. It is also placed roughly using the rule of thirds. There are other supporting focal points, such as the mountain in the background, but while its shape and size are very similar to the barn, it carries very few of the same contrasts.



▲ 15 The contrasting qualities of the barn make it the clear focal point of this painting



▲ 16 The sharp edges and warm hues of the barn stand out against the cool softness of the snow and sky

Fading to Gray © Dave Santillanes

Proportion

As it applies to composition, proportion describes the size relationship between different areas of visual interest on the canvas compared not just to each other but to the entire canvas. Put another way, it is the ratio with which we divide the canvas between different elements based on their size and visual weight in order to establish focal points and levels of importance. One example of proportion would be how to divide the canvas between earth and sky in a landscape painting. If the painting's focus is a unique cloud pattern, it would not be appropriate to devote three-quarters of the canvas to the earth. If a mountain lake occupies more than half of the painting, it would be difficult to convince a viewer that the painting is about anything else.



▲ 17 The fiery, billowing cloud occupies a proportionally large area in this landscape scene



▲ 18 The proportions used create a sense of vast scale and drama, making the ground and buildings appear even smaller

Beauty and Beast © Dave Santillanes

Dividing the canvas

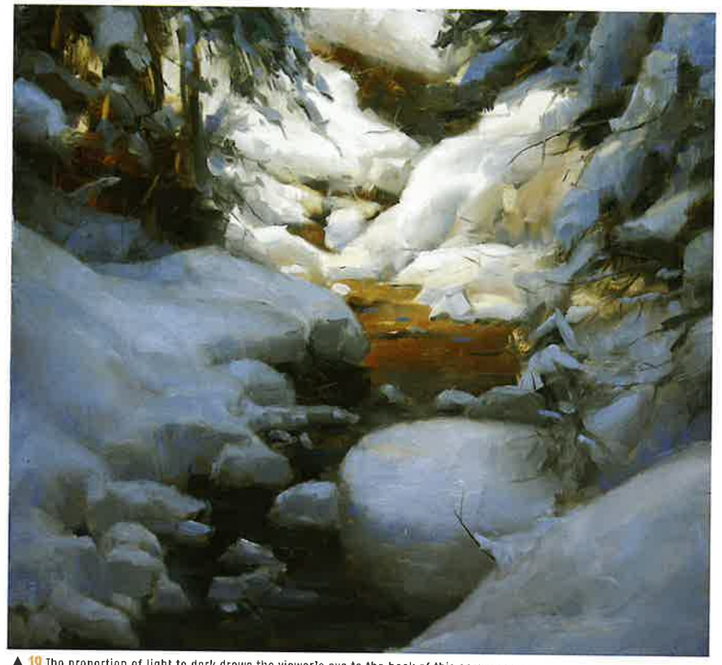
How much to allocate to each element is a matter of what the artist finds pleasing to the eye, but there are some guiding mathematical principles that can be used to help determine this, such as the golden ratio and the rule of thirds, which we explored on **page 92**.

In **images 17** and **18**, the sky filled with smoke and fire occupies two-thirds of the canvas, while the land occupies the remaining third. The farm on the right is a key focal point which is accurately proportioned to the landscape, but is disproportionately tiny compared to the immense fire. All of these size relationships serve the purpose of describing the vulnerability of the farm in the path of this ominous wildfire.

Proportions of other elements

The principle of proportion can also apply to the relativity of design elements within the composition. For example, the ratio of saturated to non-saturated color, the ratio of hard edges to soft edges, of light to shadow, or even of cools to warms.

Images 19 and **20** show how proportion can apply to other design elements. In this painting it was important to determine how much canvas to devote to the light areas and how much to the shadows. The dividing line between light and shadow ended up following the golden ratio **(page 94)**, and the design itself was reminiscent of the golden spiral.



▲ 19 The proportion of light to dark draws the viewer's eye to the back of this snowy scene



▲ 20 Light and shadow are just two qualities that can be combined with other compositional tools

Bear Creek Winter Study © Dave Santillanes

Directing the eye

When developing a composition, you have the ability to visually walk the viewer through your painting and control the image's message. This is what is meant by "directing the eye." Through the placement of certain design elements, you can create a visual map through the canvas that tells the viewer how the sequence of visual events should unfold. This is important not just to lead the viewer to the main focal point, but ultimately to control how the image's story is told.



Directing with focal points

One way to do this is through the placement of dominant and subordinate focal points. As discussed, focal points are made up of contrasts, and the human eye is drawn to these areas. You can use this human tendency and your knowledge of design elements (such as shape, color, and value) to tell the viewer where to look. The placement of these points of visual interest, and whether they are primary or secondary, will determine the ultimate sequence.

Directing with shape & line

Shape and line can also be used to direct the eye between focal points, as our gaze tends to follow these visual cues subconsciously. These directional lines can be real, such as the edge of a stream, or perceived, such as the gaze of a rider toward a distant mountain. Many types of directional lines and shapes can occur naturally within an environment – roads, rivers, rocks, logs, or perhaps the one-point perspective of a city street – and all can be helpful in guiding the viewer through the scene.

In **image 21**, the eye is directed along the path of the river – up and to the right. Then it is sent immediately back to the left along a distinct angle of willow shrubs, where the viewer arrives at the primary focal point of this painting, which is the light on the distant mountains.

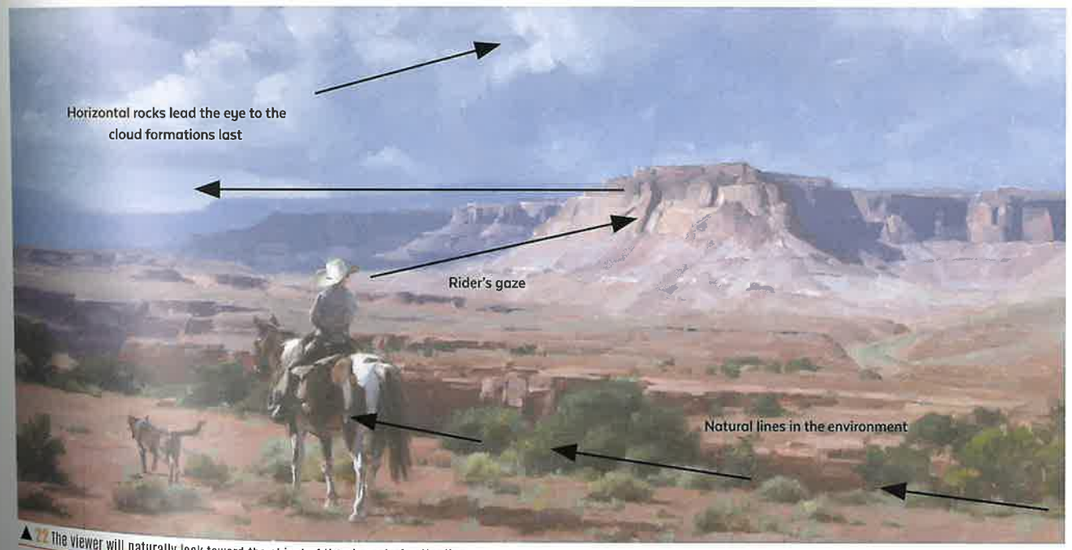
Image 22 shows an example of a perceived directional line, in which the viewer follows the rider's gaze back toward the mountain.



▲ 21 Features of the nearby environment are used to guide the viewer's eye to the mountains

Winter on the San Miguel © Dave Santillanes





▲ 22 The viewer will naturally look toward the object of the character's attention

The Explorers © Dave Santillanes

FUNDAMENTALS APPLIED...

THE HUNT

Martina Fačková

Tools: Adobe Photoshop

"The inspiration for this personal piece came while I was skiing in the snowy High Tatras mountains. I imagined a peasant girl who was in some way different, and for that reason, was being hunted through the winter forest as a monster. Her dead father's sword was the only precious thing she managed to grab while on the run.

I always try to paint images that make the viewer feel as if the character is a real person. With this painting, I wanted the viewer to feel the cold snow on their skin and the hot blood in their face. I aim to tell believable stories and always try to use elements that grab the viewer's attention and hold it.

There are a few compositional elements that I used to help me create the best visual read. The most obvious is the big white snowy bush behind the girl that frames the primary focal point of her head and torso. The branches also help to create the feeling of being trapped. This placement of darker values against lighter values creates a tonal structure in the painting, and that is always the first thing that the viewer sees, even if the painting is very small or in grayscale.

Color was the next tool I used to help guide the eye. The red hair naturally grabs attention and brings us to the girl's face. Then the eye can follow the pattern down to look at her wound or her freezing fingers. The orange leaves help to connect the figure with her surroundings. The whole image is carefully designed to keep the eye wandering around the scene and not lead the viewer outside, such as branches pointing at the girl, the big bush 'grabbing' her, and her head turned to the center of the image. One last thing that I consciously designed was the four hands. The monstrous nature of the girl was not meant to be the first thing that the viewer notices, which is why I 'hid' the hands within her silhouette."





▲ 23 The viewer's gaze naturally moves up the stream toward the bright trees in the distance

Rhythm

As our eye moves through a painting, we may discover a certain visual tempo to the movement from one area to another on the canvas. This is the rhythm of the painting. Rhythm is a principle usually applied to music and writing, and is not as easy to define in art, but as noted, it works very closely with "directing the eye."

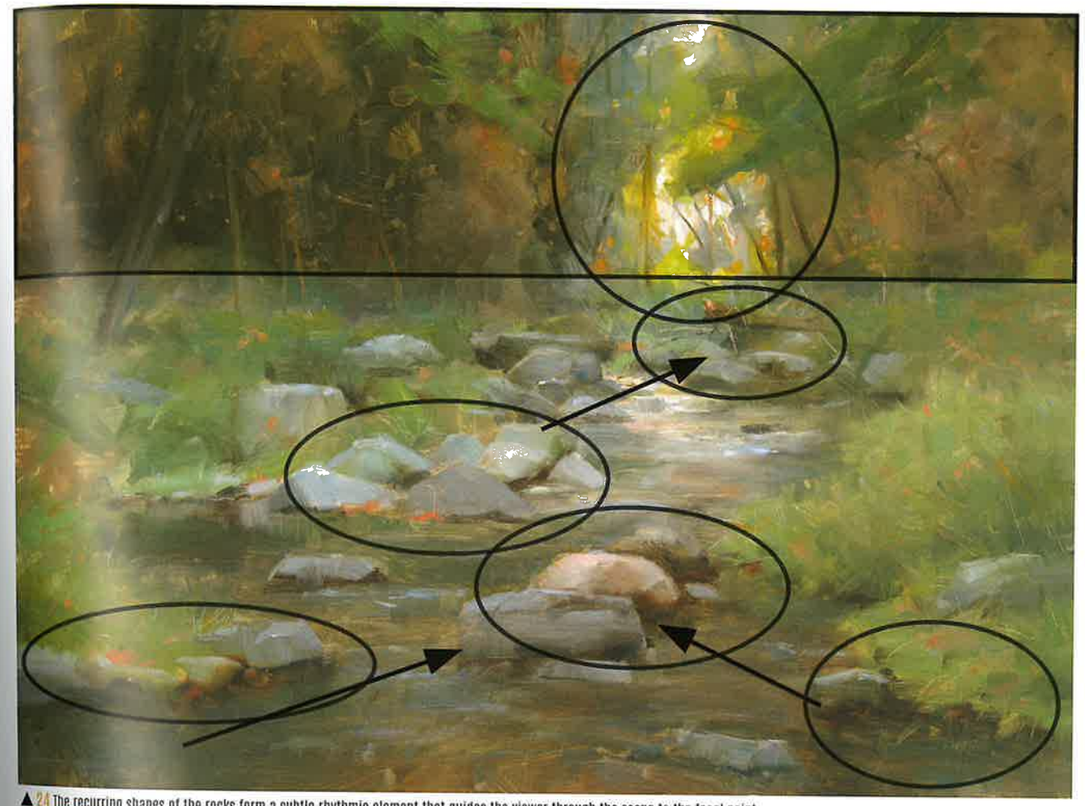
The difference is that while directing the eye provides the map to travel through the painting, visual rhythm provides the tempo at which we travel between areas of visual interest. So whether the rhythm has a regular, random, alternating, flowing, or some other pattern, it is a useful compositional device to help convey the overall mood of a painting.

In **images 23** and **24**, for example, the repeating pattern of rocks along the stream creates an underlying rhythm as the viewer travels from one group of rocks to another, toward the bright crescendo of the focal point at the end. This compositional structure is subtle and organic, embedded into the environment in a way that the viewer will not consciously notice.

When composing an image, consider how you can place objects or other elements in it – such as similar shapes or recurring details – to immerse the viewer and pace the eye as it travels around the scene.

"Visual rhythm provides the tempo at which we travel between areas of visual interest"

Oak Creek Passage © Dave Santillan



▲ 24 The recurring shapes of the rocks form a subtle rhythmic element that guides the viewer through the scene to the focal point

Analyzing composition

As mentioned at the beginning of this section, some or all of these compositional parts will be present in any image, whether we consciously recognize them or not. Try looking at paintings by your favorite artists to see if you can identify these elements and analyze how they serve the image. When making your own images, consider if there is a device that you could pay closer attention to, or if there is potential to introduce a new element or approach. This could help to make your image more effective or give a good composition the extra push it needs to become great.

FUNDAMENTALS APPLIED...

WITCH

Valera Lutfullina

Tools: Adobe Photoshop

"This image was an exact case of not knowing at the beginning what the end result would be. First, I thought about the *khorovod* – one of the oldest Slavic dances. I thought that there should be a lot of goats, with one big white goat leading the dance on its hind legs, but this tore the picture apart. I decided to move away from the white goat idea and make a more human-oriented scene, with a woman in charge and all of this wild pagan festivity here because of her.

I wanted to create the effect of watching something secret or dreamlike, something not intended for prying eyes, which is why I allowed so much space for the meadow. It puts distance between the viewer and the procession.

I used the simple rule of thirds to break the image down into sections: the dark ground and the light sky. The tonal contrast is the greatest contrasting element in the image, and helps to clearly single out the woman and her retinue as they are silhouetted against the sky. The color scheme and lighting could be either night or day, dream or reality – there is no certainty about what is happening.

To encourage the eye to explore all this distance between the viewer and the procession, there is a kind of S-shaped rhythm in the composition, created by the lighter values of the creek and *umbelliferae* plants. This leads the viewer to the big goat and then to the woman, whose sightline is angled slightly towards us, as if she has noticed the viewer."

Image © Valera Lutfullina



▲ 25 Multiple elements including lighting, scale, and perspective work together to make this composition successful

ENHANCING COMPOSITIONS

Now that the foundational elements and tools of composition are more familiar to you, you can begin to combine them with your knowledge of light, value, and hue, and to play with extreme compositions to create visual drama or an intriguing narrative. Even if a picture simply consists of cloudless sky and green grass, the horizon line that divides the picture comes under the banner of composition. Any object placed on your white canvas will have a bearing on the composition.

Artists are often led by feeling and spontaneity in creation, though this can have the drawback of resulting in visual errors. Before you sketch your picture, it is important to visualize an overview of your final piece. Envision where each component in your picture will be placed, such as the horizon line, and also what light and color palettes you will use, as these will have a bearing on your composition too.

Composition, in general, is still dictated by feeling to some degree. Without imagination, fantasy, and inspiration, a picture will often lack impact. However, it is necessary to analyze and use formulae to support your creative ideas.

Image © A. Ryabovichev



Combining your skills

Advanced artists understand that until a strong composition is found, there is no sense in delving deeply into the individual components of the picture; even if separate elements are executed well, they lose their impact if they are arranged poorly. Learning how to synthesize multiple aspects of image-creation will help you to create compelling work that succeeds on many levels.

Image 25 uses multiple elements to create an immersive composition, such as linear and repeated elements, as discussed on **pages 106** and **110**. It also features contrasting light and shadows, and objects of different scales, which we will explore further in the following pages.

Composing with light

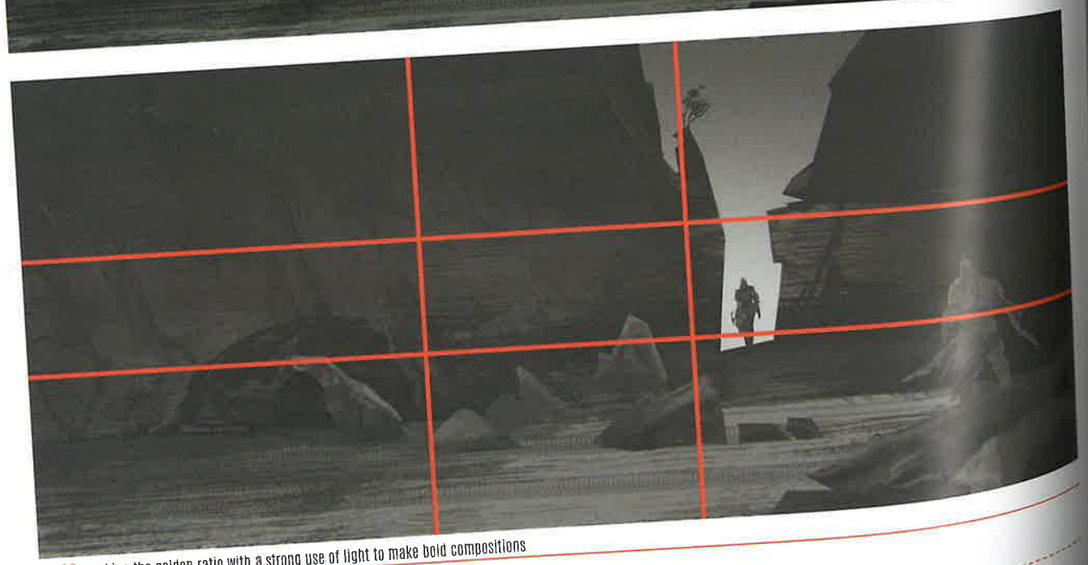
As you saw in the **"Light & shape"** chapter (**page 8**), light is perhaps the most powerful force for creating atmosphere and focusing the viewer's gaze on specific areas of a composition.

A high-contrast shape, whether light or dark, stands out vividly to the viewer as an important element of the composition. In **image 26**, for example, the light values create the effect of an "object" in the scene. The viewer's eye is immediately drawn to the bright shape with the silhouetted figure, not only because it is very visible in its location near the golden ratio (**page 94**), but because the light and shadow contrast so strongly.

No artist can create an image without a variety of values, whether these are light, midtone, or dark. There are many ways that lighting and value can play a part in the composition of an image, and you should typically consider organizing an image in one of these three ways:

- A light object with a dark background (**image 27**)
- Light or dark objects on a midtone background (**image 28**)
- A dark object with a light background (**image 29**)





▲ 26 Combine the golden ratio with a strong use of light to make bold compositions

Images © A. Ryabovichev



▲ 27 You can create a bold composition with a light-on-dark arrangement of values



▲ 28 This composition mixes light and dark objects against an overall midtone value



▲ 29 Dark objects create high impact when composed on a light backdrop



▲ 30 This image has a largely symmetrical composition but the figure and shapes of the rocks ensure it does not become too static

Playing with symmetry

Perfect symmetry is rarely encountered in organic life, and so is rarely used to express organic matter in paintings. However, too much disturbance of symmetry can be perceived as incorrect or even deformed. The golden ratio is based on finding a point that is slightly off-center on a given line, creating dynamism that expresses activity, motion, and development. It creates variations in the division of objects, exuding a sense of movement and asymmetry without being displeasing to the viewer's eye.

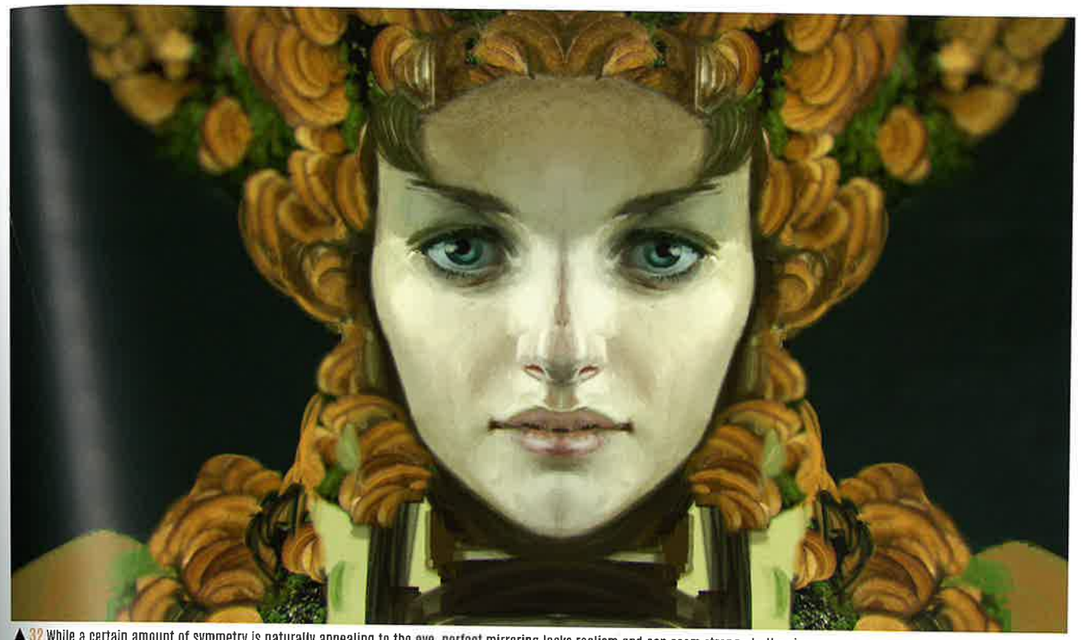
Images 30 and **31** show compositions that are roughly symmetrical along the vertical axis. However, they contain differences in either side, and off-center figures that make the scenes look more organic and engaging.

If you consider the realism depicted in **images 32** and **33**, it is clear which composition conforms to static symmetry and which is more dynamic. As organic subjects are never completely symmetrical, it is also clear which version has more believable proportions.



▲ 31 The rocks and figures break the symmetry and add dynamism to this composition

Images © A. Ryabovichev



▲ 32 While a certain amount of symmetry is naturally appealing to the eye, perfect mirroring lacks realism and can seem strange to the viewer



▲ 33 This version of the image retains elements of symmetry without both sides being completely identical

Experimenting with scale and ratio

Scale

Many compositions are carried simply by the use of scale, which enables you to allocate importance to certain objects over others. **Image 34** shows some rock formations of unknown size; the viewer has no concept of their scale until human figures are added to the scene in **image 35**. This enables the viewer to judge the size of each object by the way they relate to each other proportionally. To give the foremost rock an even larger presence, it could be extended outside the borders of the canvas and beyond the limits of the composition, giving the impression of incredible size (**image 36**).

Ratio

In **image 37**, the viewer automatically glances at the vast empty space, then at the cliff, and up to the rider. This whole process only occurs for a fraction of a second and is entirely unconscious. The drastic ratio of sky to cliff creates perplexity and tension in the viewer, and they begin to question what is happening in the picture. Is it an end or a beginning? Is the rider in danger or admiring the scenery? Consider how you can balance the relative sizes of objects or spaces in your image to make a greater impact, such as in **image 38** where the lone warrior is the focal point of the open forest space.



▲ 37 The sky dominates this scene, adding drama to the presence of the cliff and rider



▲ 34 Without a smaller element for context, the viewer cannot gauge the size of the subject



▲ 35 Tiny human figures instantly put the vastness of the rock formations into a clearer context



▲ 36 The scale of the rocks can be exaggerated even further by extending them off the canvas entirely

Images © A. Ryabovolov





▲ 38 The proportion of light, open space to dark, detailed areas helps guide the viewer to the desired focal point



▲ 39 The angled perspective in this scene affects the composition and placement of the characters

Considering perspective

Perspective refers to the position of the viewer in relation to the objects in the scene. We look at objects with two eyes, but only see an image from one perspective; this perspective is from an angle located at the bridge of the nose. From this point, the viewer's principal line of sight is directed toward one main subject, and can be angled upward, downward, or on a level with the subject in the scene.

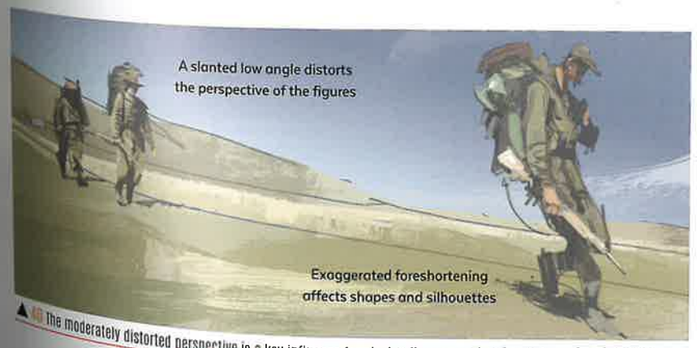
Perspective is linked to composition because it considers the subject's visibility from a certain angle in your image. The distance and angle between the viewer and the objects in the image directly correlate to the composition of the piece. Perspective addresses the limitations within your frame of sight, and because of this, it is important to consider perspective and composition together.

Images 39 and **40** show a composition with a slanted, angled perspective that distorts the proportions of the figures by elongating the first figure and shortening the final one. Some of the characters' limbs are subject to foreshortening (see **page 151**), which affects their placement on the page.

It is possible for artists to accurately determine the precise distances between any objects in a scene, and it is always possible to find and manipulate the most appropriate point of view. This will be covered in more detail in the **"Perspective & depth"** chapter on **page 132**.

Images © A. Ryabovitser





▲ 40 The moderately distorted perspective is a key influence for placing figures and judging distance in this scene

PLANNING COMPOSITIONS

Even experienced artists are unlikely to compose a perfect image on the first try, with no prior planning. Creating thumbnail sketches is common practice for visual creatives in many industries (**image 41**). These small, loose sketches help artists from many creative backgrounds to test ideas for a composition, explore different ways to tackle a subject, and see whether an image will work on its most fundamental level before investing time in it.

Each new concept requires a personalized compositional solution, and each time the artist must search for it, or the idea will die. Simply fulfilling all the laws of composition will not guarantee an excellent picture – you must also have a creative approach to your solution, selecting the most relevant ideas and methods for the picture, in order to achieve success. Composition, figure placement, value, contrast, and color all contribute to the idea's success. Here are five useful rules for creating thumbnails.

Keep them small

Although thumbnail studies maybe larger than the one or two centimeters of an actual human thumbnail, it is still best to keep them small. This will encourage you to be bolder and more shape-oriented, avoiding extraneous detail. You can also build coverage more quickly, though the larger the study, the longer this can take, depending on your medium. Between four and eight centimeters is a good working size.

Do not get attached

As a thumbnail is so small and rough, you are unlikely to become too attached to it. When you are less attached to an idea, you are free to be experimental, which is the spirit you want to invoke in the thumbnail stage.

Fewer lines, more shapes

Working with shape and tone does not mean the complete abolition of lines. Lines are a natural way to gain control in drawing, but as much as possible, focus your thumbnails on major shapes and tones. Avoid ultra-fine pens or hard pencils; instead, use drawing tools that make bold, decisive marks, such as a dark, soft pencil, a broad-nibbed marker, or even a brush.

Use limited values

Shapes are defined by areas or tonal value, so using fewer values forces us, in a very direct way, to find the shapes that make up our composition. Three or four discrete tones are more than enough to capture a basic compositional structure. Too many can lead to too much complexity and muddle the clarity of your vision.

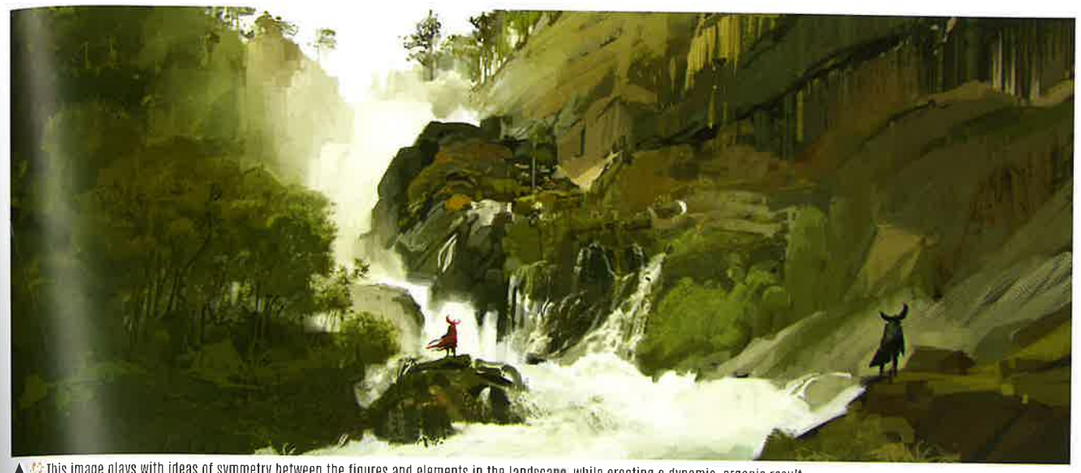
Keep them simple

Adding more detail never solved a compositional problem that would be better worked out with basic shapes. Keep with the broad, shape-oriented approach and avoid drawing fine details. Drawing is useful, but only insofar as it help us to define the placement of major shapes.



▲ 41 Thumbnails are an essential tool for planning compositions

Images © A. Ryabovichev



▲ This image plays with ideas of symmetry between the figures and elements in the landscape, while creating a dynamic, organic result



▲ 43 This image uses value, hue, shape, scale, texture, and off-center focal points to create an engaging scene with depth and distance

YOUR SUBJECTIVE OPINION

Though this chapter has dealt with some objective calculations, let us end with a note on subjectivity. It is easy to assume that when we look at something, we all see the same color or object, but that is not the case. Our vision gives us a reflection of the objects we see, and we do not doubt their truth, but in reality our brain fills in some of that information based on what we expect to see. It is the artist's job to see beyond this and make their own judgment.

Even though objectivity is possible in terms of object placement and composition, a final image will always be based on your subjective opinion, particularly when addressing color, which is affected by so many external stimuli (**images 42** and **43**).

Excellent artists frequently ask themselves, "Why is this picture so interesting? What is it that makes it stand out?" People in general are attracted to the uncommon and mysterious, almost as much as beauty. Albert Einstein noted that man's deepest, greatest experience is that of mystery. While measurements and formulae are useful, an artist must use their intuition and imagination to fill in the gaps that objective calculations cannot. That is how masterpieces are made.

FUNDAMENTALS APPLIED...

HONEY HUNTERS

Maxim Kozhevnikov

Tools: Adobe Photoshop, 3D modeling

"This image was one of a series of illustrations I created for my graduation project at the Art Center. I was trying to depict a story from the everyday routine of some nomads. These two men make a living by selling a very rare type of honey, acquired from a special type of bee that nests on the walls of some ancient ruins. One of the hardest parts was to come up with an idea for the story; on top of that was the additional challenge of using 3D software, which at that time was not a part of my pipeline.

As the story was the most important part of this piece, I wanted not only to create a good visual composition, but one that would convey some of the narrative behind the world I was trying to depict. The biggest challenge to achieving this was the elimination of unnecessary elements. My early ideas included a camel-like animal to help carry loot through the desert; I also had a lot of ideas for floral elements and different types of trees that might flourish among the ruins. However, these details were not essential to the story, and were competing too much with the architecture.

The light and mood were also difficult to resolve, as it was very easy to lose the feeling of lightness and adventure, turning the whole piece into a dark and dirty composition that I did not want. Trimming excessive details from the concept, even if I liked them a lot, ensured that the final composition was bright, open, and appealing."

Image © Maxim Kozhevnikov

FUNDAMENTALS APPLIED...

ASCENT TO THE LAKE OF MOUNTAIN SPIRITS...

Rinat Khabirov

Tools: Adobe Photoshop

"One summer I went hiking in the Altai Mountains, a very beautiful place in Russia. I was inspired by the gigantic stones scattered throughout, the forms of the sharp rocks and mountains, the stormy azure rivers, and the flora and fauna. I especially remember the shadows cast by the stones, which inspired me to use long, contrasting shadows in my work. All these impressions served as a great impetus for this project.

I wanted to create a composition with a striking shape contrast between the large stones and small person, using scale to show the power and greatness of nature and to encourage a greater emotional impact in the viewer. Bright rays of sun would reflect off the stones to create a dazzling effect, lighting the figure with a strong glow to create a focal point.

A complementary color scheme gives the image even more contrast, balancing cool blue rocks with small areas of warm hue. Many books have been written about the perception of color – I recommend those of Swiss painter Johannes Itten and illustrator James Gurney.

I often use a mix of traditional and digital media, and for this image, I used traditional monotyping, scanning the resulting patterns and adding them to the scene. This use of texture ensures that the stones do not look monotonous and, along with the different shapes in the terrain, creates variety and detail that engage the viewer in the composition."





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ASCENT

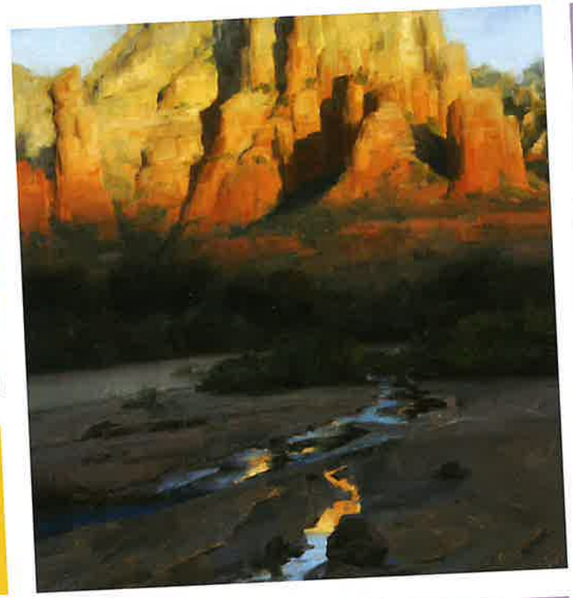
Axel Sauerwald

Tools: Adobe Photoshop

"The idea of a multi-figure composition had been on my mind for a while. When I made a quick cloud sketch for a live stream, it offered the perfect opportunity to begin realizing my initial idea. The aim for this artwork was to create a simple but striking multi-figure composition, with the Pre-Raphaelites being a big inspiration for the characters and the overall feel of the painting. Projects like this are always a great learning opportunity. There is much to learn by leaving your comfort zone and tackling scenes and subject matter that are not very familiar.

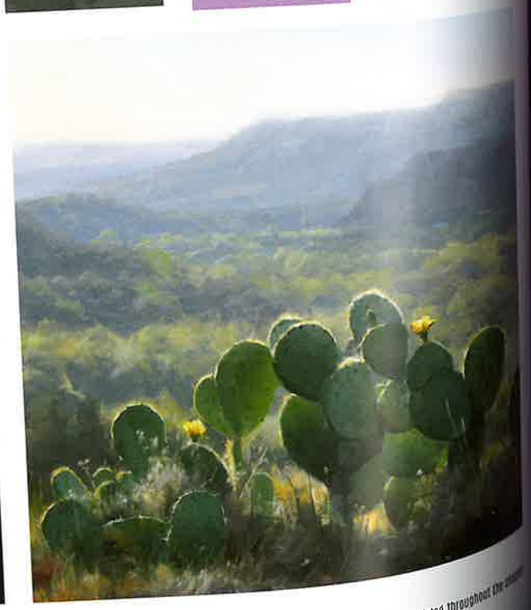
One of the challenges of creating a striking composition is achieving a strong impact at first glance, and then inviting the viewer to explore the image further. It was very important for this image to have a clear separation of the value groups of the foreground and background. The characters have a strong, readable silhouette while the background remains hazy and light.

Within the main shapes of the foreground, I could then place shapes and details in a way that guides the viewer's attention to the focal point of the main character. Balancing the range of values of both foreground and background was also very important to create believability in the scene, giving it convincing atmospheric depth."





Images © individual artists as listed throughout the chapter

Perspective & depth

By Roberto F. Castro & Dave Santillanes

Perspective has always been the tool with which artists have tried to represent reality. We live in a three-dimensional world, and since the birth of artistic representation, humans have tried to shape and recreate that world in the two-dimensional realm. This chapter will explore perspective and depth – two closely linked but essentially separate subjects.

Perspective is how an image is seen by the eye, with its two main features being that objects become smaller the farther away from the viewer they are, and that their dimensions along the viewer's line of sight appear relatively shorter than across the line of sight (known as foreshortening).

Depth is the broader concept of indicating three-dimensional feeling in an image. The artist has many tools to attain the sensation of depth in a drawing, such as light, color, and level of detail. Together, perspective and depth can be used to create immersive, believable, dynamic scenes that place the viewer in the world you have created.

ART HISTORY: THE PAST IN PERSPECTIVE

Although the first attempts to represent the real world are visible in early, rudimentary cave paintings, such as the Lascaux paintings shown earlier in this book (**page 54**), the illusion of three-dimensionality was absent from Western art before the fourteenth century. It was the artists of the Renaissance who solidified ideas of perspective in art that we still recognize today, and introduced methods of constructing images that are still valuable for contemporary artists.

The rise of perspective

It was not until the Renaissance that artists clearly began to experiment with perspective and depth to create more obviously three-dimensional images; before that, European artists had not aspired to reproducing realistic space in their images. Artists such as Giotto di Bondone, an Italian painter and architect from the proto-Renaissance era, began to develop perspective in their artworks, introducing foreshortening and depth to the architecture and figures in their scenes (**images 01** and **02**). These artists paved the way for the sophisticated portrayals that we associate with the Renaissance (**image 03**), and over the years that followed, perspective became more polished and more prominent in popular art.

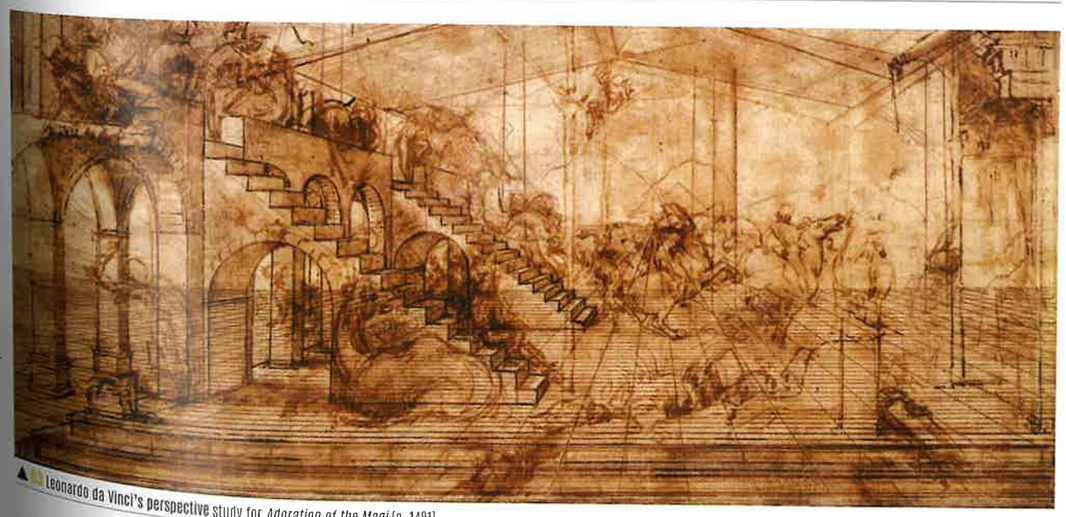
By now, we have further developed our ideas of perspective and depth, and gained greater awareness of its impact in images. We have been able to apply this knowledge to the benefit of many different fields in both fine art and the wider design community. In any image, we can clearly see any discrepancies in the portrayal of perspective and depth, and therefore try to correct and apply believable dimensions in our own artwork.



▲ **01** Giotto di Bondone's *Ascension of St. John the Evangelist* (c. 1320)



▲ **02** Giotto di Bondone's *Nativity from the Lower Church in Assisi* (c. 1310)



▲ **03** Leonardo da Vinci's perspective study for *Adoration of the Magi* (c. 1481)

PERSPECTIVE

Before explaining how perspective is constructed, we should address the nature of space and how it is interpreted on the basis of three dimensions. Capturing the illusion of these three dimensions on paper or canvas is what gives a realistic feeling of perspective to a two-dimensional artwork. In this section, we will compare and contrast axonometric and conical perspectives, explore different sub-types of these two respective groups, and see how these can be applied to shapes and compositions.

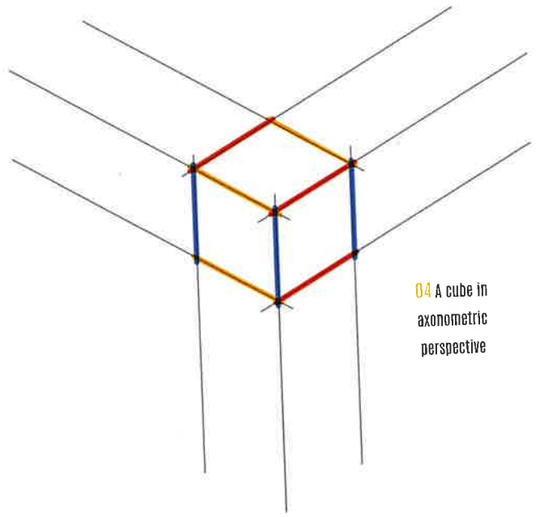
The three dimensions

Perspective assumes that space is structured along three orthogonal (perpendicular) axes that provide a spatial reference system. These axes (X, Y, and Z) are based around three dimensions:

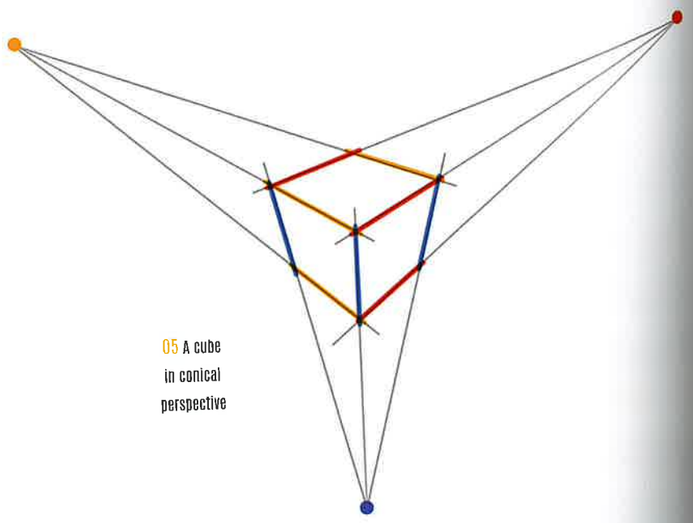
- **Length** (X)
- **Width** (Y)
- **Height** (Z)

When creating perspective, everything is referenced according to these three axes. Simple shapes such as spheres and cubes are much easier to draw than complicated and curved geometry, as their dimensions are easily adapted to the three axes.

There are many different rules and techniques when it comes to creating perspective. **Images 04** and **05**, for example, show the same shape represented in different types of perspective. They both project the length, width, and height of a cube along those respective axes, but in different ways. Let us begin by defining these main types of perspective and how to distinguish between them.



04 A cube in axonometric perspective



05 A cube in conical perspective

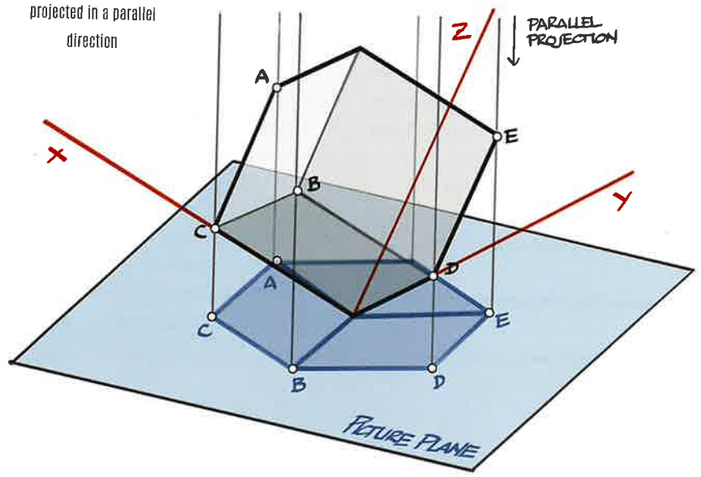
Images 04, 05, and 06 by Roberto F. Cuozzo

Axonometric perspective

Axonometric perspective, also called "parallel perspective," is fairly easy to construct. This type of perspective is not based on reproducing reality, so is not reliant on creating a natural sense of three-dimensional space. It does not necessarily show objects as the eye observes them, but simply gives an idea of volume.

Unlike conical perspective, which we will cover on **page 140**, axonometric perspective is created by projecting an object along lines that are parallel on a plane (**image 06**). Objects drawn in this manner do not recede naturally from the viewer, as there is no "viewer" relative to the scene. This type of perspective is very commonly used in technical drawing for the representation of individual parts and volumes. The parallel perspective lines are very useful for fast, hand-drawn work that is intended to quickly visualize the form of an object.

06 Letters A to E indicate the corners of the cube that are being projected in a parallel direction



Axonometric perspective in art history

While Renaissance artists in Europe emphasized the importance of natural perspectives, like the conical perspectives we will look at shortly, this was not the case globally. Axonometric perspective featured prominently in Chinese art, for example, where it allowed artists to depict numerous subjects in a scene equally.



An illustration with axonometric perspective from the Chinese novel *Romance of the Three Kingdoms* (c. 15th century)

Types of axonometric perspective

Axonometric perspective is classified according to the angles that form the three X, Y, and Z axes. These three spatial dimensions define the dimensions of the object, and all three axes (length, width, height) are represented by straight, parallel lines, as you saw in **image 06**. Within this form, three main types of axonometric perspective exist **(image 07)**:

- **Isometric:** The axes' angles are equal
- **Dimetric:** Two of the angles are equal
- **Trimetric:** The three angles are different

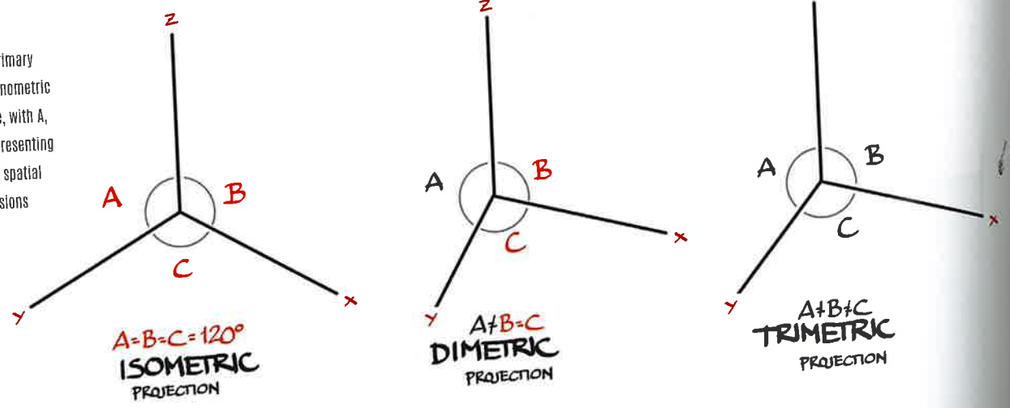
In addition to these three main groups, there are some variations with more extreme angles **(image 08)**:

- **Oblique:** The X (length) and Z (height) axes form a 90-degree angle
- **Military:** The X (length) and Y (width) axes form a 90-degree angle

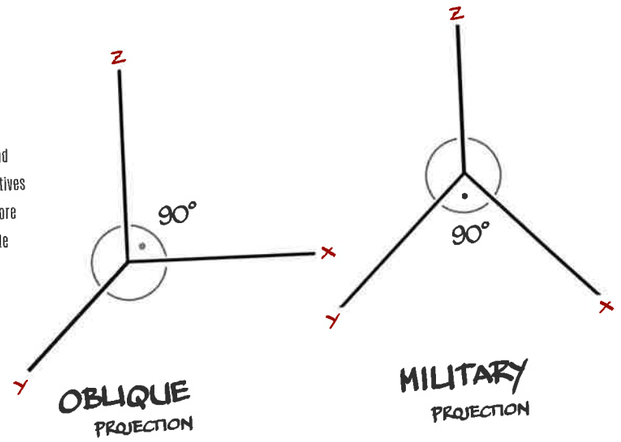
These perspectives are often used in technical and architectural drawing, as they are easy to project. If we observe the perspective in this image of the Templete de San Pietro in Rome, we can see that it is drawn in military perspective **(image 09)**.

Once the angles of the three dimensions have been defined, you have everything you need to build an object. As mentioned before, axonometric perspective does not give a realistic depiction of an object. In many cases, the objects appear to have false proportions due to the optical effect produced by parallel projection. This becomes particularly evident in the more extreme perspectives such as oblique or military. To reduce this distorted effect, you can reduce the angles of certain dimensions so that the object becomes more proportionate.

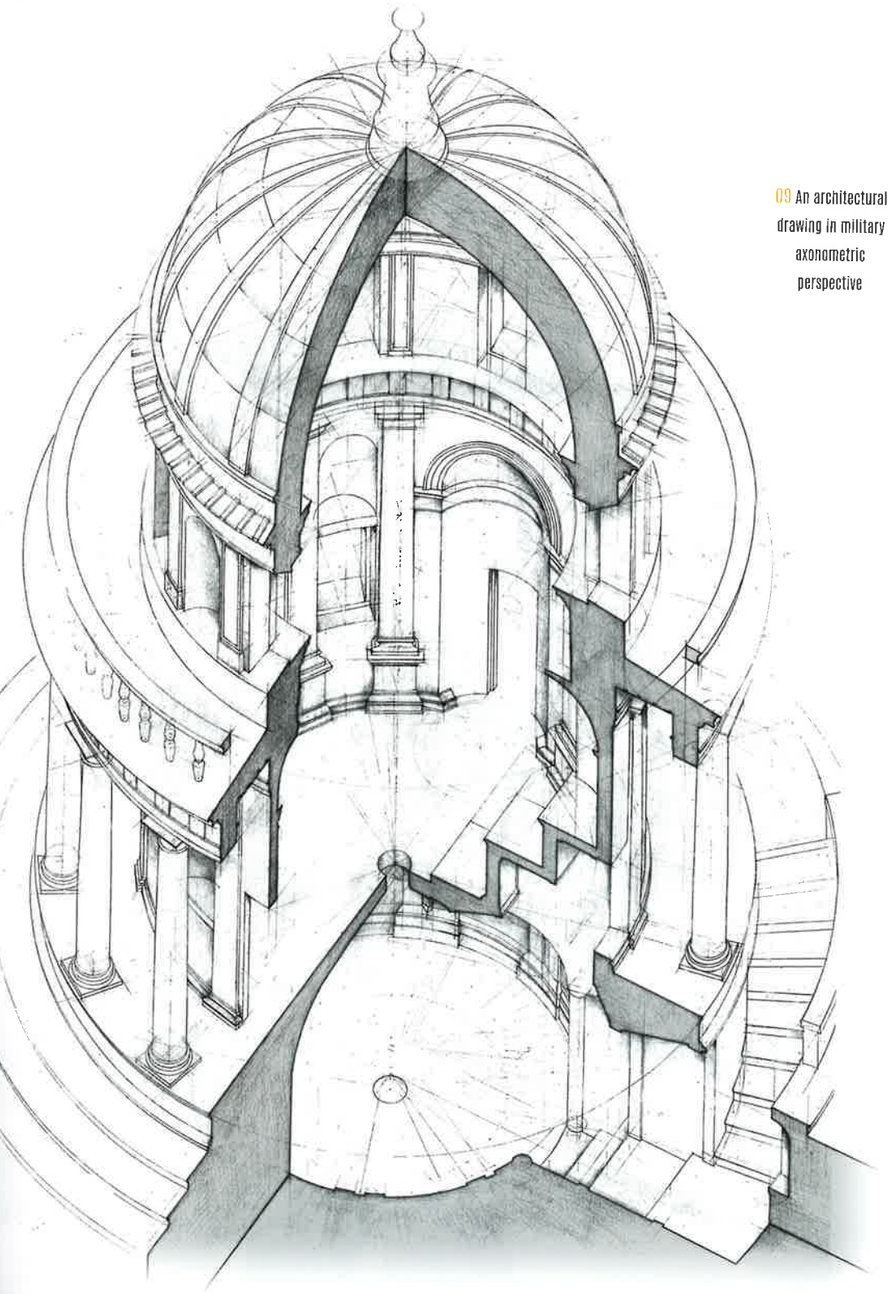
07 The primary types of axonometric perspective, with A, B, and C representing the three spatial dimensions



08 Oblique and military perspectives project at a more extreme angle



Images by Roberto F. Castro



09 An architectural drawing in military axonometric perspective

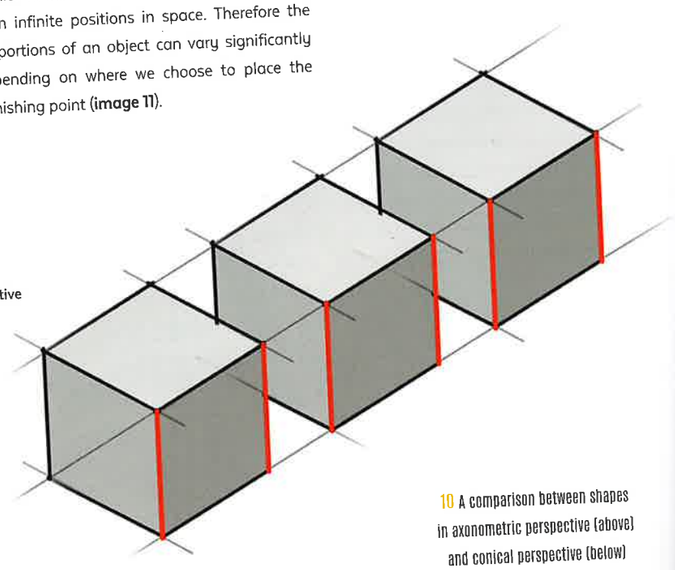
Image by Roberto F. Castro

Conical perspective

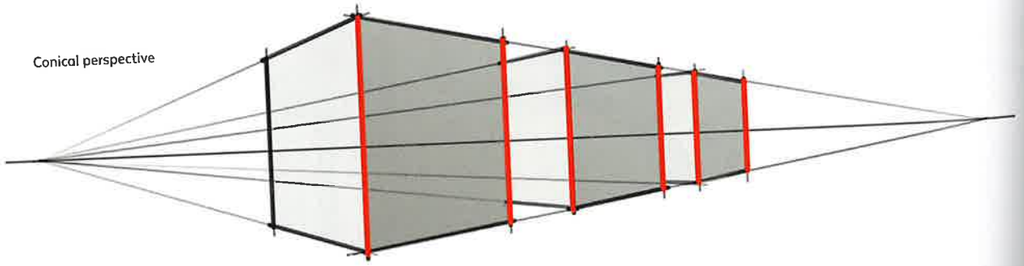
Conical (or linear) perspective is the type of perspective that serves to represent our three-dimensional reality in a two-dimensional image. In contrast to axonometric perspective, this perspective is based on a conical receding point; all objects are formed and placed in relation to that, and become smaller as they get farther away from the viewer (**image 10**).

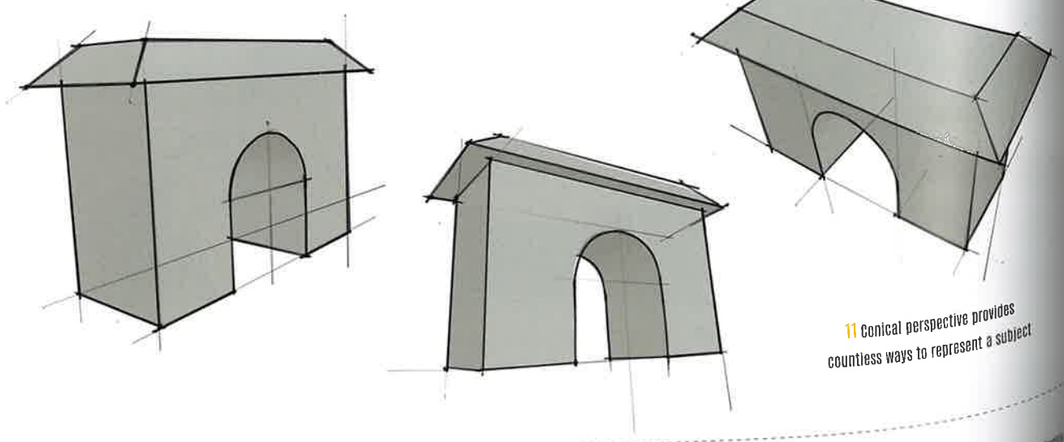
This means that the same object can have an infinite number of forms, as we can observe it from infinite positions in space. Therefore the proportions of an object can vary significantly depending on where we choose to place the vanishing point (**image 11**).

Axonometric perspective



Conical perspective





10 A comparison between shapes in axonometric perspective (above) and conical perspective (below)

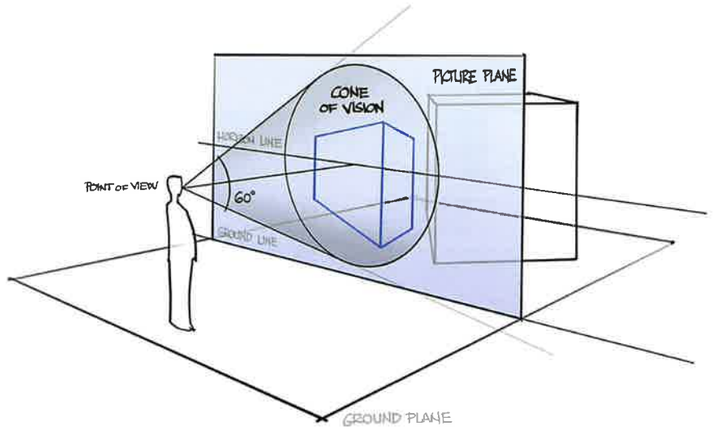
11 Conical perspective provides countless ways to represent a subject

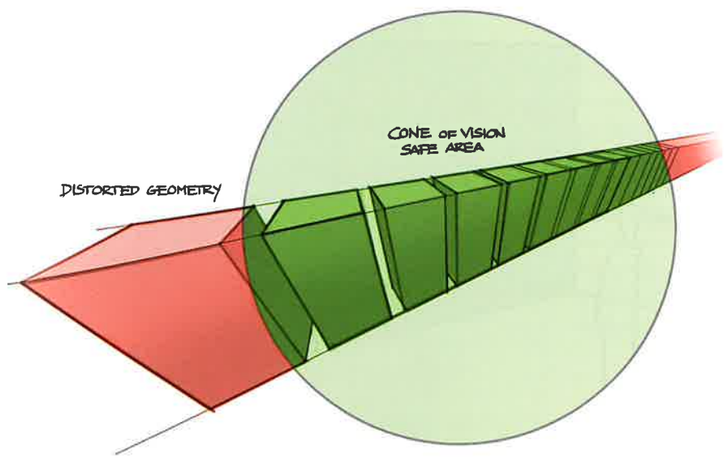
Images by Roberto F. Osorio

The visual cone

The "visual cone" defines the parameters of the light rays that reflect off objects in our environment into our eyes. Although the human eye has a cone of vision of 90 degrees, our actual range of vision is limited to around 60 degrees. Any vision beyond this point can become blurred and confused.

Though it can be used to create exaggerated effects, it is advisable not to create or place objects outside of that 60-degree cone of vision, as those objects will become deformed and give rise to distorted perspective. When planning a scene, keep these limitations in mind and reframe your composition if necessary to avoid distorted edges.





▲ Objects will appear distorted as they extend outside the comfortable range of human vision

Elements of conical perspective

To explain how conical perspective works, imagine placing a flat plane between the observer and a three-dimensional object (**image 12**). The lines of sight that lead the viewer toward the vertices A, B, C, D, and E intersect with the plane, creating a two-dimensional image of the shape. This is the underlying logic of representing a three-dimensional shape on a flat canvas. We will now look at the important elements that create conical perspective.

We are going to define the important elements that serve to build conical perspective, which you can see labeled in **image 13**.

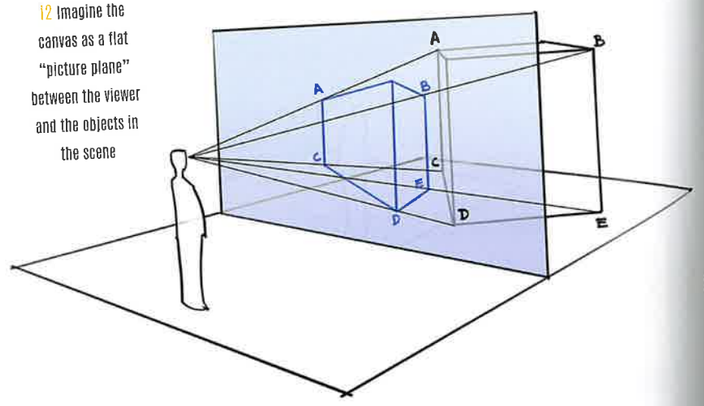
- **Point of view:** The point of view (often abbreviated as "POV") is the point at which we, the viewer, are positioned – that place from which we observe the scene. It is important to choose a good point of view when trying to create interesting perspective.

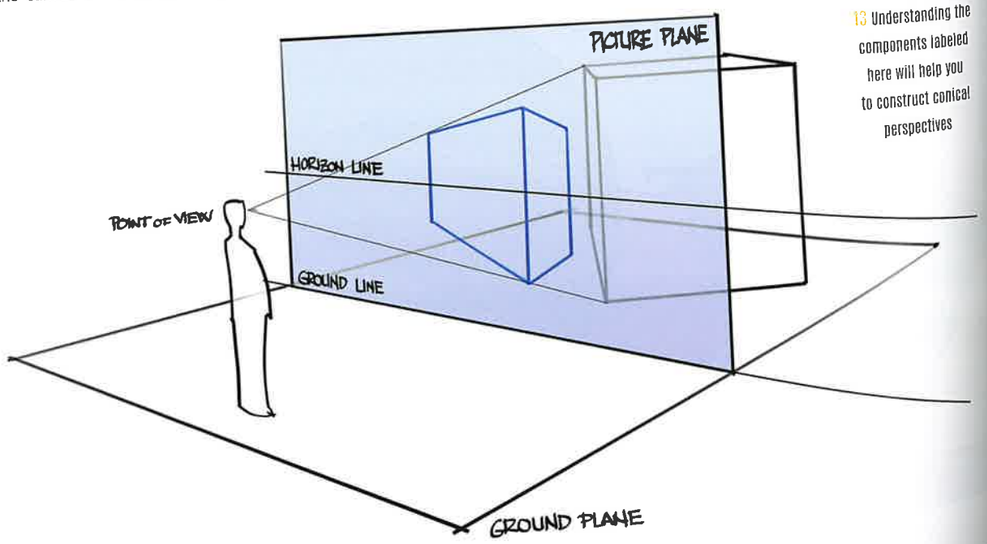
- **Picture plane:** The picture plane is the plane on which we draw the perspective. It is the transparent plane perpendicular to the observer – the canvas on which the image is constructed. The viewer's line of sight starts at the point of view and finishes at the vertices and edges of the seen objects, allowing the flat image on the picture plane to emulate a three-dimensional reality.

In **image 12** you can see an example of this "picture frame" concept. You can follow the point-of-view lines from the observer to the four vertices of the shape: A, B, C, D, and E on a square behind the picture plane. The intersection of these lines with the picture plane is shown on the corresponding blue shape.

- **Ground plane & ground line:** The ground plane is the horizontal reference plane from which vertical measurements are taken. The ground line is the linear intersection between the picture plane and the ground plane.

12 Imagine the canvas as a flat "picture plane" between the viewer and the objects in the scene





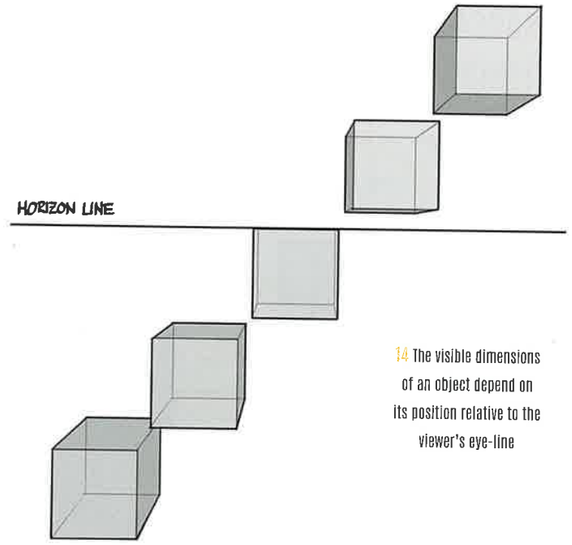
13 Understanding the components labeled here will help you to construct conical perspectives

Images by Roberto F. Castro

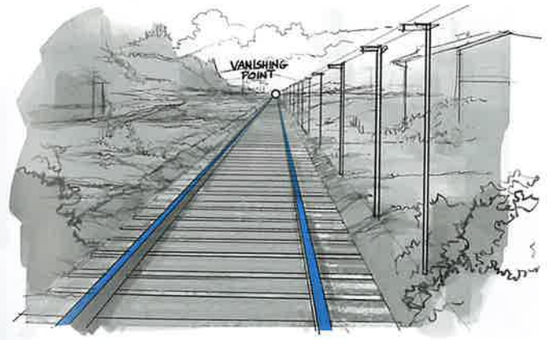
Horizon line

This is the horizontal line in the picture plane that is located at the height of the point of view. In the real world, you could compare it to the line that separates the water and sky when observing the sea. The horizon line is where the image recedes away to (in other words, where the "vanishing points" are).

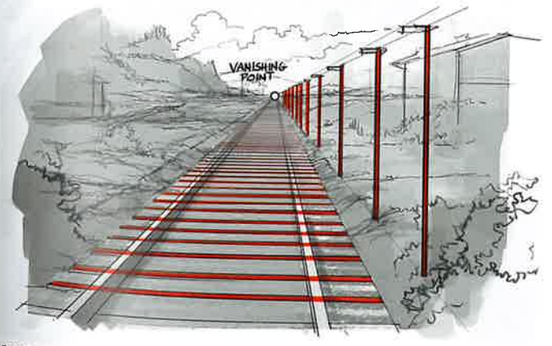
In **image 14** you can see a cube placed at various heights in a scene. When the cube appears below the point of view, below the eye-line created by the horizon, the viewer can see the majority of its upper side. As the cube rises, this upper side becomes less and less visible, "disappearing" into the horizon as it reaches the viewer's eye level. When the cube exceeds the horizon, the viewer begins to see its underside and can no longer see the top.



14 The visible dimensions of an object depend on its position relative to the viewer's eye-line



▲ 15 The parallel lines of the rails head away from the viewer until they converge on the horizon



▲ 16 Not all parallel lines in the scene converge toward the horizon

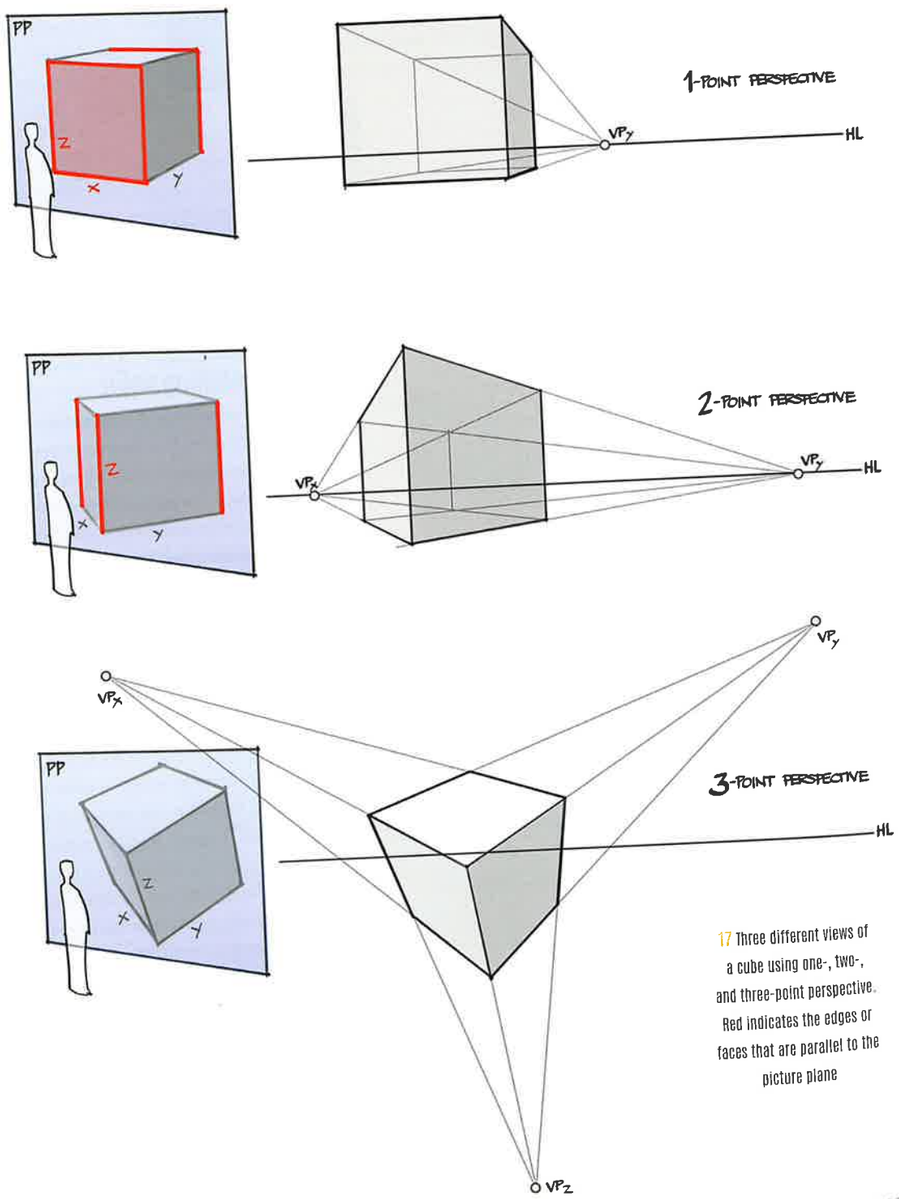
Vanishing point

The vanishing point describes a point in the image at which all lines of perspective converge. A very simple example is that of train tracks in **image 15**. The rails converge to a single vanishing point on the horizon. Both rails are parallel in the space, but when perceived in perspective, they shrink toward the horizon. When creating conical perspective, parallel lines in a scene generally converge toward one or more vanishing points.

However, not all parallel lines in a specific scene converge toward the same point. Lines that are parallel to the sides of the picture plane do not have a common vanishing point; they continue being parallel to the borders of your page or canvas. In **image 16**, you can see this effect in the sleepers on the tracks and the vertical posts; they are parallel to each other, but also parallel to the picture plane, so do not converge toward the same point as the long rails in **image 15**.

Perspectives with vanishing points

In theory, there are an infinite number of vanishing points, as you can calculate one for each group of parallel lines in a space. However, in art, there are three main types of perspective, which we shall discuss here. Depending on where the object is in relation to the observer, one, two, or three of the three spatial axes (X, Y, and Z) will have vanishing points. The number of vanishing points depends on how the subject is positioned relative to the viewer, as you can see in **image 17**.



17 Three different views of a cube using one-, two-, and three-point perspective. Red indicates the edges or faces that are parallel to the picture plane

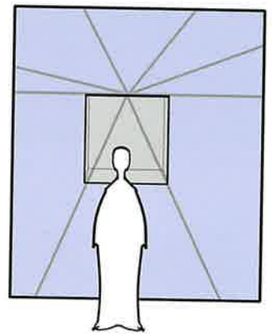
Images by Roberto F. Castro

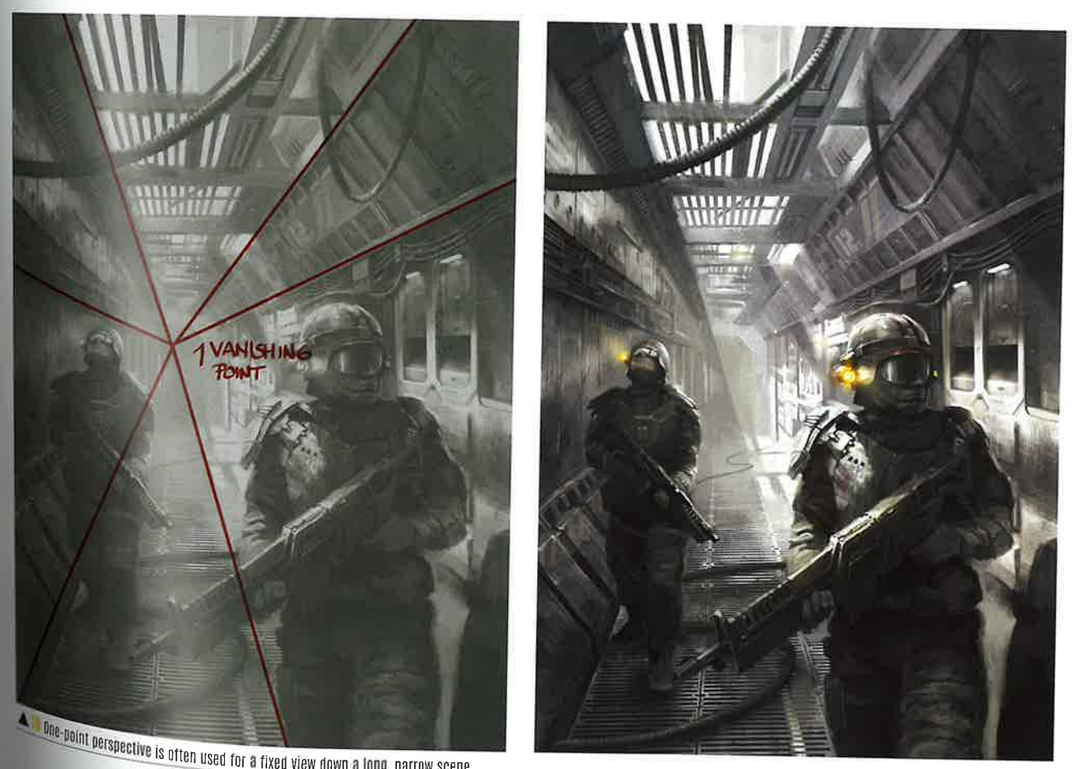
When the cube is parallel to the picture plane, with one static face of the cube facing directly toward the viewer, the rest of the cube recedes toward a single point. If the cube is turned on its vertical axes so only one edge is facing the viewer, the two adjacent faces recede away toward two points, offering a more dynamic and real effect. When the cube is tilted on its corner toward the viewer, so none of the three axes are parallel to the picture plane, its sides *and* height recede away toward three points. This is ideal for more extreme perspectives, such as a bird's- or worm's-eye view.

There are other types of perspective, because a potentially infinite number of vanishing points exist, but in principle you can attain a strong result with any of these three options. We will now look at each type of perspective in practice on an image.

One-point perspective

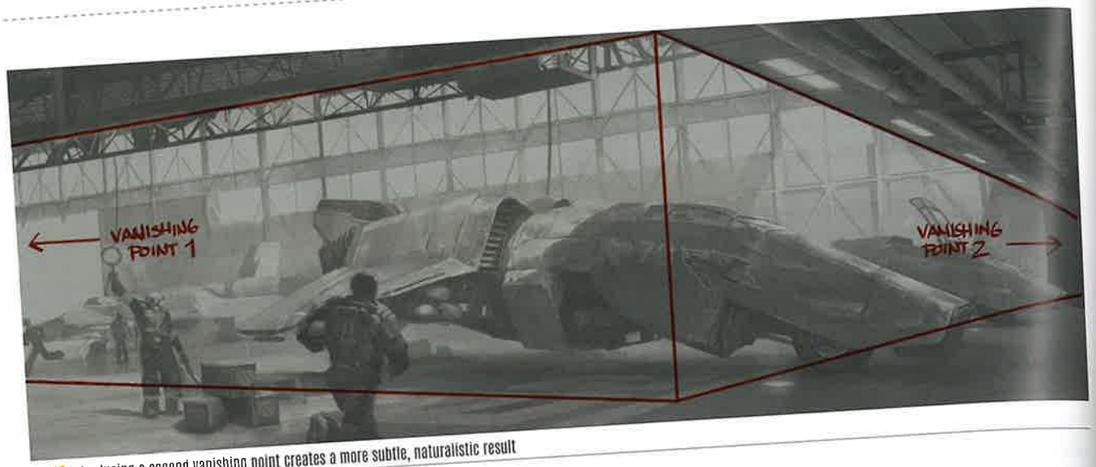
This simple perspective is often used for scenes where the viewer is looking down a corridor, tunnel, or street that shrinks toward one point on the horizon. In **image 18**, the walls, floor, and ceiling of the corridor converge toward a single vanishing point in the distance.





One-point perspective is often used for a fixed view down a long, narrow scene

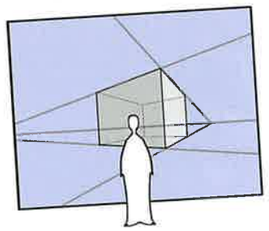
Image 18 © Roberto F. Castro



▲ 19 Introducing a second vanishing point creates a more subtle, naturalistic result

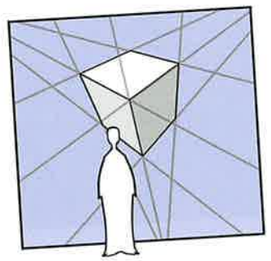
Two-point perspective

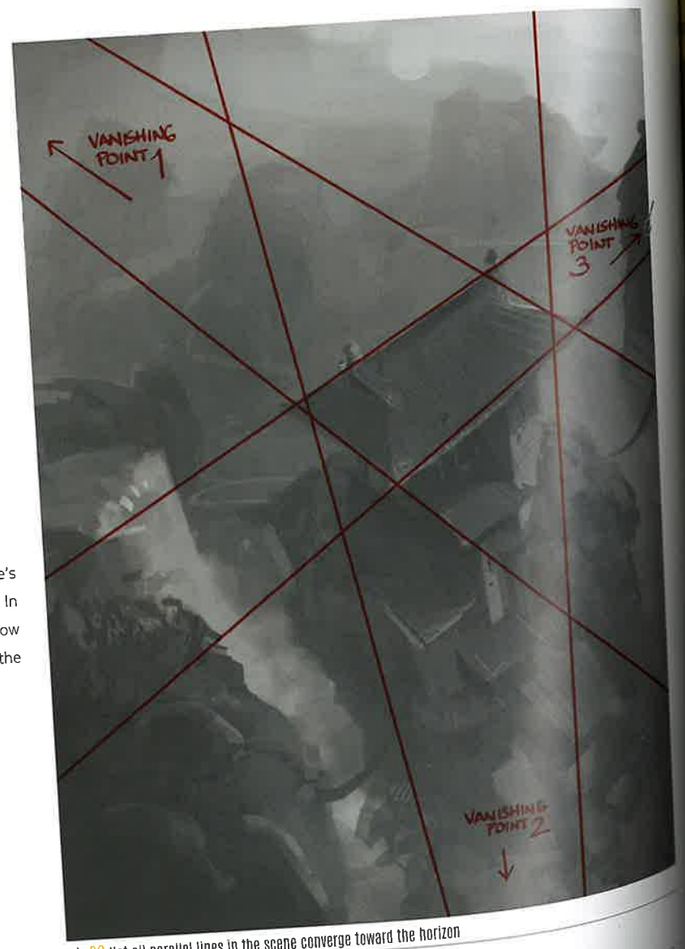
In **image 19**, two vanishing points are used at either side of the horizon. They are so far apart that they are outside the canvas itself, which creates a subtly receding perspective effect; if the vanishing points were closer together, the objects in the scene would become more visibly distorted.



Three-point perspective

A third vanishing point introduces verticality to a scene's perspective, creating an impression of depth or height. In **image 20**, the third vanishing point is situated far below the canvas, resulting in a dramatic bird's-eye view of the architecture and landscape (**image 21**).





▲ 20 Not all parallel lines in the scene converge toward the horizon



21 Three-point perspective can add towering height or dizzying depth to a scene

Images © Roberto F. Castro

Constructing perspective

The artist is the one who ultimately decides what the best point of view is for a scene. The choice of perspective is crucial and clearly influences the impression left on the viewer. Following on from the choice of perspective, the layout will determine the shape and size of the image, the sharpness of the details, and the actual composition of the image. Let us now break down the key points that you must consider when planning an image.

Point-of-view position

When deciding where to place the point of view for your scene, the first thing to consider is the visual cone mentioned previously (see **page 141**). You must ensure that your viewer is an appropriate distance away from the object so that their maximum angle of viewing is less than 60 degrees.

The second thing to consider is the form of the objects you want to show. It is important to know that the same three-dimensional environment can be much more interesting if you choose the correct view.

Height position

The distance between the observer and the ground plane is reflected in the height, or the distance between the horizon line and the ground line. The depiction of the image will differ markedly depending on the height you choose.

In **image 22** we can see a cube represented at different heights, with the figures on the side indicating the height of the viewer's eye-line. As the viewpoint becomes lower, the horizon line gets closer to the ground line. If the two match, it means that our eyes are at ground level, and if the horizon line is placed below the ground line, this means our eyes are below the base of the cube, and therefore we see its underside.

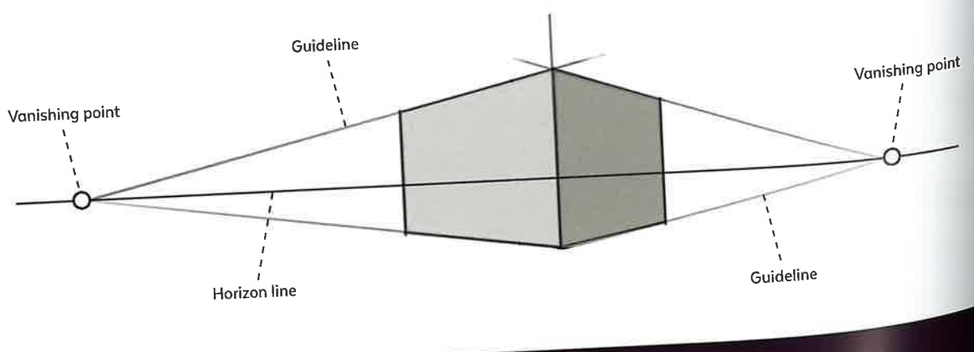
Vanishing point position

As mentioned previously, the placement of the vanishing points depends on how you place objects in relation to the observer, as well as where the horizon line is situated (in front of, above, or below the viewer). Lines parallel to the ground plane will eventually converge to the horizon line.

Placing one or two vanishing points on the horizon is easy enough, but placing a third can be more challenging, as it would be above or below the horizon. In the event of this, place two vanishing points on the horizon first, then place the third on a line perpendicular to the viewer.

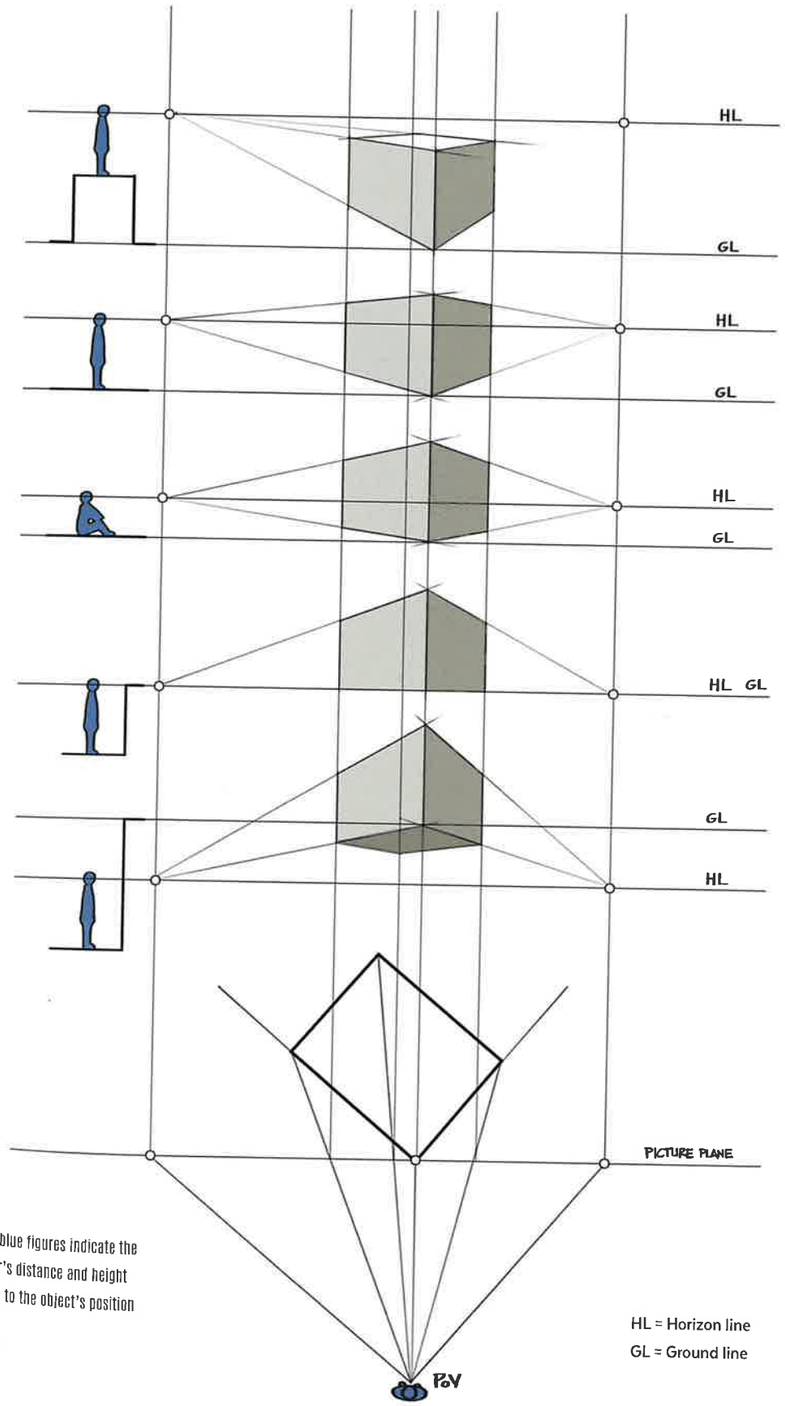
Perspective guides

To draw your own simple perspective guide, begin by lightly drawing the horizon line and placing one or two vanishing points on it. From the vanishing points, you can draw angled lines, which will guide the top and bottom edges of the objects in your scene. The closer the vanishing points are to each other, the more small or squeezed the object will appear. The farther apart they are, the milder the perspective effect.



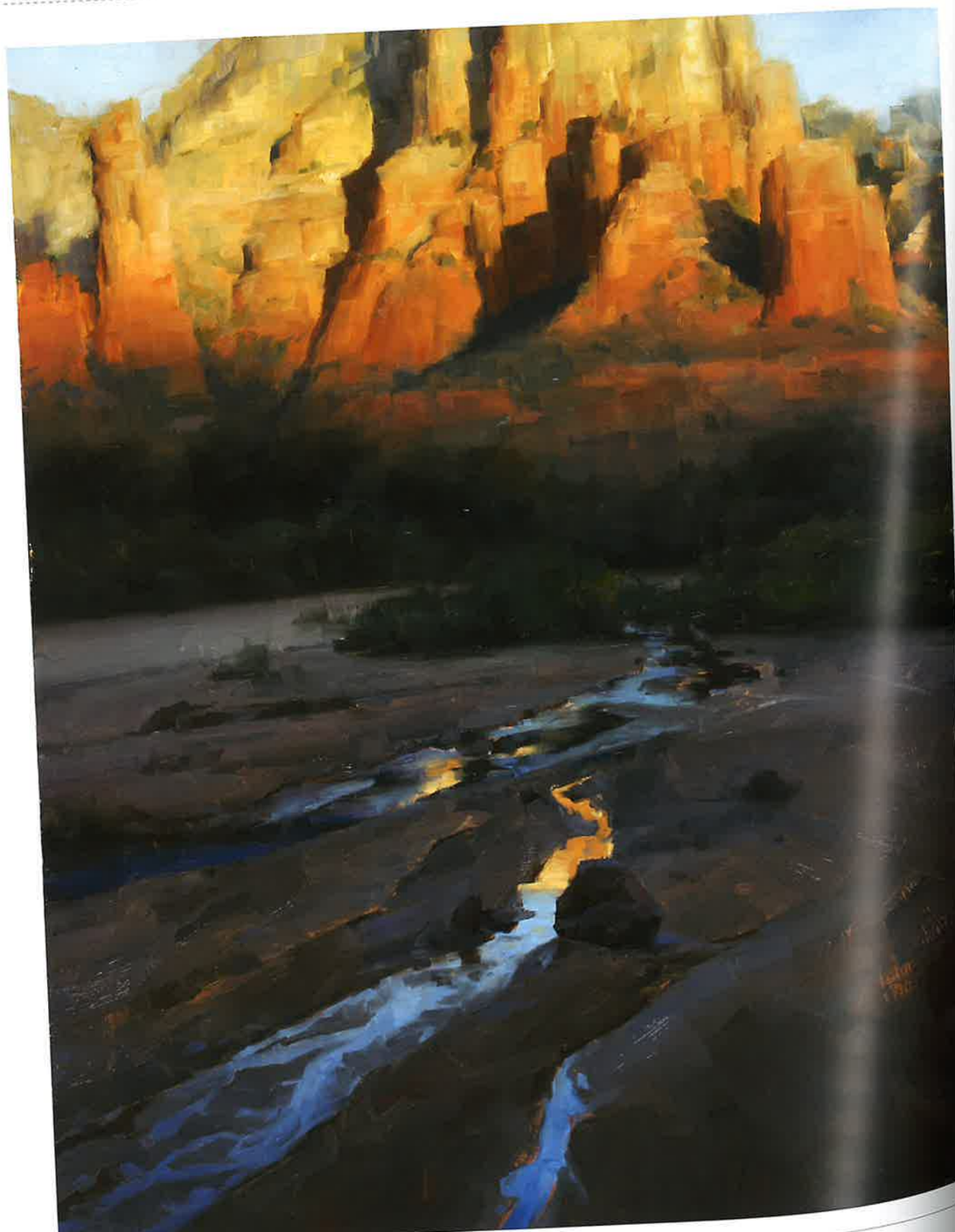
▲ The key elements needed to construct your own perspective guides

Images by Roberto F. Castro



22 The blue figures indicate the viewer's distance and height relative to the object's position

HL = Horizon line
GL = Ground line

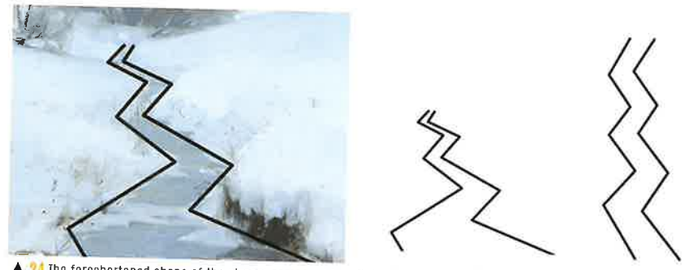


▲ 23 Foreshortened subjects appear flattened or shortened from the onlooker's point of view

Images © Dave Sanfilippo

Foreshortening

Foreshortening is a technique most often associated with figure drawing, but it can certainly apply to other subjects as well. It is closely related to scale and perspective, and is used to render objects coming directly forward in space. Creating this illusion involves a "shortening" of the length of the object in comparison to what its length would be if viewed from the side or above.



▲ 24 The foreshortened shape of the stream compared to a flat overhead view without perspective

For example, if the object in question is the arm of a figure pointing directly at the viewer, the length of that arm from shoulder to fingers would be rendered much shorter in terms of actual canvas space, in comparison to an arm resting by the figure's side. In addition, the hand itself would be rendered larger than the hand that is farther away, giving the impression of it being closer to the viewer. You can see examples of dynamic figures in the **"Anatomy"** chapter (**page 174**) to see foreshortening in action.

In a landscape painting, this technique could apply to objects such as logs, rivers, or roads. A river or stream will appear to "lie down" if its length is rendered with shorter lines that converge farther into the landscape. In **images 23** and **25** for example, the lines of the stream are shortened and they converge to a single point. This foreshortening leads the viewer's eye farther into the composition.

One helpful tip for tackling foreshortening is to see objects purely as shapes instead of specific things (**image 24**). Trust that an arm or a river can really be rendered that short and still appear to have sufficient length to the viewer.



▲ 25 This foreshortened stream would appear much longer if viewed from above

FUNDAMENTALS APPLIED...

CAPTAIN'S QUARTERS

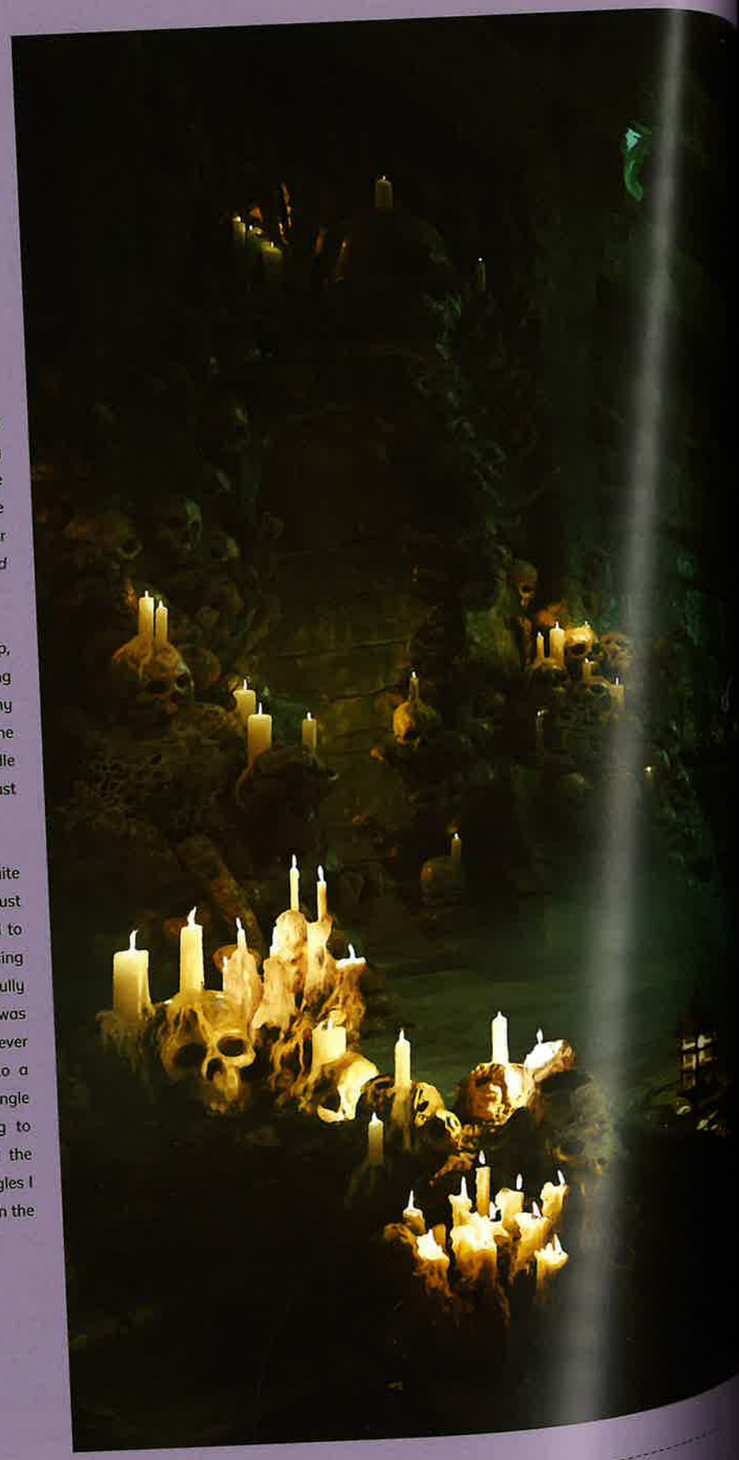
Andy Walsh

Tools: Oculus Medium, 3D-Coat, Adobe Photoshop

"I love pirates and saw someone create a shipwreck using the Oculus Medium virtual-reality sculpting software. I thought I would make an old ship in the Oculus Medium too. Mine would be an interior scene inspired by the kind of human-hybrid sea monster characters seen in *Pirates of the Caribbean: Dead Man's Chest*.

With that in mind, I wanted the ship to look damp, covered in barnacles and skulls, with decaying woodwork. I wanted the environment to feel slimy and decrepit, like the ship ought to sink but for some strange and pestilent supernatural force. Candle light would add to the mood and provide a contrast with the cold atmosphere.

My initial sketches for the composition were quite primitive; I originally intended this scene to just be a digital painting, but now I knew I wanted to be able to move around it and light it in 3D. Using this virtual-reality sculpting method, I did not fully know the exact angle I wanted until the scene was textured and lit. I tried to remain open to whichever perspective was best and not get wedded to a particular angle. Eventually, I chose this low angle because it felt strong and dynamic, adding to the eerie mystery of the scene and leading the viewer's eye right into the piece. Any other angles I considered were all fairly similar, pointing down the length of the room toward the focal character."



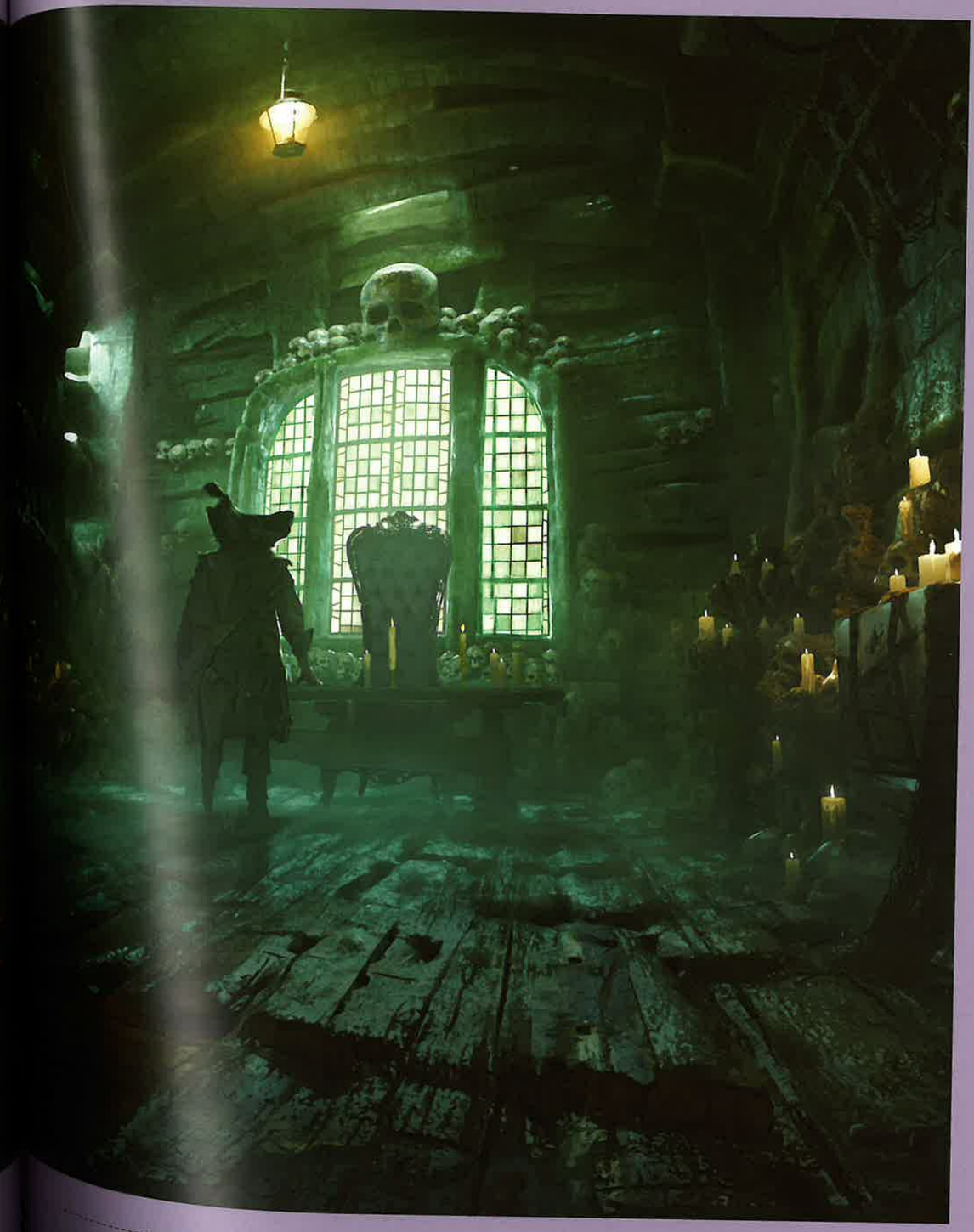


Image © Andy Walsh Art



FUNDAMENTALS APPLIED...

PREPARING

Konstantinos Skenteridis

Tools: Adobe Photoshop

"For this image, I wanted to capture an adventurer preparing to go on a dangerous quest. The scene that came to my mind was that of him at an inn, planning his journey, surrounded by maps, notes, and books to enhance the feeling of researching and taking notes.

As with all the personal work I do, I had a technical goal in mind – practicing and training specific skills while exploring an idea or object. I want to be able to create the images in my mind as effortlessly as possible, so any time things do not go as I planned, that is due to a lack of knowledge. Identifying this lack of knowledge gives me a clearer idea of where to focus my training next. By 'effortlessly,' I mean being able to create the desired image without worrying at all about the technical aspects of it. If I imagined this character in a certain pose, but could not execute it due to lack of anatomy knowledge, that would be a sign that I have to keep working hard on learning anatomy, or at least introduce some tools or resources to the process that would help me with that aspect.

Unless there is a very clear image in my mind, there is always an initial exploration phase of a scene. I considered other 'camera' placements for this scene, but it was quite clear from the beginning that it should be from a low perspective. This angle adds a more dramatic feeling to the scene, showing the character's concentration as he works. I always tackle this by imagining myself a photographer, asking myself, 'How would I take a photograph of this scene or story? What would be present in the scene – maps, books, a window?' I let that thought guide me when composing and choosing an angle. If the scene were viewed from a different perspective, it would feel different from how I would like to photograph it if I was there."

Image © Konstantinos Skenteridis Art

DEPTH

As mentioned near the beginning of this chapter, manipulating perspective is not the only tool that helps to add depth to an artwork. Many other aspects exist that we need to master in order to attain a feeling of depth.

In a lot of our images, we do not need to have an exact knowledge of how to construct perspective in order to create a feeling of depth. While it is important to have a good understanding of the theories underlying perspective, you also need to be aware of other visual aspects, such as light and color, in order to depict a sense of depth.

You will already have encountered some of these aspects in other chapters of the book, but we will look at the main elements here and how they tie in specifically with creating depth.

Light & shadow

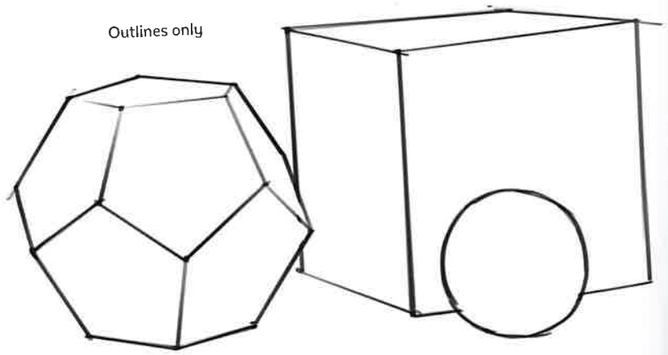
Everything you have learned regarding perspective serves to teach us how to fashion and place objects correctly in a scene, but that is the extent of the concept. To create a true feeling of depth, you must utilize other visual tools – value in particular. As shown in the **"Light & shape"** chapter on **page 8**, lighting your objects with bright and dark values is essential for communicating their form.

In **images 26** to **29** you can see how adding light and shadow to line art can enhance the viewer's understanding of a scene's depth.

- **Outlines only:** The objects are described with line art and no light or shadows.
- **Basic lighting added:** Adding two or three lighting values makes the objects more clearly legible.
- **Cast shadows added:** Adding shadows cast by the objects gives them further depth and context.
- **Final rendering:** The line art is reduced but the lighting ensures that the shapes are still fully legible.

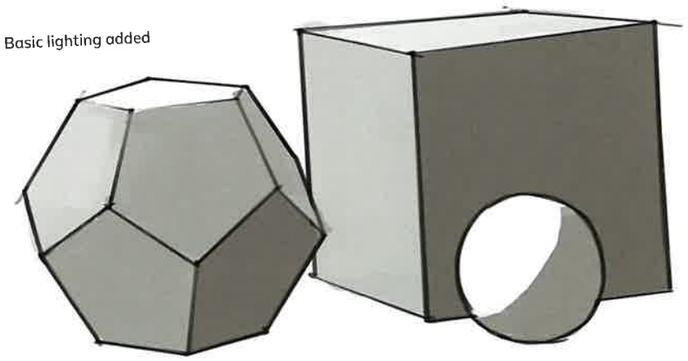
Even though all the images are drawn in the same perspective, the lighting clearly defines the viewer's perception of the shapes. Knowing how light falls on an object is fundamental. Values create depth and are the difference between a flat circle and a three-dimensional sphere.

Outlines only



26 Not all geometric forms can be discerned from outlines alone. Light and shadow are needed to clarify them for the viewer

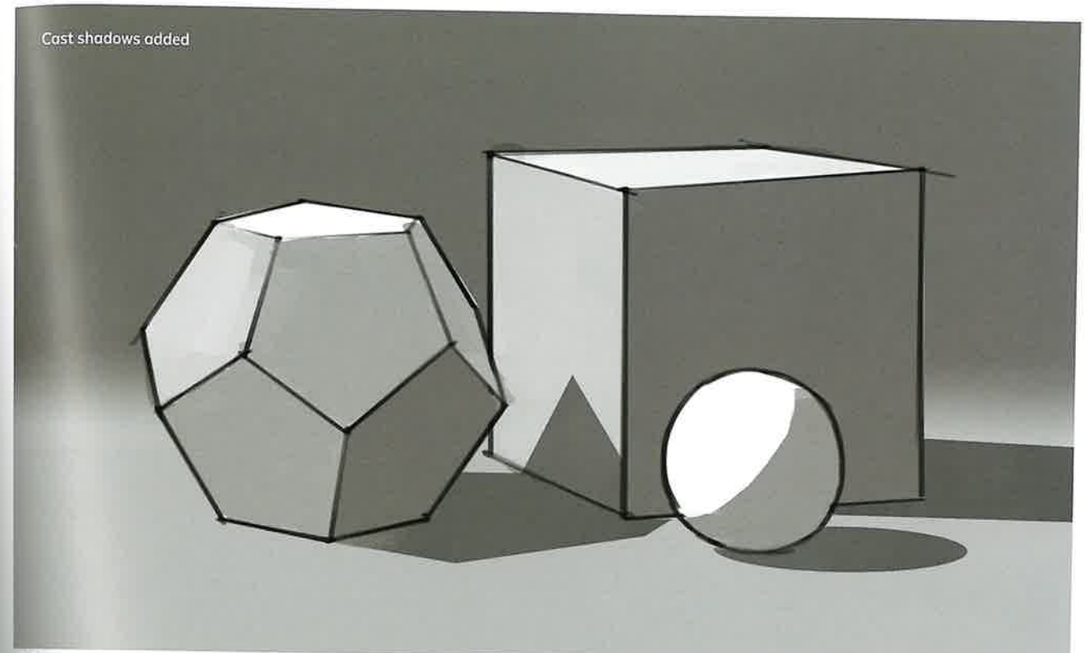
Basic lighting added



27 Introducing two or three different values indicates form and depth much more clearly

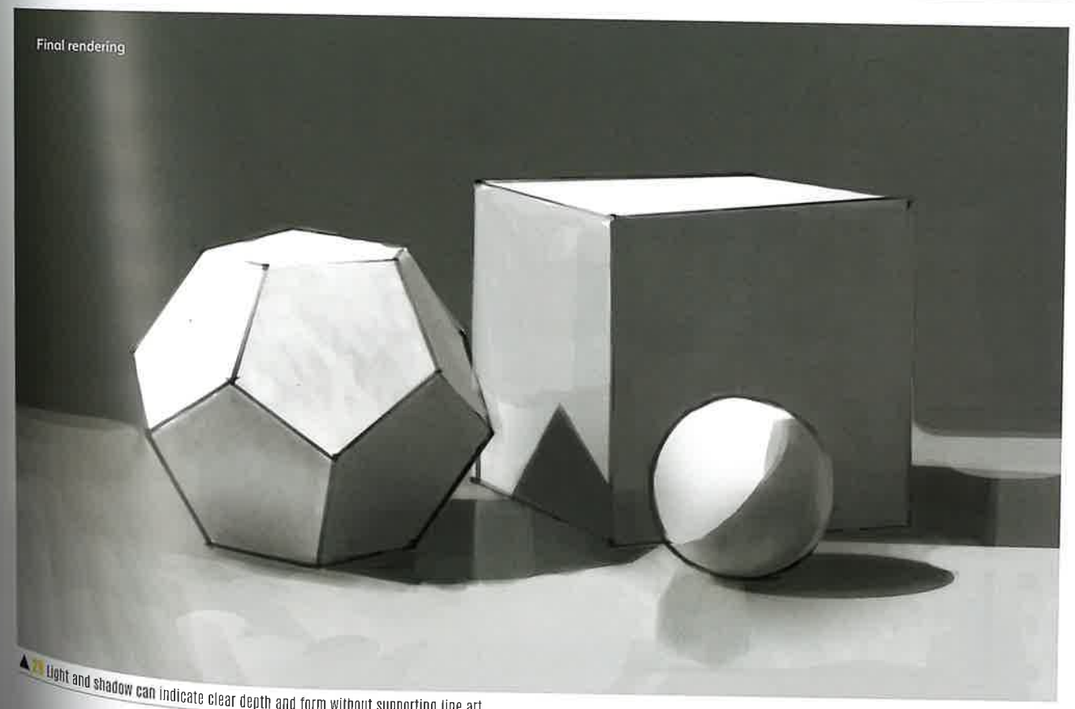
Images © Roberto F. Castro

Cast shadows added



▲28 Background values and cast shadows further clarify the objects' depth and placement in the scene

Final rendering



▲29 Light and shadow can indicate clear depth and form without supporting line art



▲ 30 Atmospheric perspective lightens and soften objects as they recede into the distance

Atmospheric perspective

Like linear perspective, atmospheric perspective is a method used by artists to create the illusion of depth in a painting. Where linear perspective uses lines (real and perceived) converging at the horizon, atmospheric perspective relies on modifying both color and clarity to create depth.

Atmospheric perspective is also called "aerial perspective" (or "distance fog" in the realm of 3D graphics) and has a firm basis in reality. Air contains water and other particles that cause light waves to scatter, which affects how we see color through different layers of atmosphere. This generally causes an object's color to become **cooler and less saturated** as it recedes into the distance. Its value will become lighter and there will be **less contrast between light and shadow** the farther the object goes into the atmosphere. Distant objects tend to take on the color of the sky, which is usually blue on a sunny day, but in the evening the sky takes on a warmer hue that bleeds over onto distant objects.

Atmospheric conditions also affect the **clarity of objects** as they recede. As the edges of distant objects are not as well-defined, one object can be hard to discern from another. Painting distant objects with softer edges and blurred distinctions can add further to the illusion of depth in a scene.

Image 30 shows several important effects of atmospheric perspective. One is the relative intensity of color in the foreground compared to the background, as well as the higher contrast in foreground objects compared to distant ones. The painting also depicts warm evening sky light bleeding over onto the most distant hills, though the cooler blues of the distant shadow shapes hold up until the last hills. Finally, the edges of objects in the foreground are hard relative to the softer edges farther into the landscape.

Image 31, similarly, has a warm, saturated, crisp-edged foreground that recedes into a paler, cooler, soft-edged background to create atmospheric depth.

Desert Bouquet © Dave Sakrison



▲ 31 Use atmospheric perspective to create a natural feeling of depth and distance between elements in your scene

Image © Roberto E. Castro



▲ 32 Consider how your scene can be divided into foreground, middle ground, and background planes to give it believable depth

Foreground, middle ground & background

Adding a range of volumes to your image is one of the simplest ways to introduce depth into your composition. By adding different elements to the scene, strategically placed on different planes, you can transform a flat, one-dimensional environment into one with three-dimensional depth.

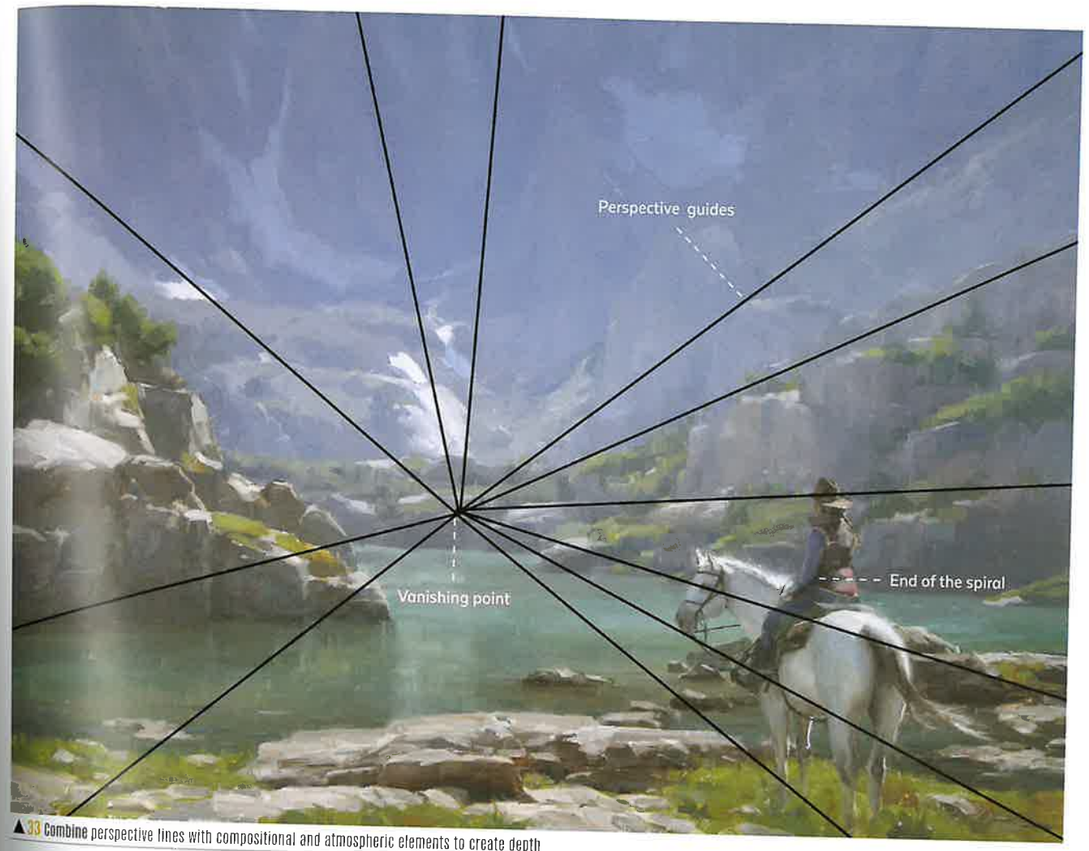
Image 32 has a clear foreground (the near shore and figure), middle ground (the rocks and water farther out), and background (the distant mountainside). These three planes are separated with the use of color, light, and shade.

The foreground is bright, detailed, and colorful; the middle ground features less detail; the background features less detail still, fading into the blue haze of atmospheric perspective (see **page 158**).

Digital layers

If you are a digital artist, most painting programs such as Adobe Photoshop and Procreate will enable you to organize your scene into separate, editable layers. This is very useful when controlling different elements of your composition and switching between multiple planes of an image.

High Places © Dave Santillano



▲ 33 Combine perspective lines with compositional and atmospheric elements to create depth

Composition

Composition is not just about creating a visually pleasing design; it can also be a useful tool for creating the illusion of depth in a painting, especially in conjunction with other atmospheric devices. How and where you place focal points, shapes, and other design elements in a painting can serve to lead the eye through the scene from foreground to background, as discussed in the **"Composition"** chapter (**page 90**).

One of the best ways to do this is to lead the viewer's eye along lines of linear perspective using elements within the scene – in a landscape, these might be rocks, rivers, or clouds. The key here is not to be too obvious or the results will appear contrived and unnatural. Instead, use subtle hints along perspective lines to draw the viewer in and lead them right through the scene. For example, in **image 33**, a number of subliminal perspective lines in the environment converge in the distance.

Color

As you may have gathered from the use of atmospheric perspective (**page 158**), another way to create depth is by playing with color. Complementary colors, as covered on **page 62**, can help to separate the objects in a painting.

As you can see when comparing the two versions of **image 34**, the impression of depth is achieved with the use of color. The monochrome image seems flatter than the image with color, though their value structures are identical.







▲34 A dynamic color palette adds depth and punchiness that the monochrome version lacks

Image © Roberto T. Castro



▲35 This *plein air* study uses scale to enhance the illusion of depth

Scale

As mentioned on **page 120** in the **"Composition"** chapter, scale is the relative size of one object compared to other objects in a scene. As it relates to perspective and depth, an object will appear to diminish in size the farther it is from the viewer. We can use this knowledge of relative scale to enhance the illusion of depth in a painting.

One effective way to do this is to use similar objects in different planes of the scene. For example, if there are rocks in the foreground, you can enhance the illusion of depth by placing the same types of rock farther into the landscape. This repetition will also create rhythm in the painting, as well as guiding the viewer through the composition.

Scale can also apply to unrelated objects, such as in **image 35**. If you have a detailed rocky cliff on one side of the canvas and a tiny boat on the other, the viewer's perception will be that the boat is far off in the distance. You can learn more about creating depth with detail on the next page.

Other commonly seen examples of using scale to create depth include placing a small human figure in the foreground of a landscape, or adding tiny, distant birds to make a sky or environment feel vast.

Nocturne Bay © Dave Santillanes

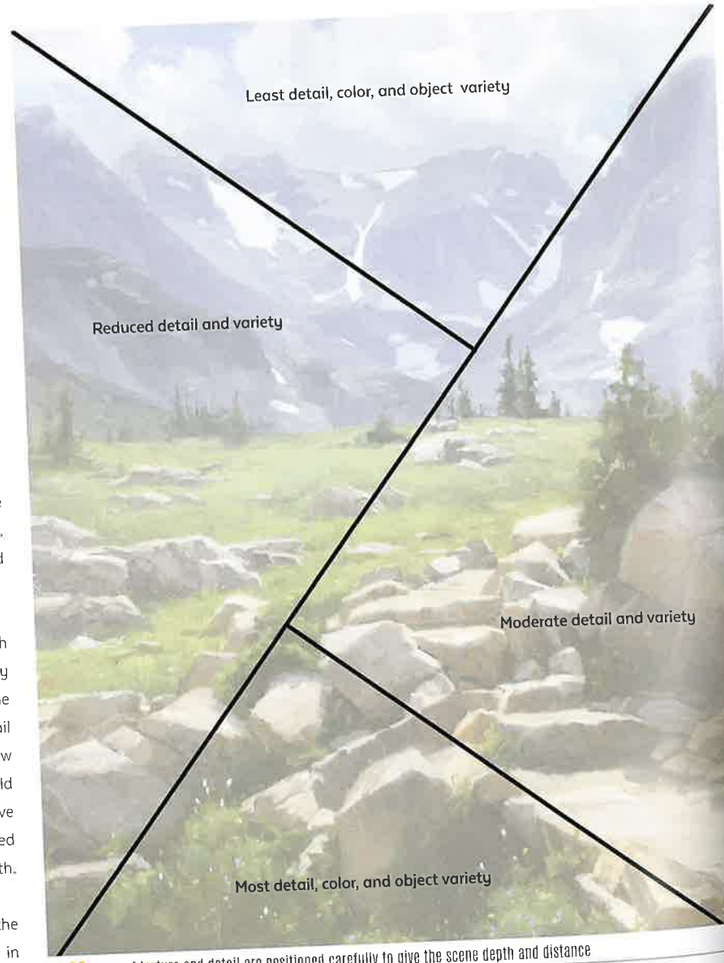
Texture & detail

Color, temperature, and value are not the only elements that vary across different atmosphere planes. The amount of texture and detail in a subject will also vary relative to distance. "Detail" is usually thought of as linear detail (edges and drawn details), but also includes variations in shape and color. "Texture" pertains not just to individual surfaces, but to the overall variety of surfaces, such as trees, shrubs, and rocks.

Creating atmospheric depth in a painting is all about how different design elements relate to each other from foreground to background. As we move from foreground to background in a scene, we invariably see more detail and texture up close. For example, individual flowers in the foreground become fields of color in the distance. Individual rocks form mountains farther out, and trees become hillsides.

In order to paint these elements with atmospheric accuracy, try to use relatively smaller, more intricately detailed shapes in the foreground, and broader shapes with less detail in the background. This is not to suggest how detailed or impressionistic your painting should be overall, but is about relativity – if you have a lot of detail in the background, you will need relatively more in the foreground to create depth.

Notice the amount and variety of detail in the foreground compared to the background in **images 36** and **37**. Compare the texture of the grasses from foreground to middle ground, and the rocks from the foreground all the way back to the mountains. Also note the color variety and other details that only exist in the foreground.



▲ **36** Areas of texture and detail are positioned carefully to give the scene depth and distance

Into the Wilderness © Dave Santillanes

37 The rocks and flowers in the foreground of the landscape create depth when compared with the distant mountains

FUNDAMENTALS APPLIED...

DRAGON ALTAR

Konstantinos Skenteridis

Tools: Adobe Photoshop

"This image was part of a daily training series I did with some friends. We would suggest a theme a little outside of our comfort zone and create it that day. The theme that day was 'statue.' I knew I wanted to show an ancient structure that was part of the surrounding environment, and that was more than a simple statue - more like a place of worship. This led to the addition of candles and fires, as if this place was visited by worshipers who took the risk of reaching the area.

I wanted the viewer to feel as if they had finally reached this ancient dragon altar after some adventuring. The low-angled view helps to make the viewpoint more personal, as if at the eye-level of someone who has just entered the area. I try to paint images as if I were taking a photograph of the scene, as this forces me to try to improve in all aspects of my work. To create three-dimensional objects on a two-dimensional canvas, I have to constantly update my drawing skills and my knowledge of how light interacts with matter.

To convey the depth of the scene, I had to make a clear distinction between the foreground, middle ground, and background. To do that, I added mist to separate the rocky ground and adventurers that are closer to the viewer. I also added an extra cave-like area behind and around the dragon altar to create another area indicating depth. Atmospheric effects, fog, shapes, and textures that are in perspective can easily add a lot of depth to an image. Any time you show a recurring shape in receding size - such as the jagged background cliffs - you create the feeling of depth, and this is where practicing your perspective skills is essential.

To convey scale, I added some marks and objects that the viewer could identify and use to make a size comparison. This is easy to do by introducing a human figure to a scene, as the viewer can compare everything to the character's size. If you cannot place a human figure in your scene, then remember to include some other element that will be familiar to the viewer and can act as a scale indicator. Other elements in this scene that provide important cues for scale are the candles, the rocks in the foreground, and the birds."



FUNDAMENTALS APPLIED...

SEBASTIAN

Maxim Kozhevnikov

Tools: Adobe Photoshop

"This image was part of an exploration into the simple emotions of small, cute creatures. I was experimenting with mixing frogs, lizards, cats, and in this case some panda-like fur. I wanted to depict a creature that was playful and hungry, with realistic fur. The most important part of the image for me was the interaction between the character, Sebastian, and the object of his desire – a small white butterfly.

I tried to use all the possible tools such as materials, lighting, and atmosphere in order to correctly translate the emotions of the scene. For example, the foggy forest in the background helps to emphasize the intimacy of the moment, ensuring that the foreground character is the focal point. The sharp white shapes of the fur and butterfly help to prioritize them in the scene. The fur was a particular challenge because it is so close to the viewer, and I realized at the beginning that the believability of the scene would depend on how realistically I could render it. The background, in comparison, is less detailed and lower in contrast to create distance."







FUNDAMENTALS APPLIED...

PARADISE SHORE

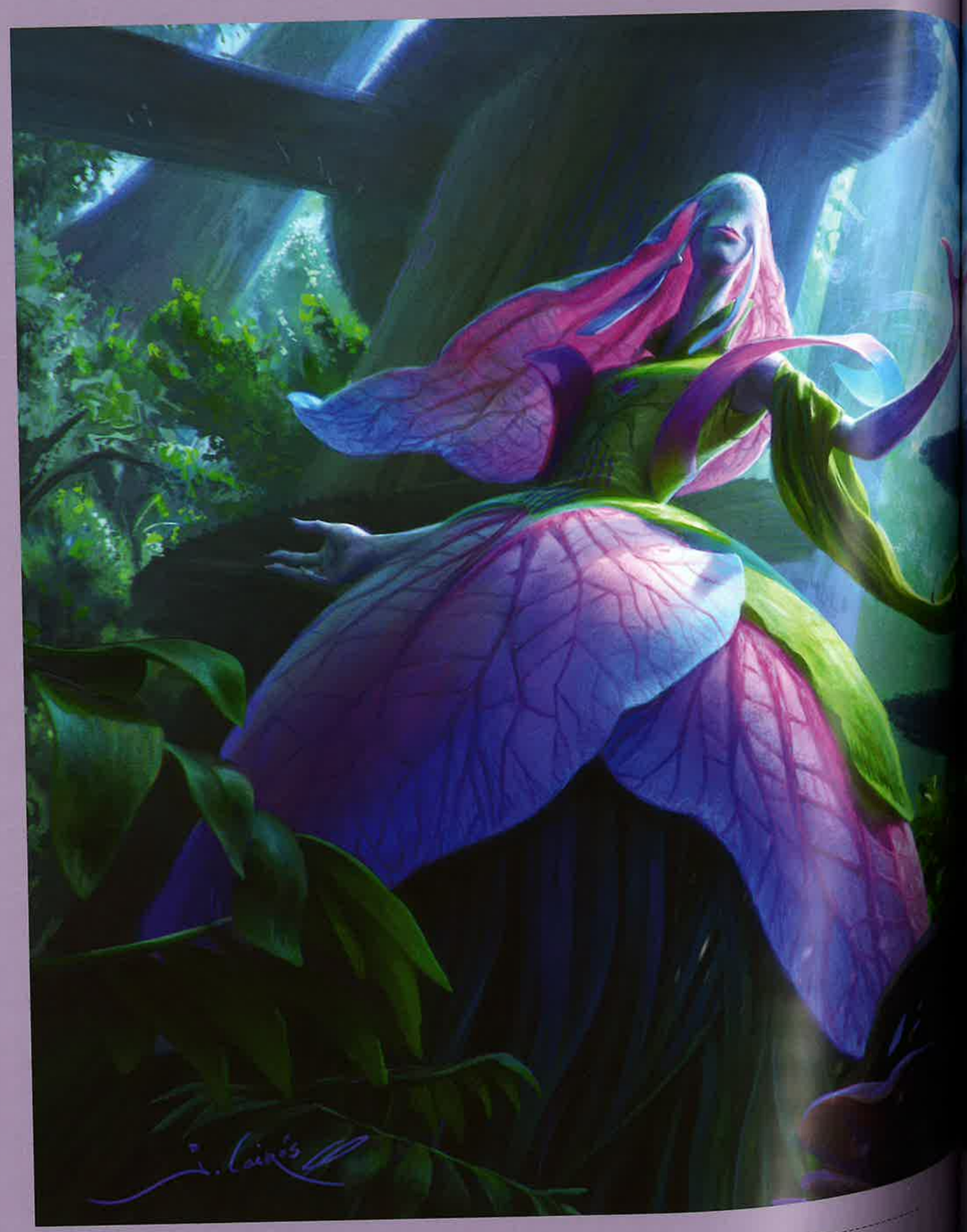
Lorenzo Lanfranconi

Tools: Adobe Photoshop

"This scene was painted as a bonus artwork for my environmental art book, *Evolution*. My goal was to capture a scene from the daily life of a group of baboons in their natural environment. The result is obviously not a real environment, but the art book's theme is a future where things have changed – this premise allowed me to draw what I want without too many restrictions.

In terms of my technical goals, I was simply trying to take my technique to a higher level; I did not have a specific goal, simply 'try to paint differently and better.' When painting personal work, I always consider what I have done before and how I can improve on it in some way. The only certainties in my mind were that I wanted to paint transparent water, which required me to think of what kind of natural elements I could use to compose the image in the most effective way.

I decided to use a wide perspective to emphasize the whole environment instead of just the baboons. The protagonist is the landscape, the 'paradise shore,' while the animals are just an element to fill it with life. To give the environment depth, I used different organic elements. I composed the image using the ponds in the foreground to lead the eye into the painting toward the cliff in the middle ground. I then used lighter values and colors to show the distance between the middle ground and the background, using the greenish light as my key color to create atmospheric perspective."





FUNDAMENTALS APPLIED...

FOREST DWELLER

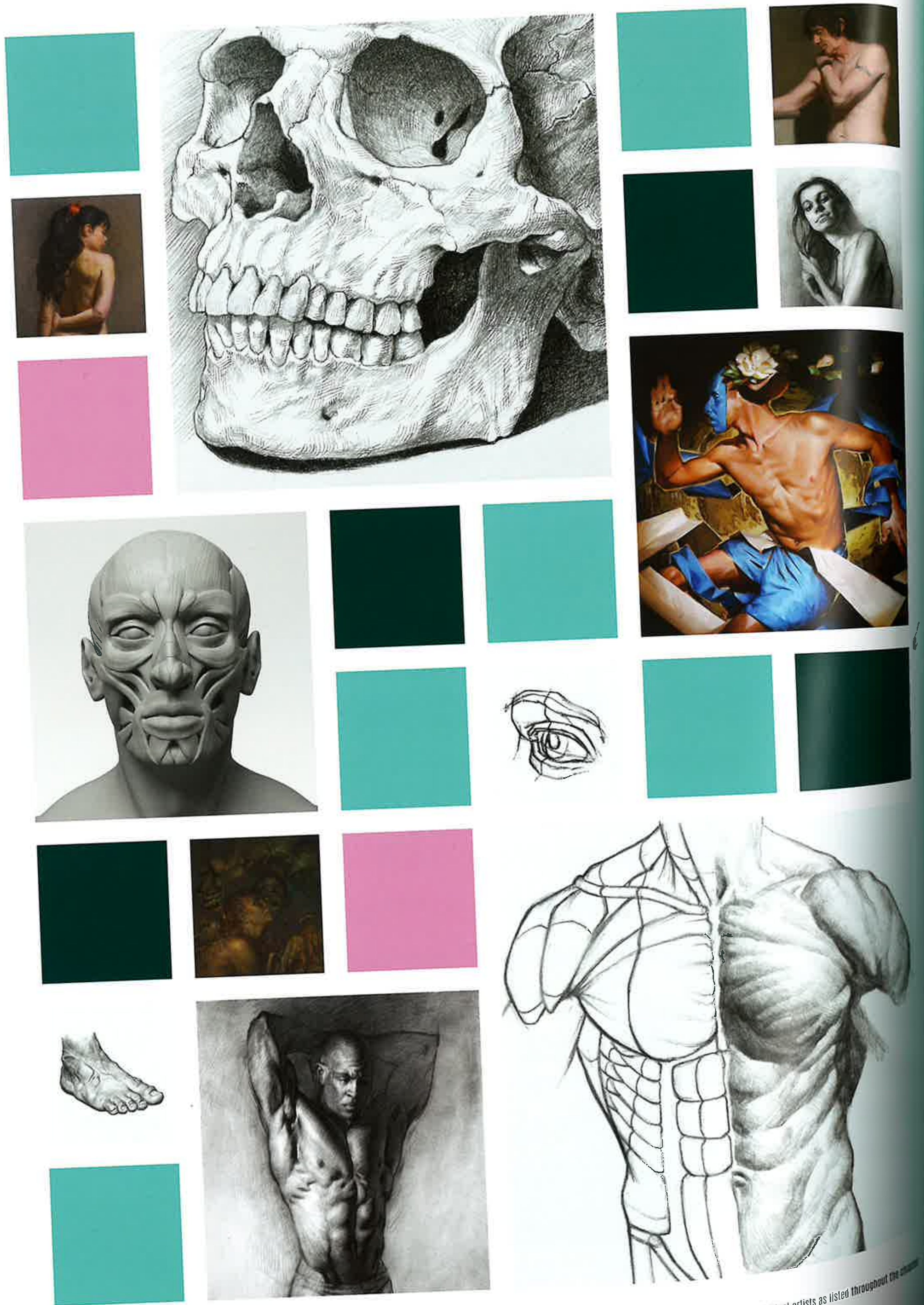
Joshua Cairós

Tools: Adobe Photoshop

"This image depicts one of the Silennus, a race of forest dwellers with magical powers. They are capable of communicating with, healing, and passing their knowledge to plants. These creatures are rare and delicate, living in the treetops and only coming down to the ground when it is absolutely necessary to look after the forest and maintain its balance.

From the start, I wanted to include magic in this illustration. I wanted to use complementary colors - in this case, green for the forest and pink to create a magical quality. The perspective that I chose was based on my need to create a powerful illustration: a low viewpoint that empowers the main character and emphasizes the action taking place. Working from this point of view also enabled me to draw most of the trees, where I wanted to add some elements that would explain a little bit more about this race, such as the ramps that they use to climb up into the treetops. The ambient lighting colors, such as the blue in the background, helped to emphasize the depth of the forest and create the magical, mysterious mood that I was looking for."

Image © Joshua Cairós



Images © individual artists as listed throughout the chapter

Anatomy

By Matt Smith, Mario Anger, Sylwia Bomba & Rita Foster

The human body is a complex machine of muscle, bone, and skin. Capturing its anatomical details is a challenge in itself, before you even come to the nuances of adding personality with poses and facial expressions. This chapter offers a guided tour of the key parts of the body, including muscles and bones that are especially useful for artists interested in the human figure, as well as showing you how to convey emotions and create dynamic poses.

THE HEAD

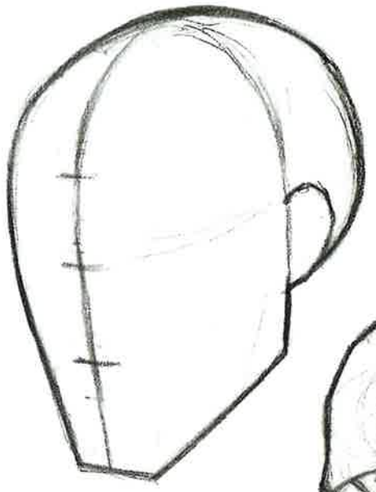
There are several ways to start out drawing the human head. You may start by drawing a circle and adding a jaw, or even drawing the basic shape of the head. Another approach is to draw a basic shape that matches the model you are drawing, and after you have that basic shape, to locate the sections of the face. We will explore that approach here before looking at specific facial expressions in depth.

Dividing the head

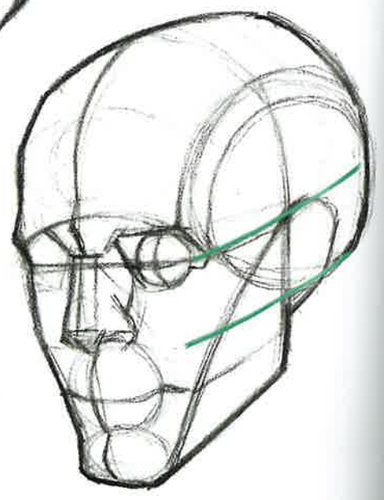
The human face can be divided into three sections: the chin to the bottom of the nose; the bottom of the nose to the brow; and the brow to the hairline (**image 01**). These sections are not always divided evenly, as everyone's face has different proportions; for example, some people may have a longer nose, making the middle section longer. These proportions all depend on your model's face type or the character you want to portray. Nonetheless, there are some basic guidelines that can be followed for drawing any human head (**image 02**):

- The **eye line** falls roughly around the center of the face
- The **bottom of the nose** falls halfway between the eyes and chin, and is as wide as the distance between the eyes
- The **mouth** falls halfway between the nostrils and the chin

"These proportions all depend on your model's face type or the character you want to portray"



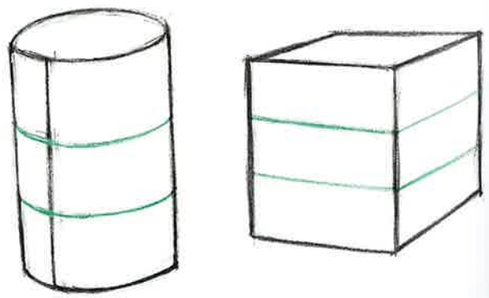
01 Divide the head into three sections to help you place its features



02 The eyes and nose generally align with the top and bottom of the ear

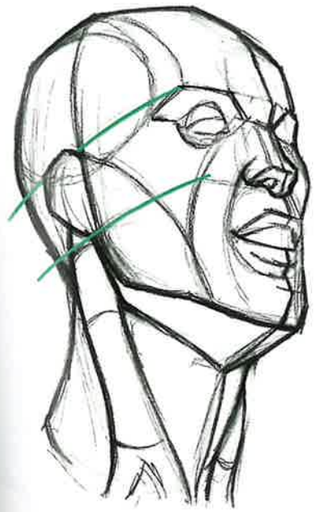
Simplified perspective

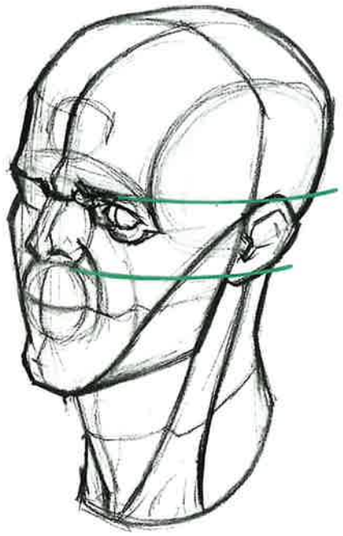
Perspective is always important when drawing, but more so for the head, such as when locating the ears on the sides of the head. If you have a hard time lining up the ears correctly, try visualizing the head as a cylinder or cube with the three dividing lines wrapping around it.



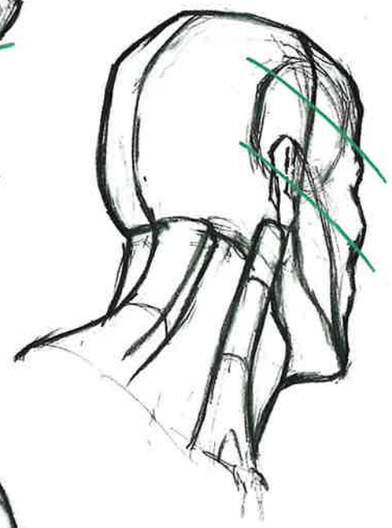
▲ Imagine the head as a cylinder or cube to guide its perspective

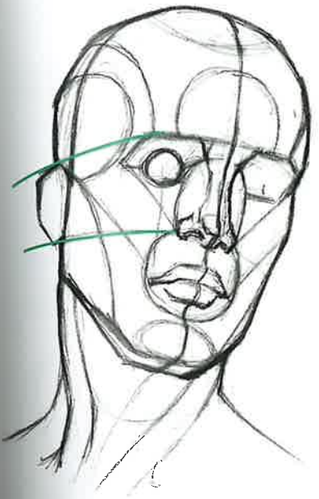
Images by Matt Smith

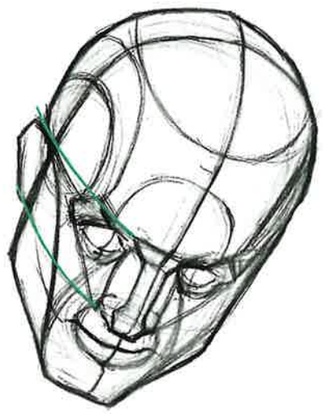


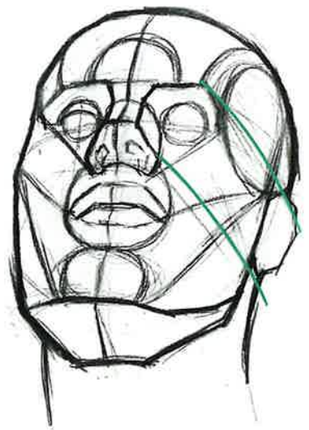


03 Drawing the head at extreme angles becomes easier with knowledge of perspective and anatomy









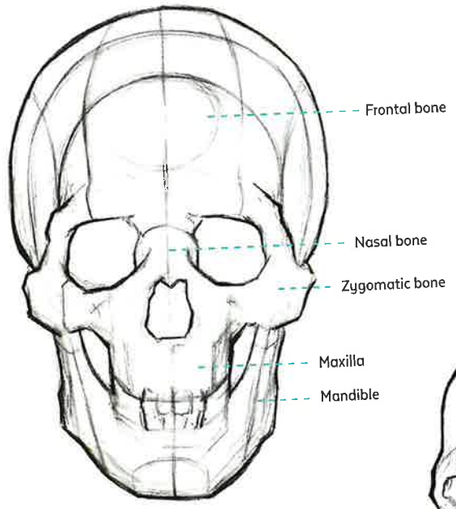
Heads in perspective

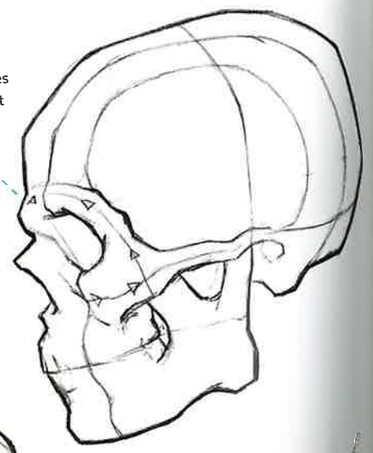
These sketches (**image 03**) show the head drawn from a variety of angles. It is important to note that drawings with more extreme perspective show the ears either above or below where you would normally expect them. Typically, this can be difficult to draw, but understanding the structure of the head will make it much easier. In the following pages we will explore the structure of the head, rather than the anatomy; specific anatomy will be covered more thoroughly in the **"Facial Expressions"** section on **page 192**.

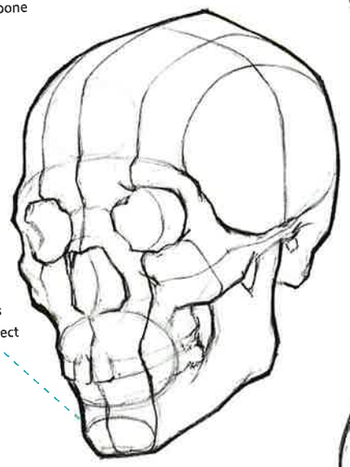
The skull

Much of the structure of the head is influenced by the shape of the skull. These drawings show the human skull from various perspectives. It is highly recommended to study and draw from real-life skulls, as this will make understanding the head so much easier.

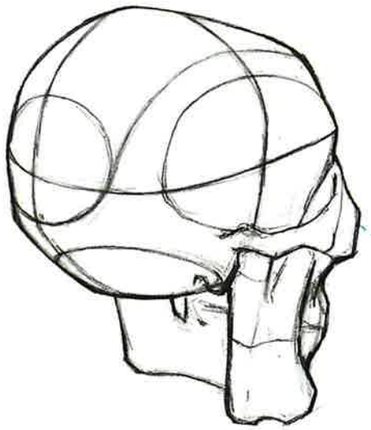
Many of the structure lines shown here can also be used when drawing heads, as the skull effectively determines the contours of the head. Note the domed top of the skull, with slightly concave depressions on the sides of the dome at the front. This bone then funnels out a little toward the front to form the eye sockets and cheekbones. The bottom of the skull is more angular. The exact shape of the jaw will largely depend on the gender of your subject and their natural bone structure.

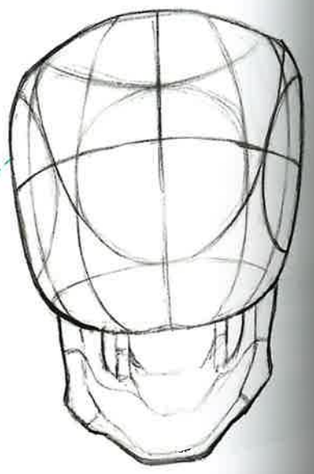






04 The landmarks of the skull influence the shapes of the face and head



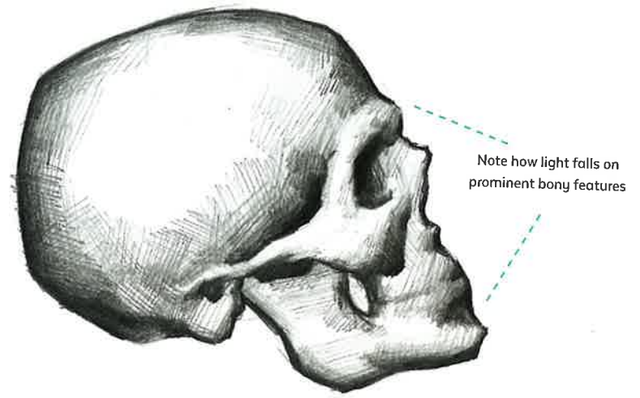


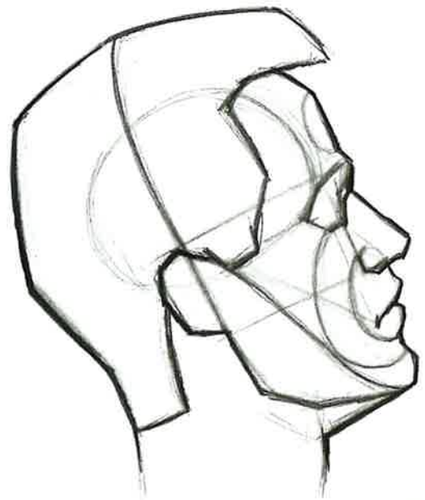
Images by Matt Smith

Comparing structure

These three drawings show the head in profile. On the skull rendering, you can see some of the key features discussed on the previous page, such as the prominent brows and cheekbones. The image in the center demonstrates the structural rhythm lines of the head. As you saw on **page 48**, it is these major shapes that dictate much of how lighting affects the subject.

When comparing these drawings, you can see how the cheekbone of the skull affects the cheeks on the face. On the skull, the cheekbone wraps around to the front of the face and moves into shadow; the cheeks of the face do the same as well. The bones of the brow, eye sockets, and chin create noticeable shadows on the skull; the same shadows are visible on the face.





05 Three different renditions of the human head in profile

Planar anatomy

Later in this chapter, you will see examples of "planar" heads, on which the anatomy has been simplified to geometric planes and blocky structures, similar to the structural drawing shown above. Studying planar models is useful for evaluating the overall shape of a subject, especially in different lighting conditions and at different angles.



▲ Planar models are helpful for studying light

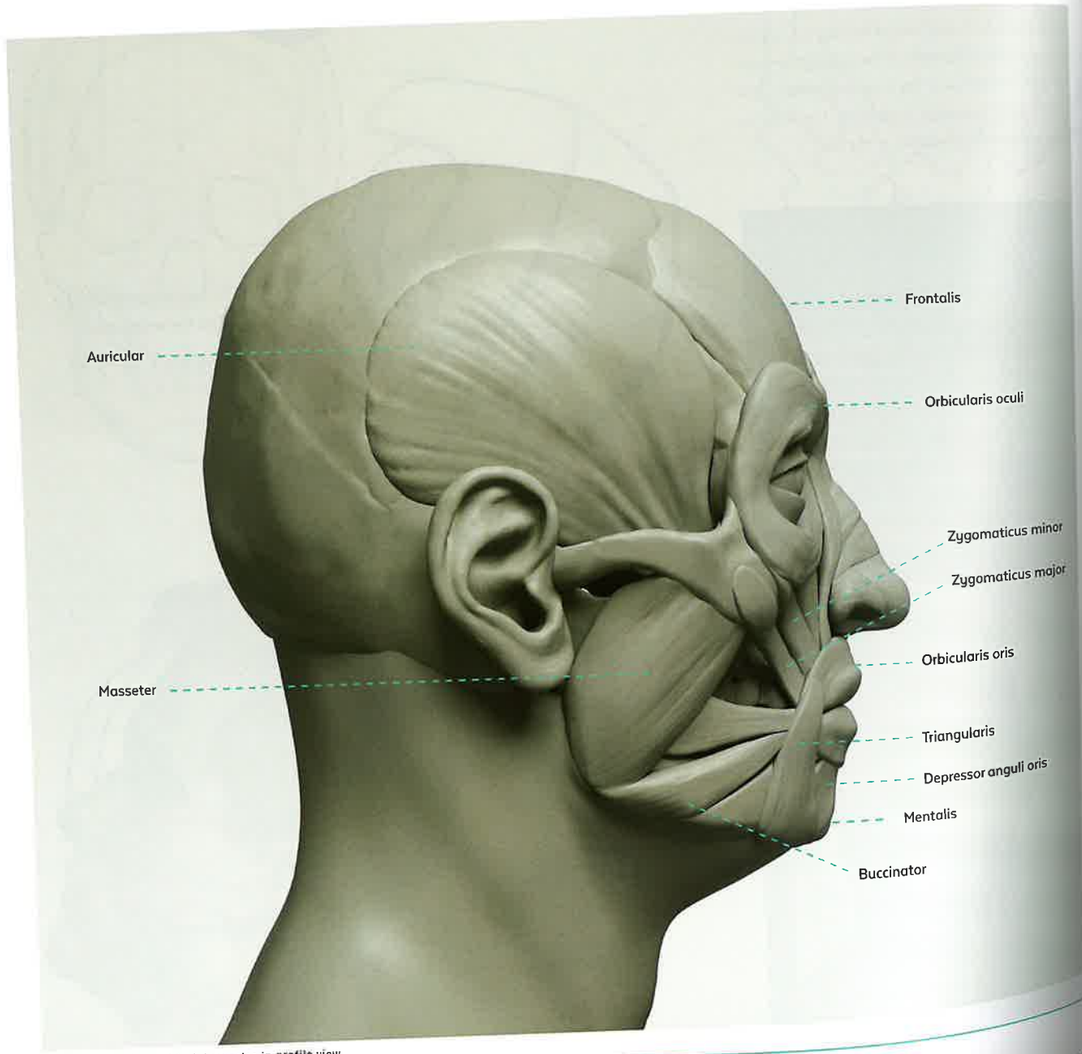


Render by Marie Anger
Other images by Matt Smith

Musculature

There are many muscles of different shapes, lengths, and angles that interconnect across the face. All of these muscles help to create a variety of different facial expressions and movements, bringing life and character to the geometry of the head. Before you can begin to show the face in motion, however, you need to consider its muscular structure.

Images 06 and **07** show a side and front diagram of the facial muscles that are important for an artist interested in creating portraits and characters. Study these to get an idea of the key muscles that help to form and shape the face. It is crucial to understand how the muscles contract and change to create expressions and convey emotions, as we will cover on **page 192**.

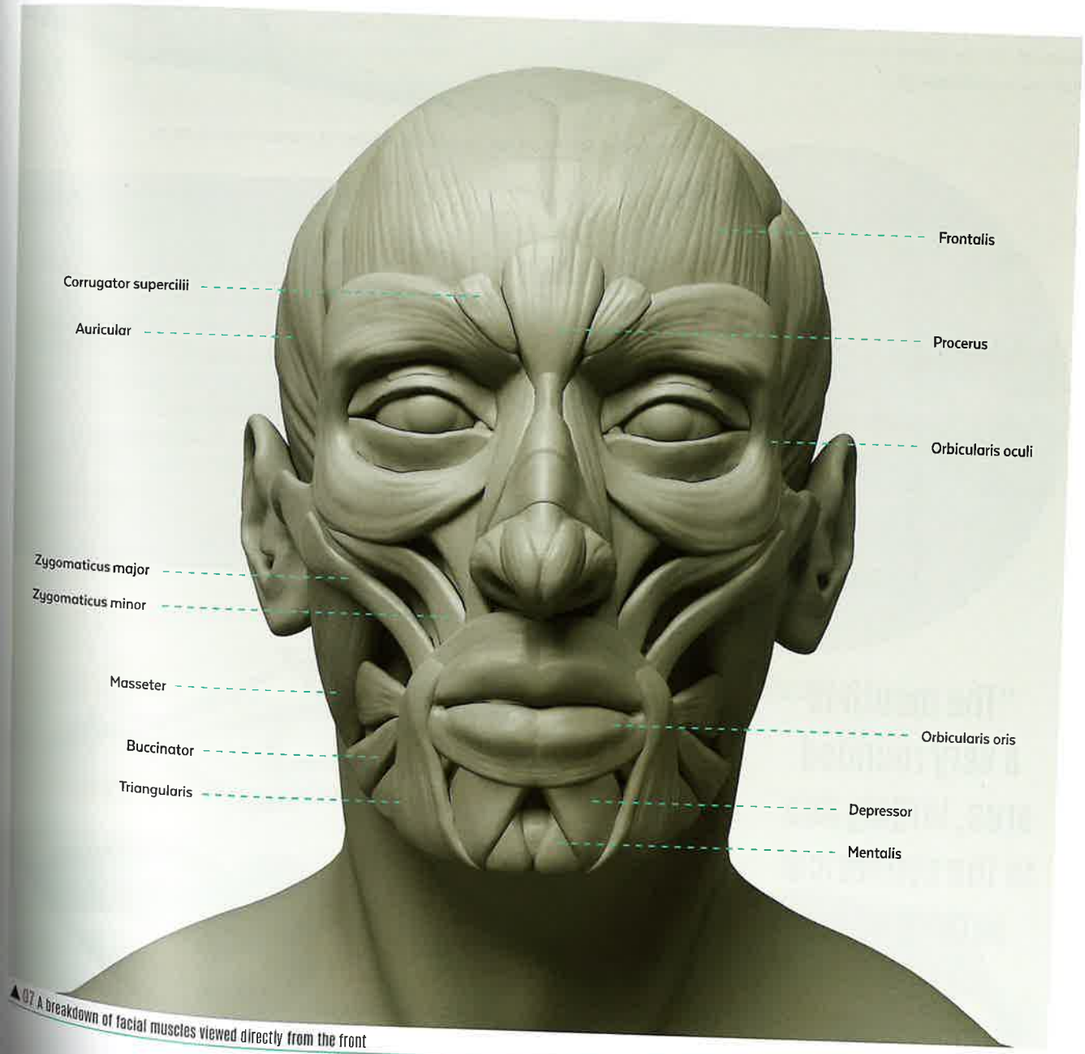


▲ 06 A breakdown of facial muscles in profile view

Images by Maria Ansari

Facial surfaces

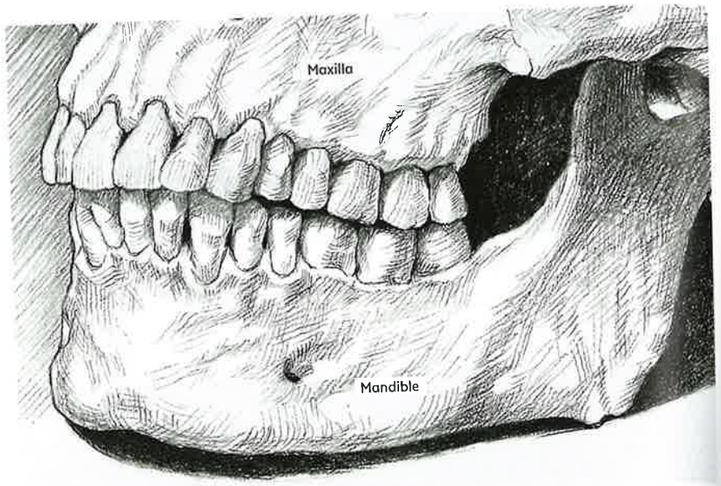
As well as muscle, bone, and cartilage, the face is also shaped by fatty deposits under the skin. These occur all over the face, in areas such as the brow, cheeks, chin, and jowls, and are present in every body type, but will vary according to factors such as your subject's age and physical build. Make sure you keep these softer, fatty areas in mind when drawing and rendering the face.



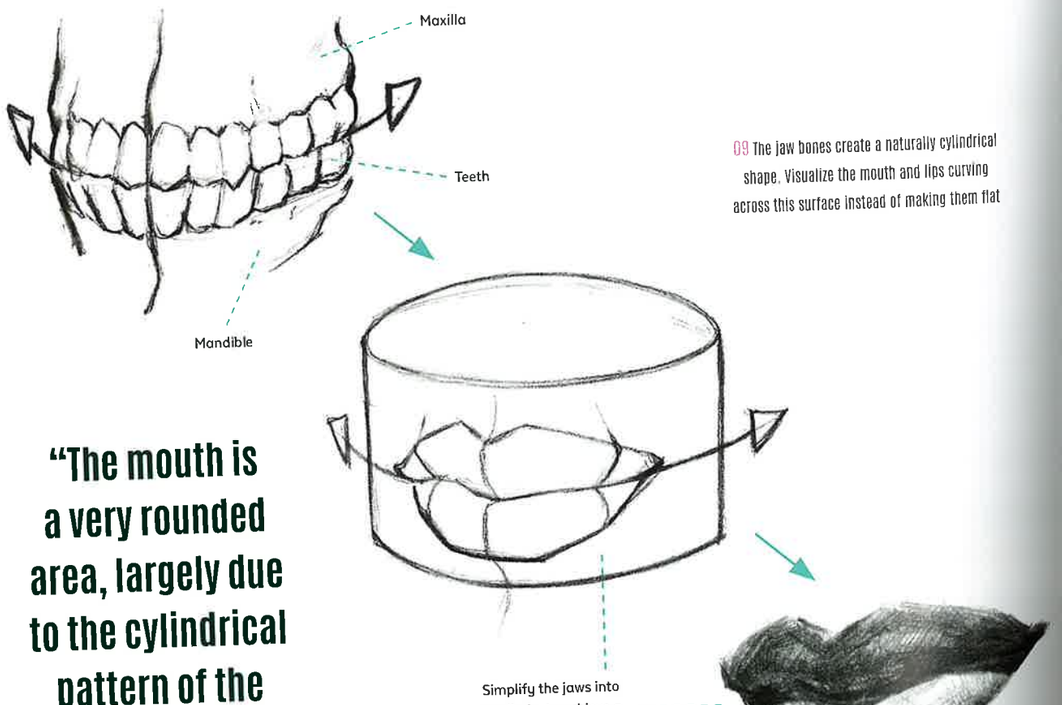
▲ 07 A breakdown of facial muscles viewed directly from the front

The mouth

Now let's explore the features of the face: the mouth, nose, eyes, and lips, starting with the mouth. You may have noticed that the structural head drawings in this section have a circular shape around the mouth. The mouth is a very rounded area, largely due to the cylindrical pattern of the maxilla and mandible (the upper and lower jaw bones, **image 08**). To demonstrate this, **image 09** shows a pair of lips on a cylinder to indicate how they naturally wrap around the shape. It is important to remember this if the mouths you draw look flat or unrealistic, as the approach can be applied to drawing mouths from any angle (**image 10**).



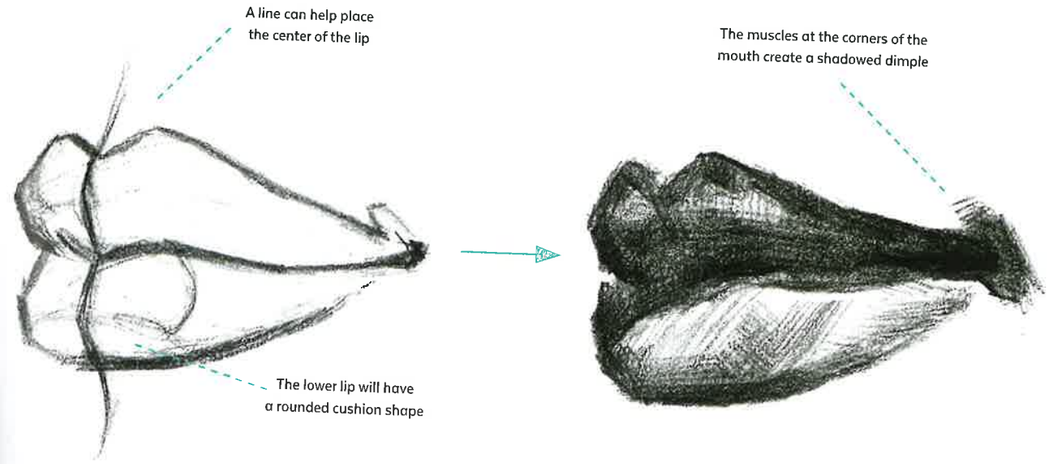
▲ 08 The upper jaw (maxilla) and lower jaw (mandible) influence the shapes of the mouth and lips



09 The jaw bones create a naturally cylindrical shape. Visualize the mouth and lips curving across this surface instead of making them flat

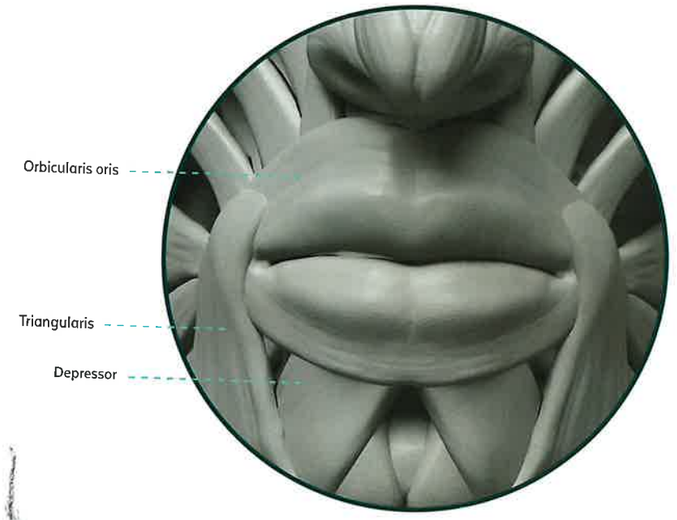
"The mouth is a very rounded area, largely due to the cylindrical pattern of the maxilla and mandible"

Image 08 by Rita Fasiolo
Other images by Matt Smith

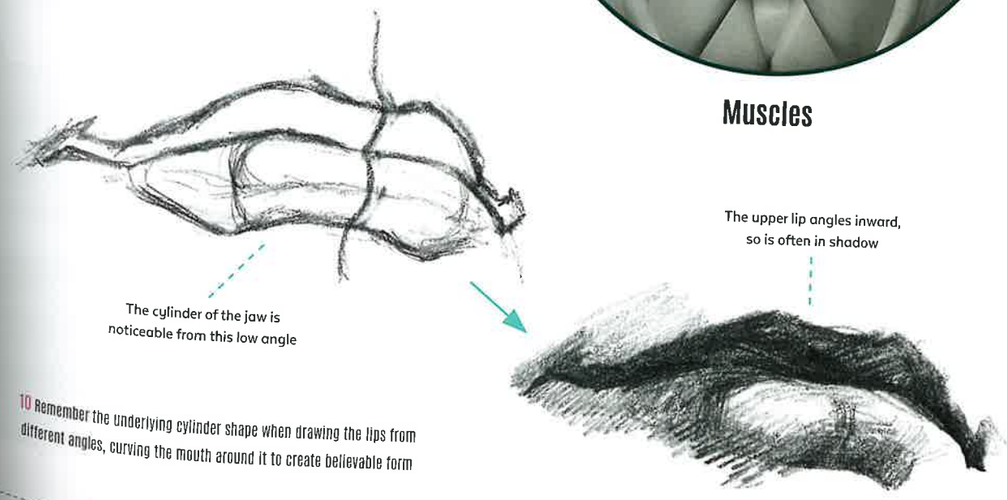


Shading the lips

When shading the lips, keep in mind that they have a darker value than the rest of the face, due to the thinness of the skin. When lit by a typical overhead light source, the upper lip will also appear darker than the bottom lip, as it is naturally angled inward. A thick bottom lip will have a noticeable shadow below it.



Muscles



10 Remember the underlying cylinder shape when drawing the lips from different angles, curving the mouth around it to create believable form

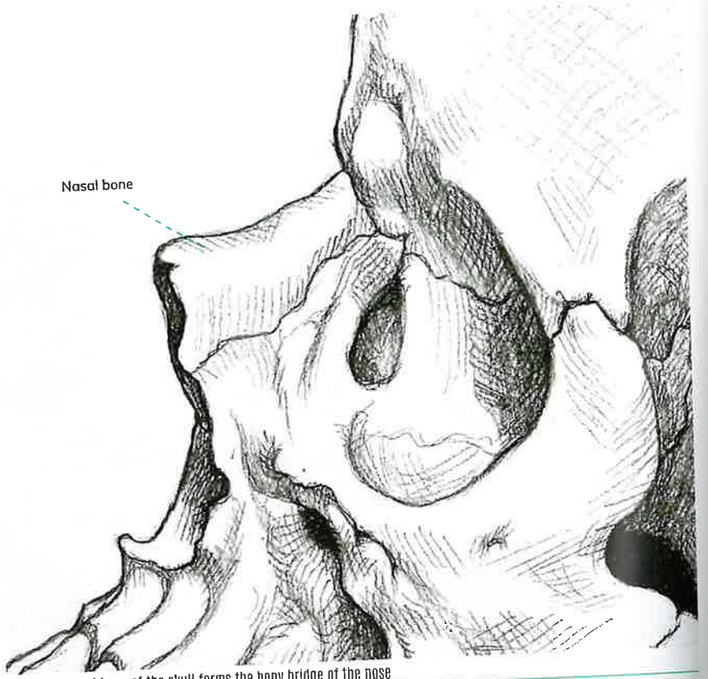
3D render by Mario Anger
Other images by Matt Smith

The nose

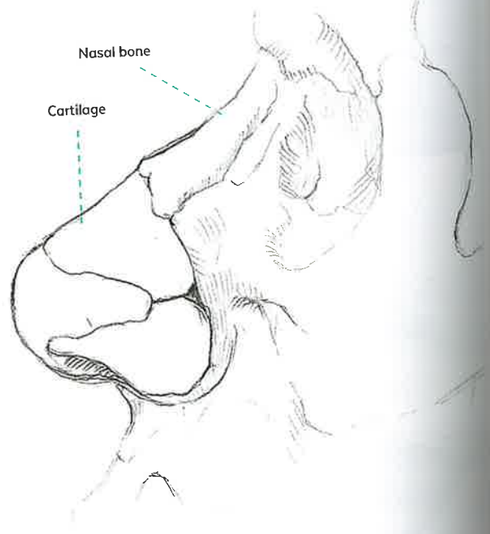
Noses can be difficult to draw, but they can be simplified by imagining the nose as a cylinder or cone shape with a flattened top.

To guide your drawing, remember the underlying nasal bone, which creates the "bridge" of the nose (**image 11**). Attached to the nasal bone are the pieces of cartilage that form the rest of the nose, including the ball of the nose and the nostrils (**image 12**).

The sketches in **image 13** show the nose in a series of different perspectives. It is important to note the planes of the nose, particularly the balled bulge at the bottom of the nose and the wings of the nostrils. The wings of the nostrils come out from the front of the nose and wrap around the ball to fold back in and reattach to the face.

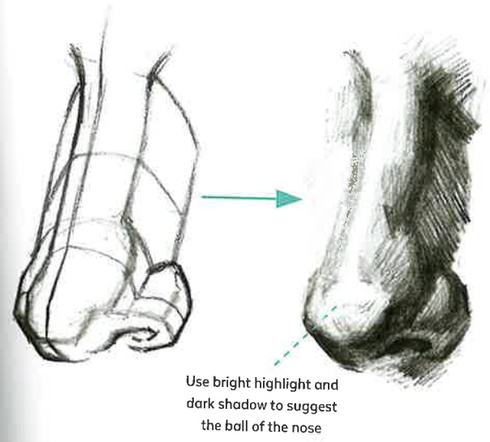


▲ 11 The nasal bone of the skull forms the bony bridge of the nose

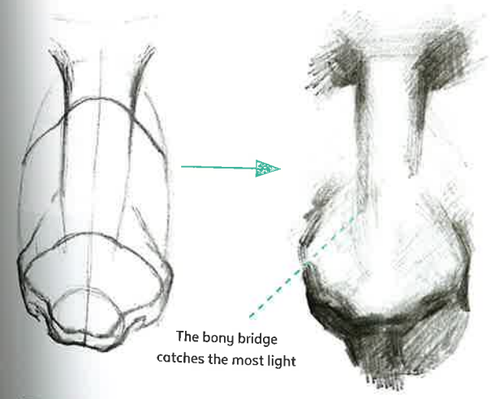


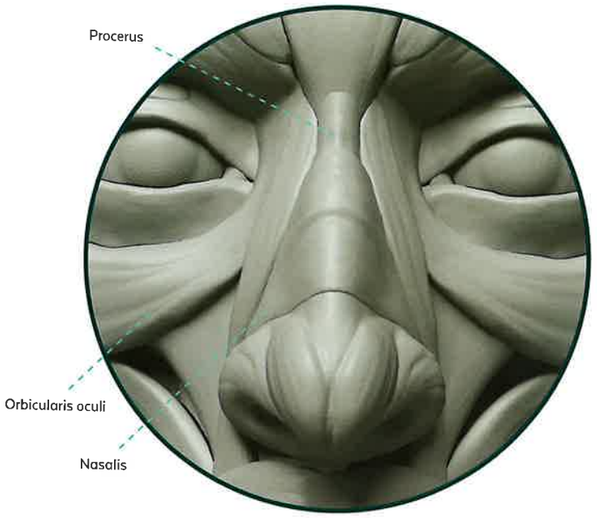
▲ 12 The rest of the underlying nose structure is formed by cartilage

Images by Rita Feuchter

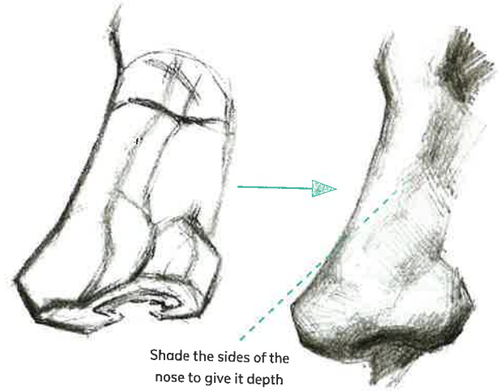


13 Simplify the complex shape of the nose by visualizing it as a flattened cylinder or cone



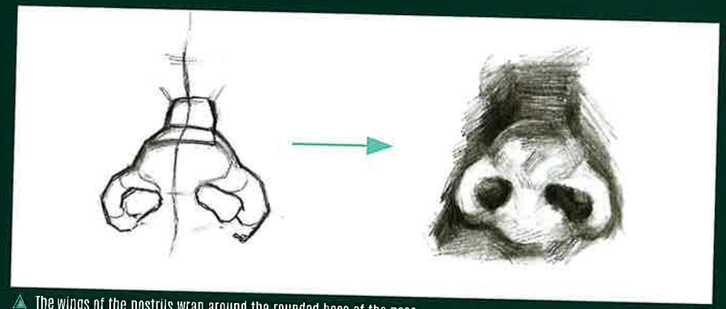


Muscles



View from below

The view of the nose from underneath, shown on the right, gives a clearer view of how the nostrils bulge out around the ball of the nose. This angle can be challenging to get right, so make sure you take some time to consider and study the structure of the nose and how it attaches to the face.



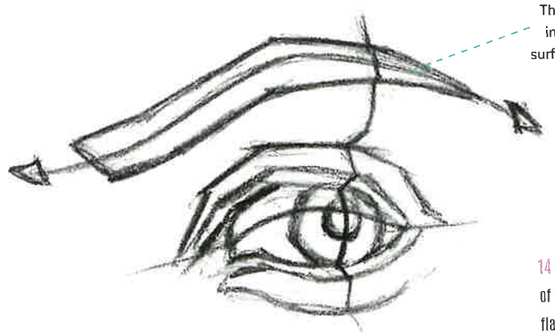
▲ The wings of the nostrils wrap around the rounded base of the nose

Illustration by Mario Anger
Other images by Matt Smith

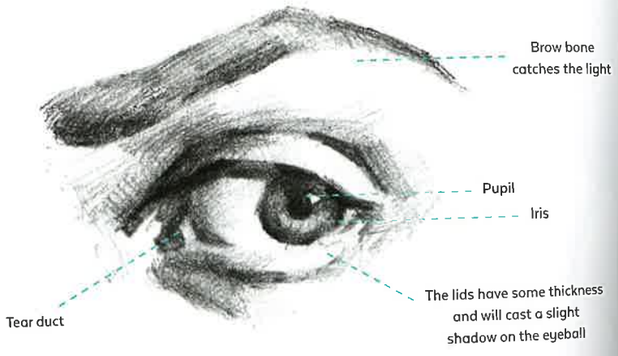
The eyes

Eyes are a lot of fun to draw; they can tell the viewer a lot about the person or character you are drawing, as you will find out when we cover facial expressions on **page 192**. The basic shape for an eye follows the spherical shape of the eyeball, and you have to be careful not to draw it flat. Even though the eyes sit in the sockets of the skull, part of them still protrudes from the face; you need to remember this spherical shape when drawing both the eyeball and the eyelids wrapping over them (**image 14**). Notice how the render lines in these images follow the pull of skin, wrapping around the eyes.

When drawing eyebrows as well, remember that they too are not flat, instead wrapping around the curved brow of the skull. Always keep the skull in mind and consider how the features interact with its structure (**images 15** and **16**).



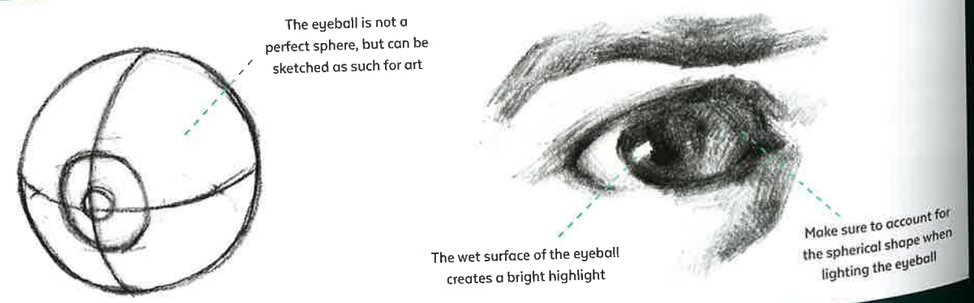
14 Remember that no part of the eyeball or socket is flat. The brow, eye socket, eyelids, and eyeball form crevices and curves



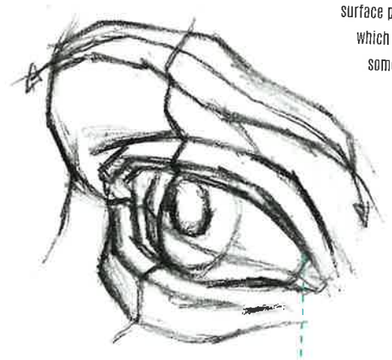
Shape of the eyeball

When rendering the eye it is important to remember that it is a spherical object, so there will be darker shadows at the corners, as you can see below right as the eyeball turns away from the light source.

In reality, the human eyeball is not perfectly spherical in shape, but it is easiest to visualize it as such for the purposes of blocking out and lighting a drawing.



▲ Imagine the eyeball as a sphere when applying shadows and light. This shape means that the eye will protrude slightly and parts of it will always be shadowed

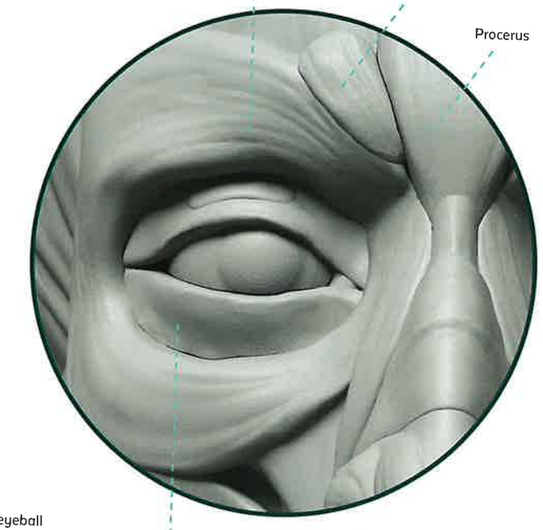


15 Part of the eyeball's curved surface protrudes from the socket, which is more apparent from some angles than others

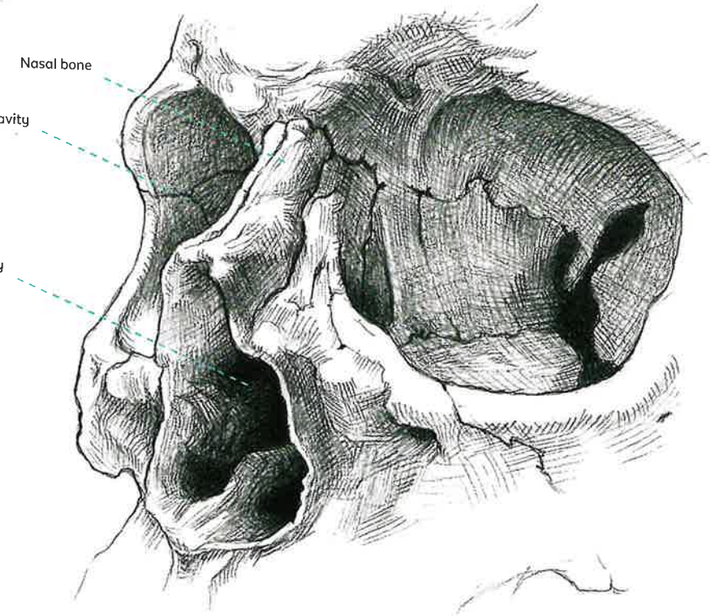
The eyeball and eyelids protrude from within the socket cavity



The eyelids and eyeball catch the light compared to the recesses of the socket



Muscles



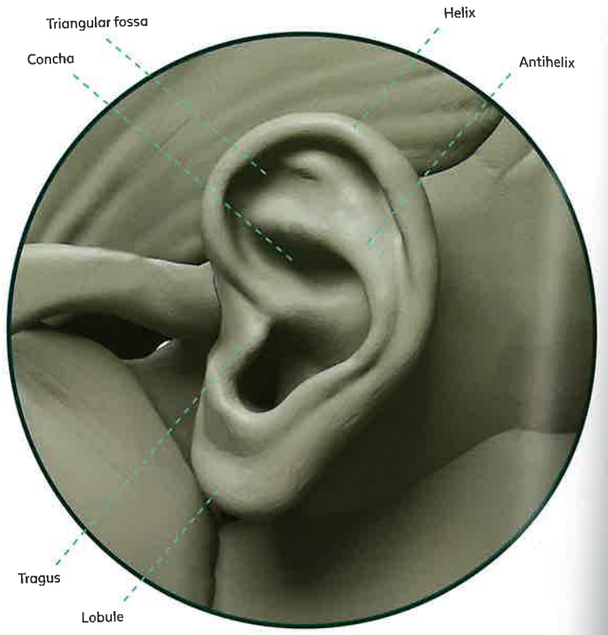
16 The bones of the eye socket will remain prominent on the surface

Skull render by Mario Anger. Image 16 by Rita Foster
Insert images by Matt Smith

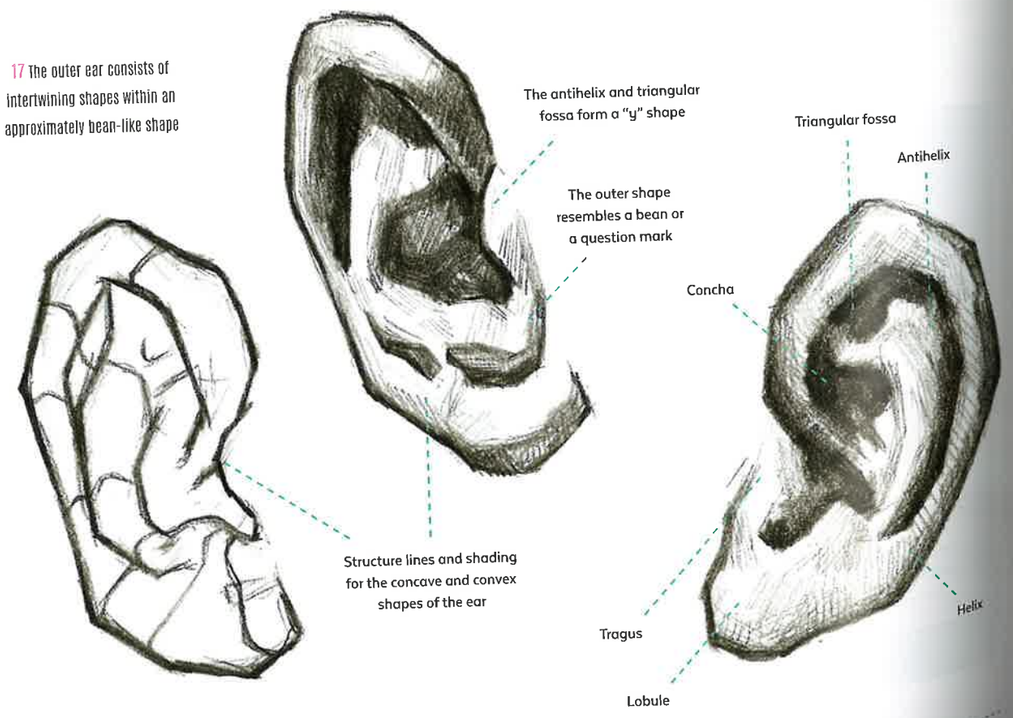
The ears

Ears can be difficult to draw, as they are made up of complex, intertwining shapes. Look at each shape of the ear in **images 17** and **18**, and take note of how the structures interact with each other. See how the earlobe splits into two sections; one section wraps all the way outside the ear and then back in, and the other section curls around to make up the inside of the ear.

When drawing the whole head, it is important to keep in mind that it does not matter how well you can render out an ear – if the perspective is off, your drawing will look wrong. A useful rule of thumb is that the top of the ear lobe aligns with the eye, while the bottom of it aligns with the bottom of the nose or the corner of the mouth.



The outer ear

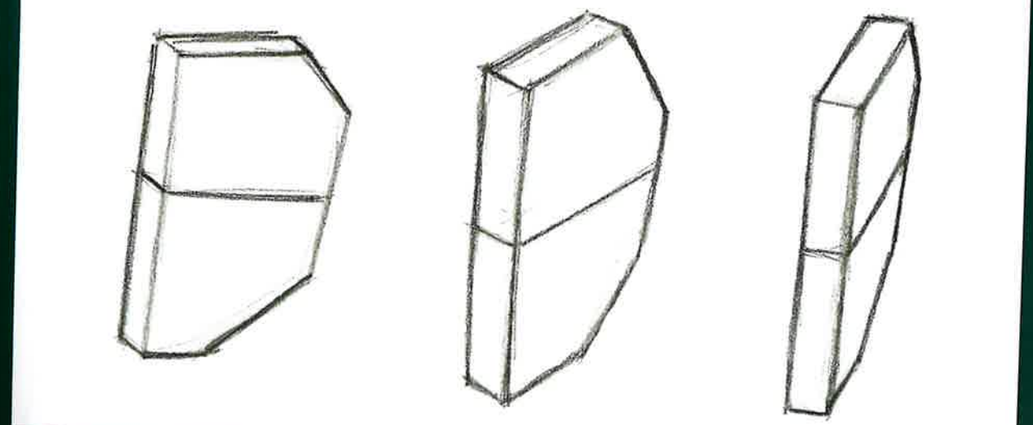


3D render by Maria Angel
Other images by Matt Smith

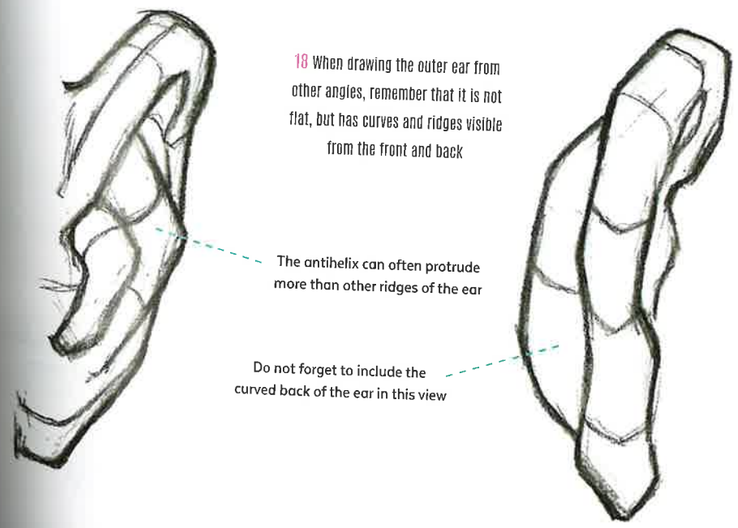
Blocking out

If you are having trouble getting the perspective of the ears right, think of them as a three-dimensional "D" shape, as shown here, and add them to the structural drawings of your heads to check them.

Keep in mind that these shapes do not lie flat against the sides of the head, but angle outwards slightly.



▲ The ear can be simplified into a D-shaped block if you are struggling with placement

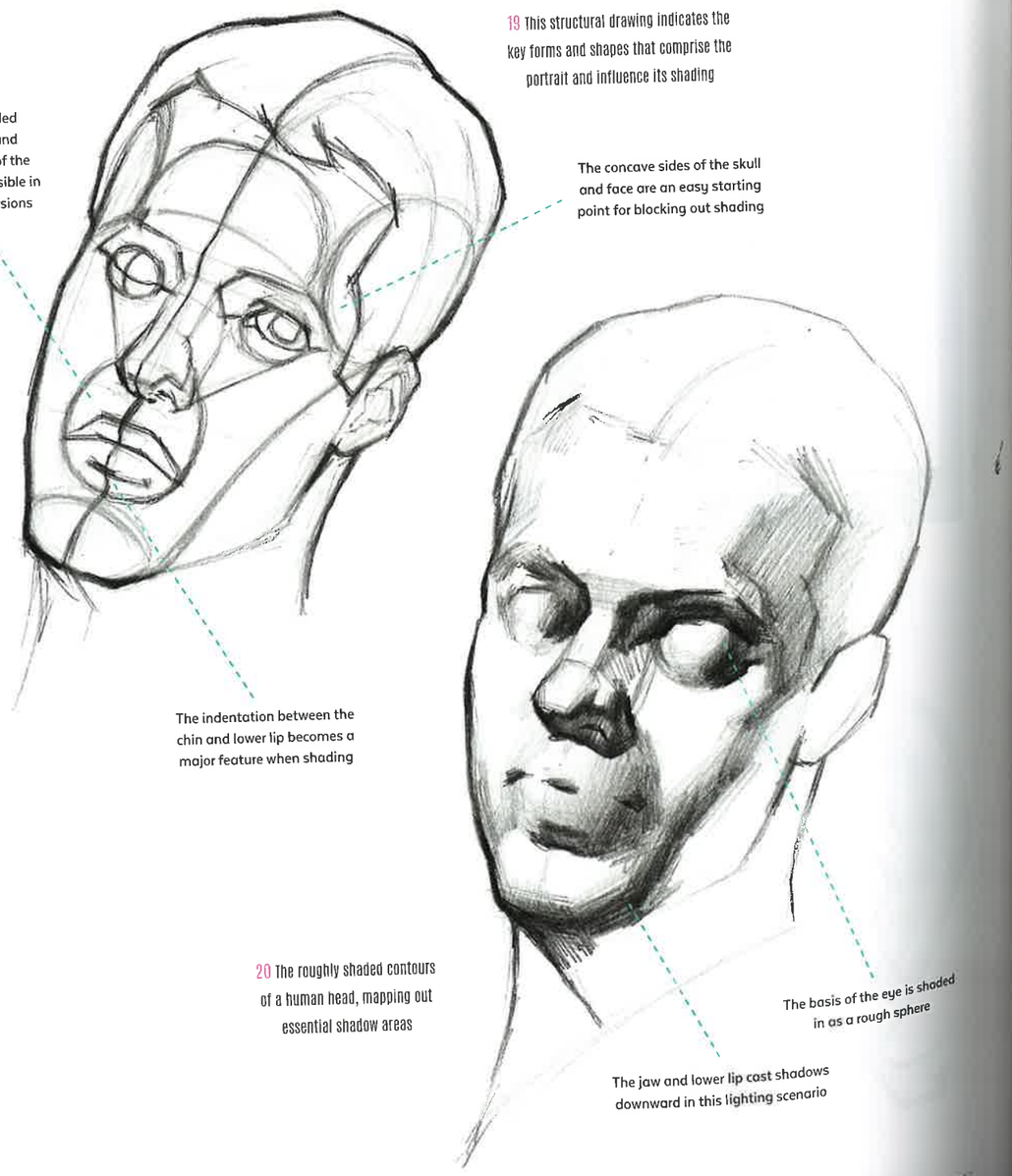


"It does not matter how well you can render out an ear - if the perspective is off, your drawing will look wrong"

The full head

Once you understand the structures of the head, your drawings will feel more believable. These drawings show how all the features are brought together to create a fully rendered head.

Image 19 demonstrates the structural contours of the head. **Image 20** shows a sketch of the same head with guidelines indicating underlying flow and structure; the mouth follows a rounded cylindrical pattern around the front of the face, and the eyes and eyelids are distinctly spherical. **Image 21** is a finished pencil render with fleshed-out features that give a softer, more natural finish to the structural blocking.



19 This structural drawing indicates the key forms and shapes that comprise the portrait and influence its shading

20 The roughly shaded contours of a human head, mapping out essential shadow areas

Images by Matt Smith



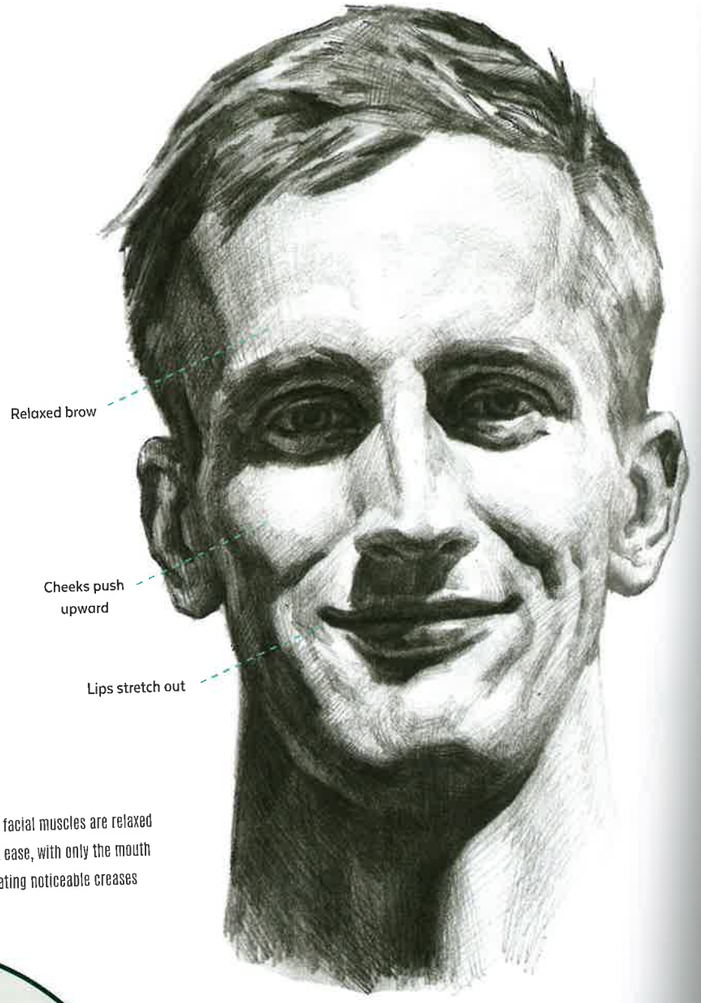
21 The refined pencil drawing with features and surface details fully rendered

EXPRESSIONS

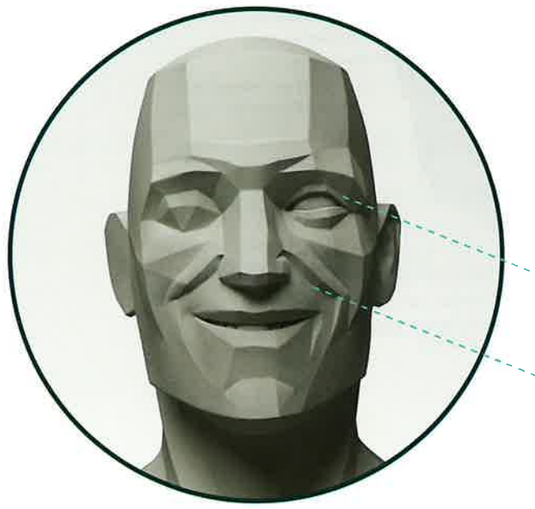
Now that you are acquainted with the anatomy of the face and head, we will look at how to infuse your drawings with emotion by creating believable expressions. There are, of course, more possible variations than the nine expressions in this section, but these are solid basic examples that are useful to master. If you observe more complex facial expressions, you will see that many of them are based on these, with subtle changes in eye or mouth shape.

Happiness

Image 22 shows a happy, smiling facial expression with a closed mouth. The eyebrows are relaxed and the main muscle in action is the zygomaticus, which stretches the mouth out and up, creating creases from the cheeks to the chin. In more intense smiles (**image 23**), creases form at the corners of the eyes, and the teeth may be exposed as well. When creating happier facial expressions, try to think in round and soft forms; the face should look inviting.



22 The facial muscles are relaxed and at ease, with only the mouth creating noticeable creases



Key shading points

"Crow's feet" wrinkles form beside the eye

Furrows form around the mouth and nose

3D render by Mario Anger
Other image by Matt Smith



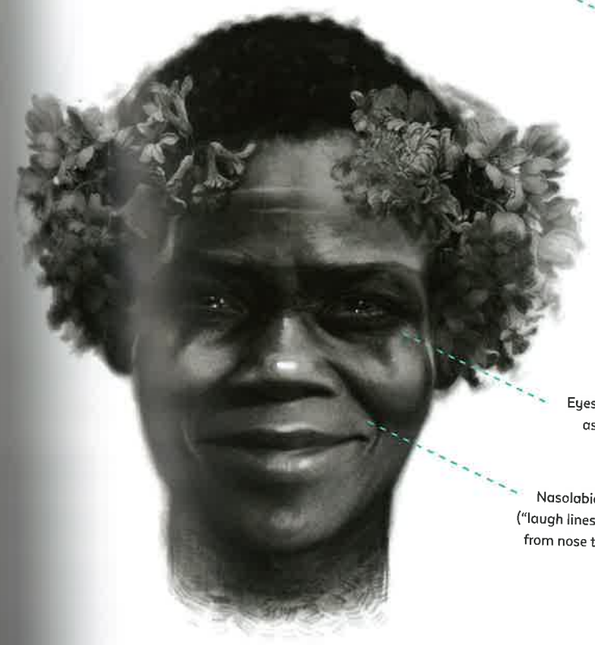
Muscles in motion

Orbicularis oculi contracts, narrowing the eyes

Zygomaticus muscles raise the mouth

23 The narrowing of the eyes and exposure of the teeth depend on the intensity of the smile

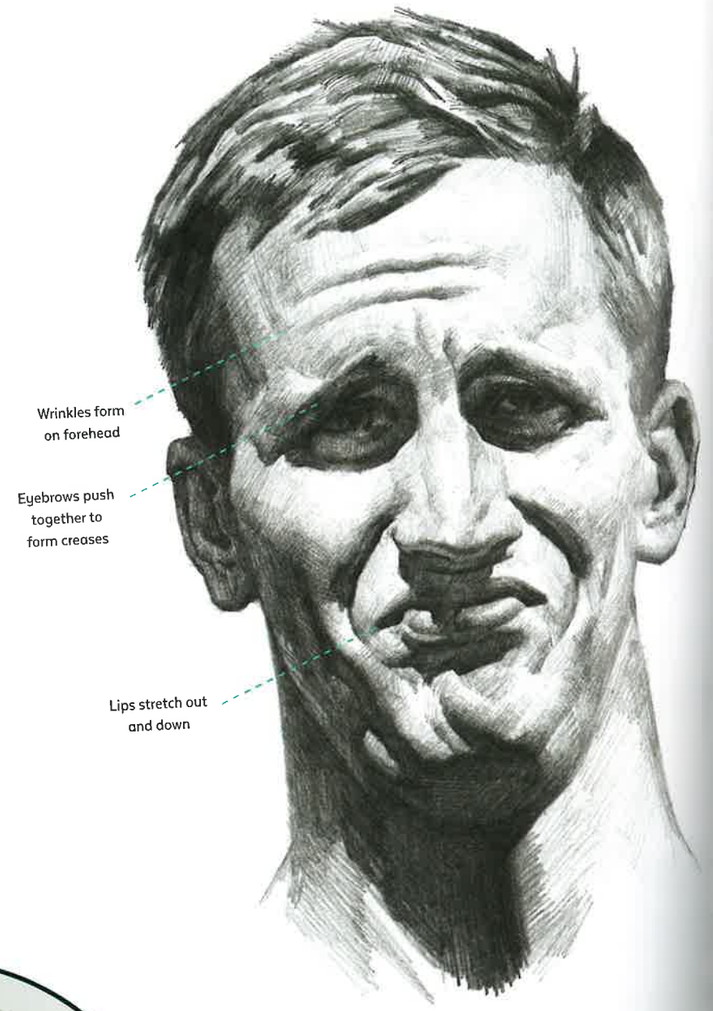




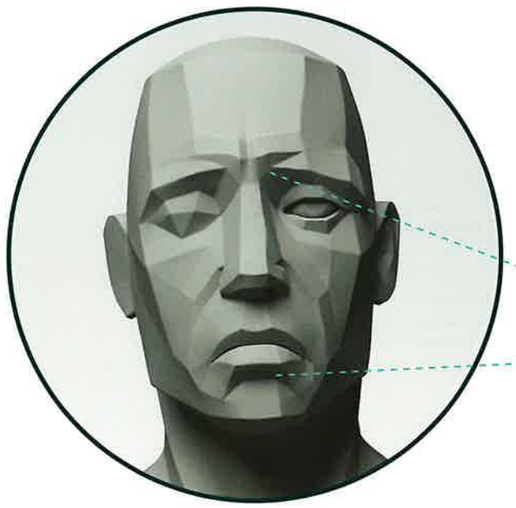
3D render by Mario Anger
Other images by Sylwia Bomba

Sadness

In these sad expressions (**images 24** and **25**), the orbicularis oculi brings the inside eyebrows up, creating the wrinkles in between the eyebrows and on the forehead, as well as pushing the rest of the eyebrows down, making the eyes narrower. The orbicularis oris pushes the corners of the upper lip down and stretches the mouth out, which pushes the lower lip out to create a pout. The mentalis is pushed up, creating the bulge on the chin.



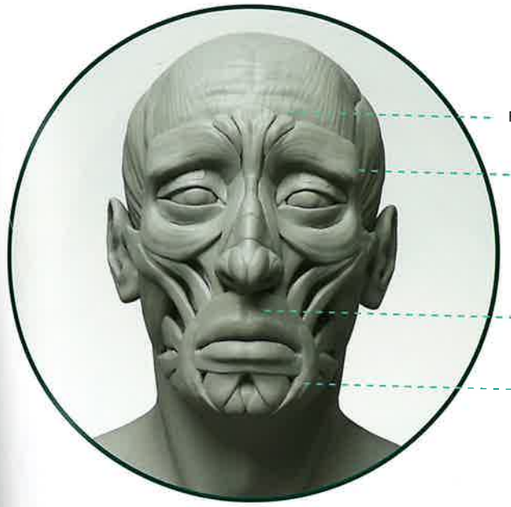
24 The brow becomes creased and the mouth turns down at the corners to express sadness



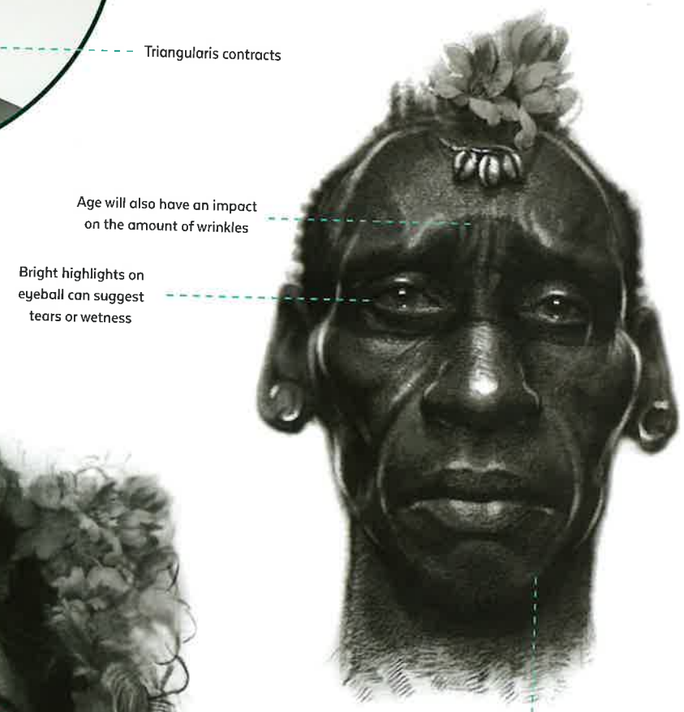
Key shading points

3D render by Maria Anger
Other image by Matt Dixon

Muscles in motion



25 There may be creases around the mouth as the lips are stretched and turned downward

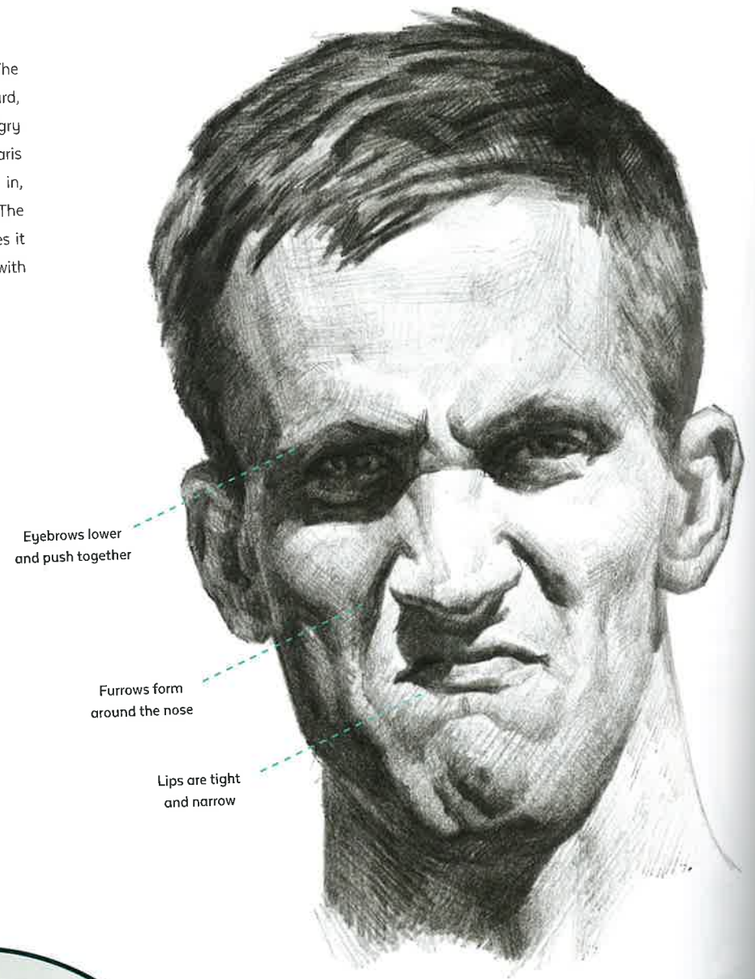




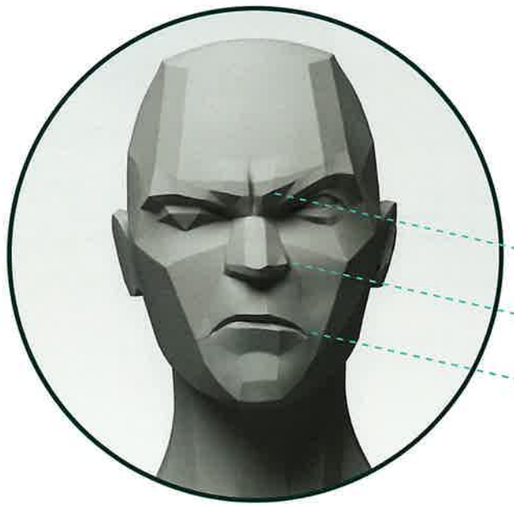
3D render by Marie Anger
Other images by Sylwia Bomba

Anger

Images 26 and **27** show angry expressions. The facial features here are all being pulled inward, distorting the face. This is what makes angry expressions unpleasant to see. The orbicularis oculi pushes the eyebrows down and in, creating wrinkles and narrowing the eyes. The zygomaticus pulls the mouth up and pushes it in. The nostrils are pulled up as well, along with the mentalis, creating the bulge on the chin.



26 An angry expression compresses and distorts the facial features



Key shading points

Deep furrows form between eyebrows

Creases appear around nose

Mouth forms a severe line

3D render by Marie Anger
Other image by Matt Smith



Muscles in motion

Procerus and corrugator supercilii create furrows

Orbicularis oculi tightens around the eyes

Orbicularis oris compresses the mouth



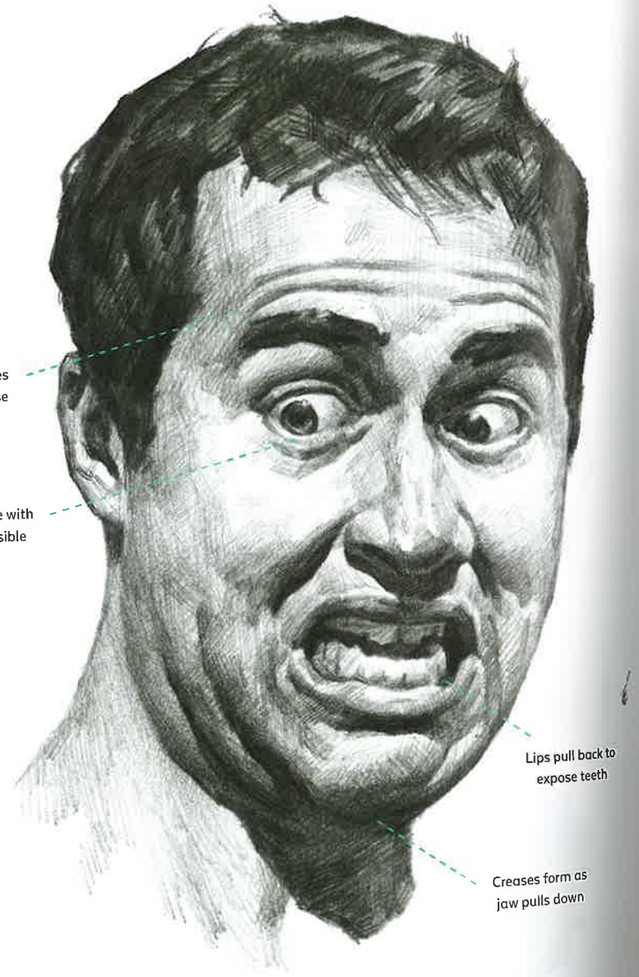


27 Distinctive brow creases form as the eyebrows push together, creating a frown

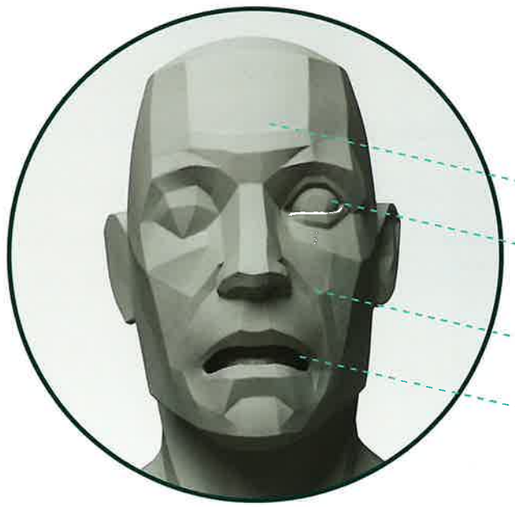
3D render by Marie Anger
Other images by Sylwia Bomba

Fear

Images 28 and **29** show expressions of terror. Similar to the surprised expression (**page 200**), the eyes are wide open due to the frontalis pulling the orbicularis oculi upward. This raises the eyebrows and creates the wrinkles on the forehead. The masseter pulls down slightly, opening the mouth. The zygomaticus pulls the top lip up and out, while the triangularis and the depressor pull the bottom lip down, exposing the teeth in a fearful grimace.



28 Widen the eyes and bare the teeth to create an expression of fear and dread



Key shading points

Brow creases as eyebrows raise

Whites of eyeballs now more visible

Creases may appear as mouth drops down

Dark inside of mouth may be visible

3D render by Maria Anger
Other image by Matt Smith



Muscles in motion

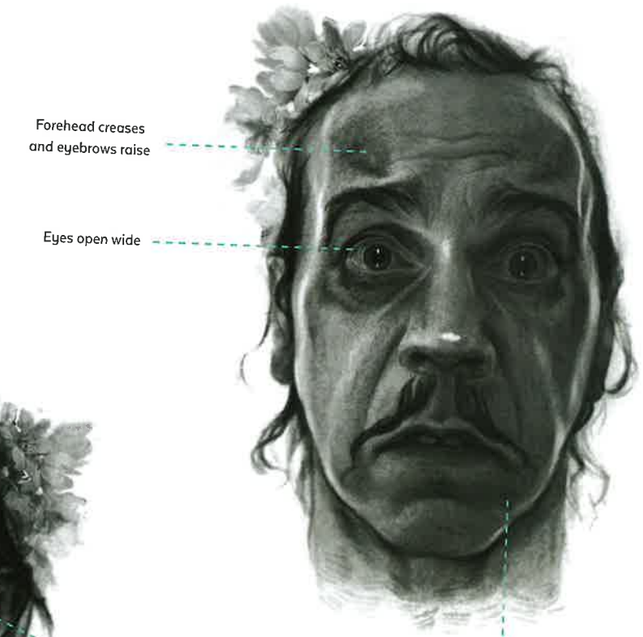
Frontalis raises eyebrows

Orbicularis oculi opens eyes wide

Zygomaticus opens mouth upward

Masseter and triangularis open mouth downward

29 Try using different mouth expressions to show varying levels of horror or fearful shock

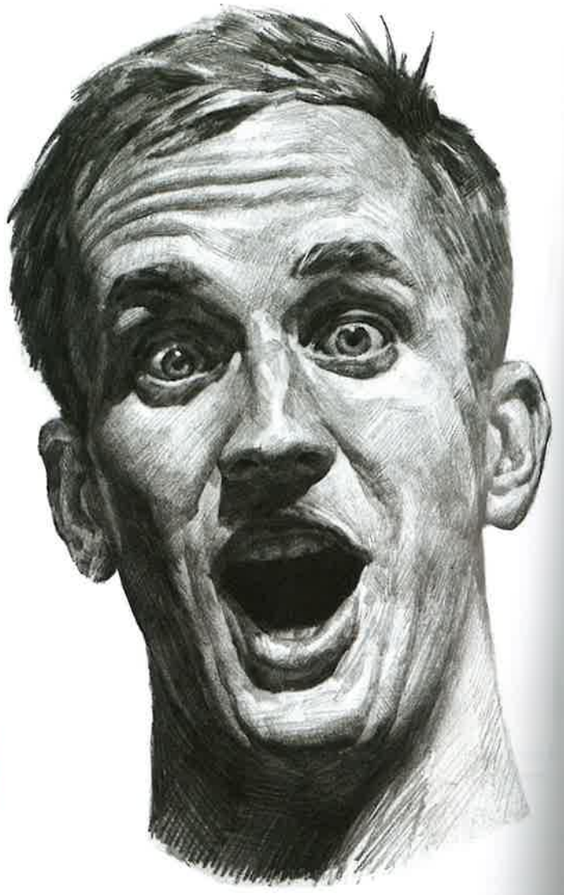




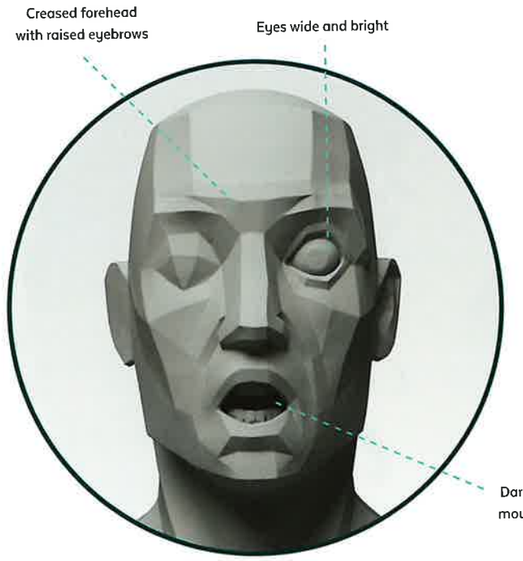
3D render by Maria Anger
Other images by Sylwia Bomba

Surprise

In a surprised expression (**images 32** and **33**), the frontalis pulls the orbicularis oculi upward. This brings the eyebrows up, widens the eyes, and creates wrinkles in the forehead. The masseter lowers the jaw, opening up the mouth, while the zygomaticus stretches the mouth, making it wider.



32 The mouth and eyes open wide to create a look of surprise



Key shading points

Conveying moods

When drawing a "pure" facial expression, such as a happy or angry face, the features are most likely going to be symmetrical on each side. When drawing a more mixed emotion, such as confusion or an evil smile, the muscles will interact differently on each side of the face. When drawing happier facial expressions where the muscles can be more relaxed, try to think of round and soft forms. With angry faces where the muscles are being pulled in, try to capture this angular sharpness instead. Keeping all these factors in mind will help you create realistic portrayals of each emotion.

3D render by Maria Anger
Other image by Matt Smith



Muscles in motion

33 Turn the corners of the mouth up or down depending on whether the surprise is pleasant or not

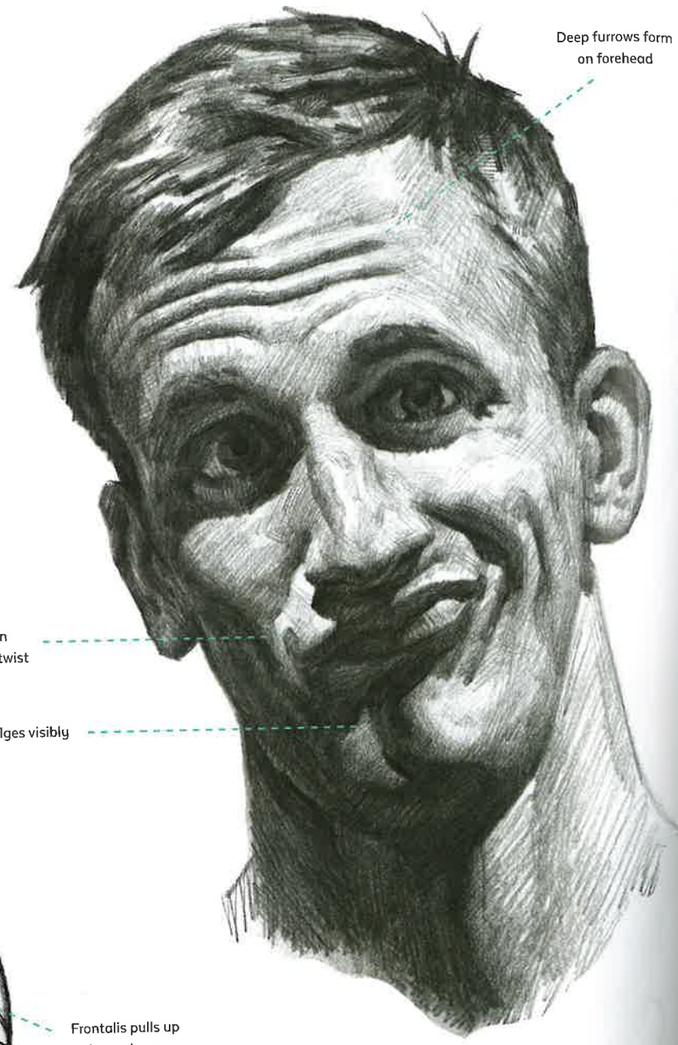




3D render by Maria Anger
Other images by Sylwia Bomba

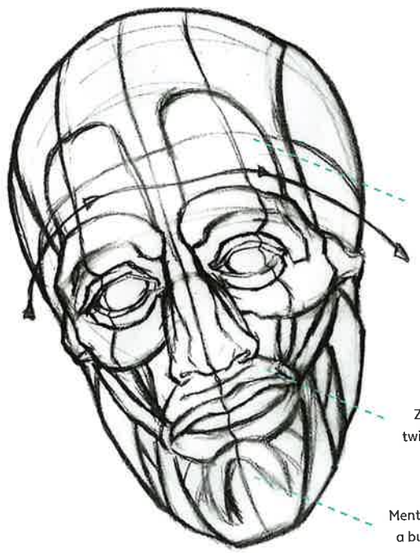
Confusion

Image 30 shows a confused or unsure face. Like the skeptical expression (**page 205**), the muscles interact differently on each side of the face. The frontalis pulls up the orbicularis oculi on each side of the face, but more on the left in this example. This creates more wrinkles on the forehead, and as the wrinkles travel to the right, they lessen and then disappear. The zygomaticus on the right pulls the mouth out and up, creating more distinction on the right side than on the left, giving the mouth an asymmetrical twist of puzzlement. The mentalis bulge is more apparent in this expression as well.



30 A twisted mouth and furrowed brow create a look of confusion

Muscles in motion



Images by Matt Smith



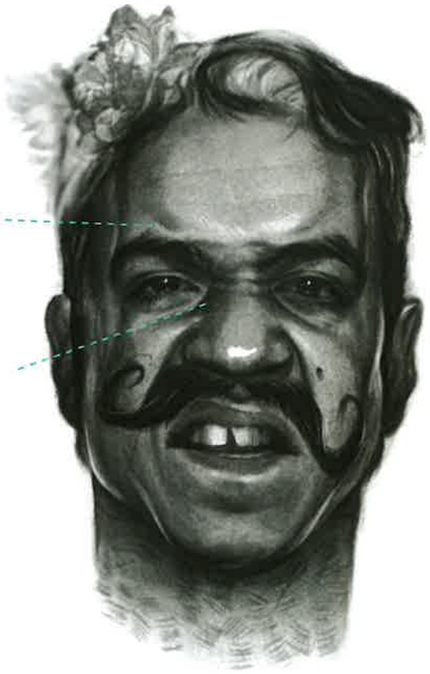
Disgust

An expression of disgust (**image 31**) has some features in common with one of anger. The brows are lowered and the eyes are narrowed. The muscles around the nose pull up, wrinkling the nose and flaring the nostrils. The upper lip pulls up and the corners of the mouth turn down, creating a grimacing or twisted mouth.

Muscles in motion

31 A grimacing mouth and wrinkled nose create an expression of disgust



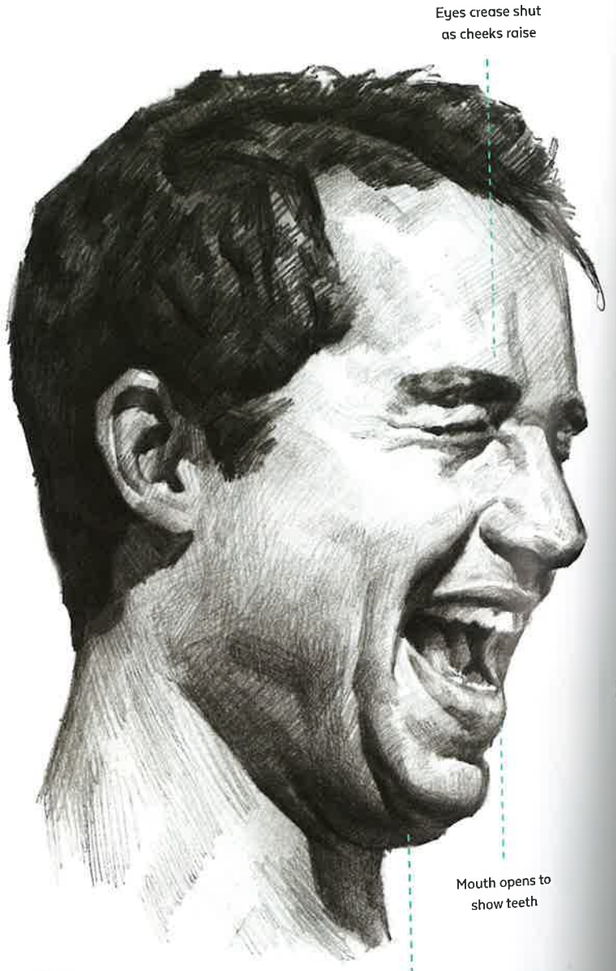


3D render by Mario Anger
Other images by Sylwia Bomba

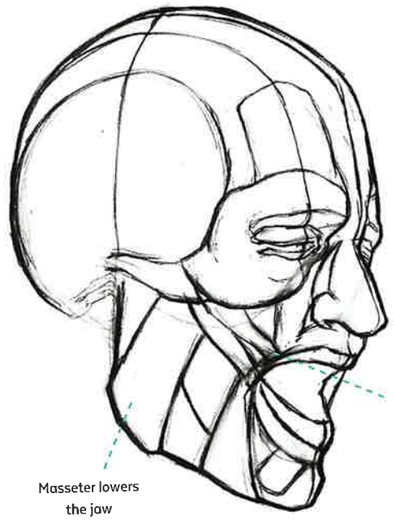
Laughter

Image 34 shows a laughing expression. Here, the orbicularis oculi pushes the eyebrows down, closing the eyelids. The zygomaticus brings the corners of the mouth up and out, creating crease lines in the cheeks. The triangularis is pulled up by the zygomaticus, creating the crease lines from the cheeks to the chin. The masseter lowers the jaw, opening up the mouth. Muscles around the mouth pull up, exposing the upper teeth and causing the nostrils to pull up as well.

34 The eyes close and the mouth stretches and opens up wide when laughing



Muscles in motion

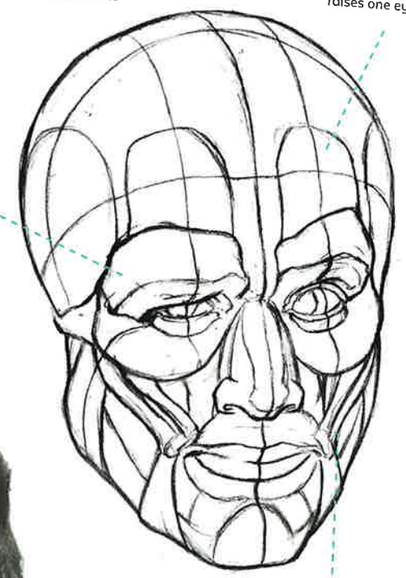


Expression tips

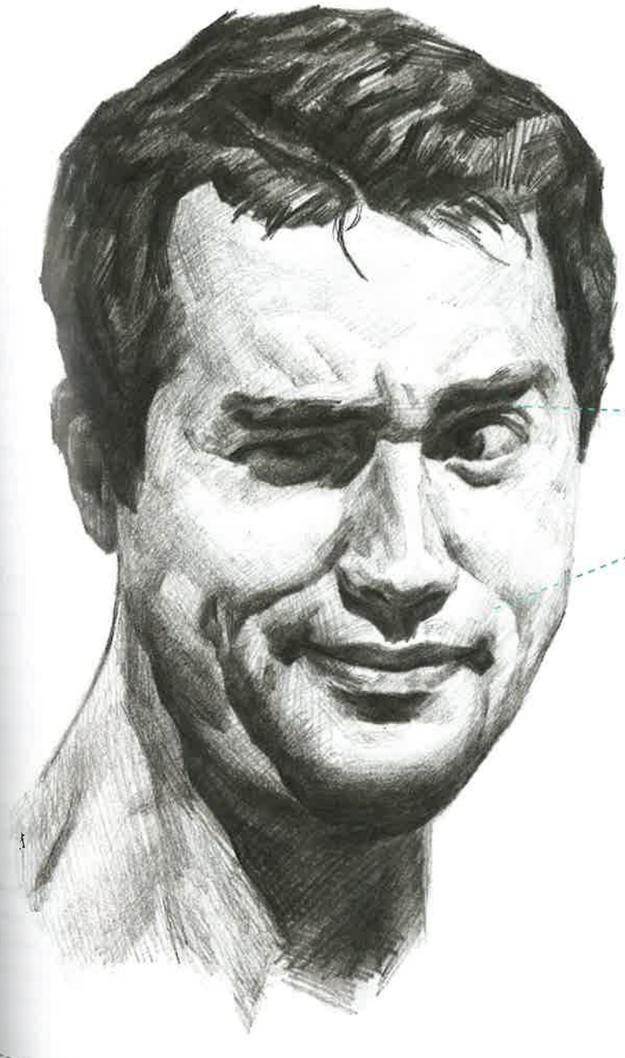
Creating believable facial expressions can be tough, even for professional artists, but there are a number of tips you can use to help you. Study artists who are great at depicting facial expressions, such as animators who exaggerate and contort expressions. Always use good visual reference – if you are drawing a friend or model who is not particularly good at acting, you may need to direct them to get the effect you want.

All images by Matt Smith

Muscles in motion



35 The asymmetrical raised eyebrow and quirked mouth convey a disbelieving expression



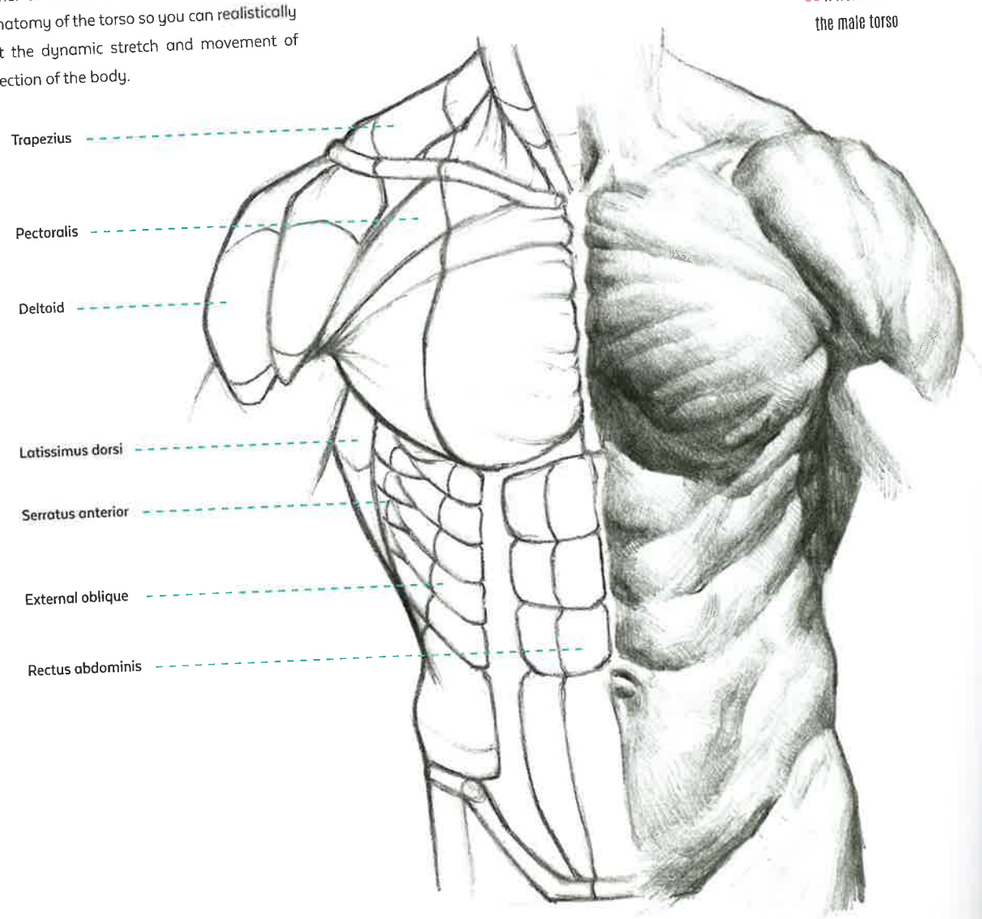
Skepticism

Image 35 shows a distrustful or skeptical expression. The first thing to note is how the muscles on each side of the face interact differently. The orbicularis oculi on the left side pushes the brow down and up, making one eye narrow and creating wrinkles on the brow. On the right side, however, the frontalis is pulling the orbicularis oculi up, raising the eyebrow and making the eye wider. The zygomaticus on the left pulls the mouth and triangularis up, creating crease lines from the nose to the chin; however, the zygomaticus on the right is more relaxed, furthering the asymmetry of the expression.

THE TORSO

The torso or main trunk of the body is often drawn as a static and solid block of flesh by beginner artists. It is important to understand the anatomy of the torso so you can realistically depict the dynamic stretch and movement of this section of the body.

36 A front view of the male torso



Front view

Image 36 shows a front view of the male torso. The left side is drawn as an anatomical diagram with simple lines to indicate the form, and the right side shows how those muscles look when rendered with pencil. Let's explore some of the key landmarks and muscle groups visible here.

Trapezius

The **trapezius** is a large muscle that is only partially visible in this front view. It covers much of the top portion of the back and moves up the back of the neck. It cuts the corner between the neck and shoulder bones smoothly here, giving a more rounded silhouette to the torso.

All images by Matt Smith

Pectoralis

Next is the **pectoralis**. This large muscle starts along the breastbone (the sternum) and collarbone (the clavicle), and wraps across the chest to connect to the humerus bone of the upper arm. This muscle can be complicated to visualize at times due to the range of motion that the arms have. **Image 37** shows a diagram of radiating lines to help you visualize how the pectoralis connects to the humerus. Notice in **images 38** and **39** how the top part of the pectoralis connects to the arm over the bottom part of the pectoralis, which tucks under the **deltoid** on the arm. As the arm rises up, the top part of the pectoralis is barely visible as the bottom part overlaps the top.

Latissimus dorsi

The **latissimus dorsi** covers much of the back and connects with the pectoralis underneath the arm to form the armpit. Underneath the latissimus dorsi is the serratus anterior. Much of the serratus is connected to the rib cage and covered by the latissimus, so is often hidden by the more prominent muscles.

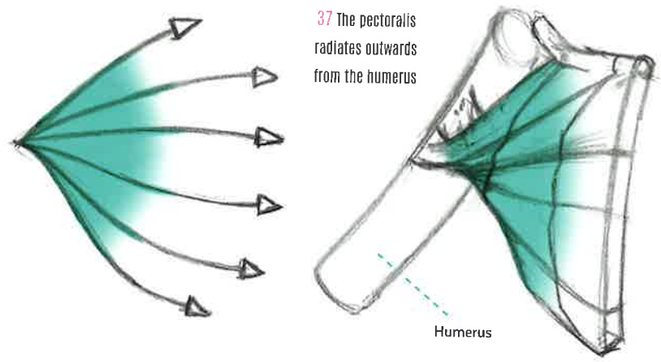
External oblique

The **external oblique** starts underneath the pectoralis and connects to the top of the pelvis, rib cage, and rectus abdominis. On a lean, muscular person, you may see the serratus and external oblique more clearly; they will form a distinct "stair step" pattern.

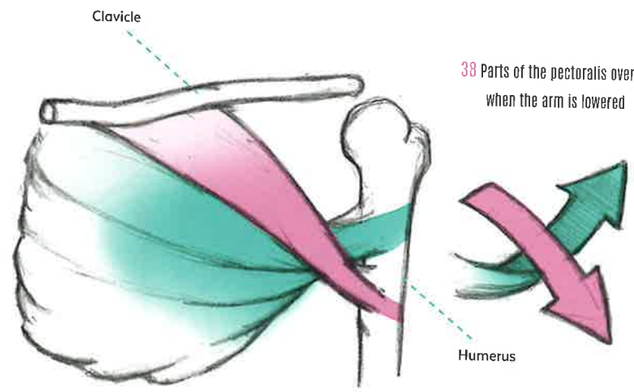
Rectus abdominis

The **rectus abdominis** starts underneath the pectoralis and moves down the front of the torso to connect with the pelvis. This muscle is naturally segmented into eight sections by tendons. When sufficiently developed, they form the familiar "washboard abs" appearance.

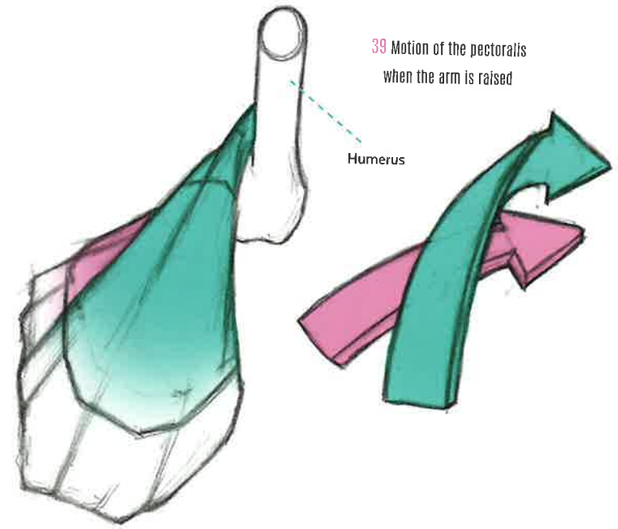
Together, the external oblique, rectus abdominis, and pelvis create a smooth, wide "U" shape that many artists use to create constructions for figure drawings. Often, depending on the pose of the torso, parts of the serratus, oblique, and rectus abdominis will form one shape.



37 The pectoralis radiates outwards from the humerus



38 Parts of the pectoralis overlap when the arm is lowered

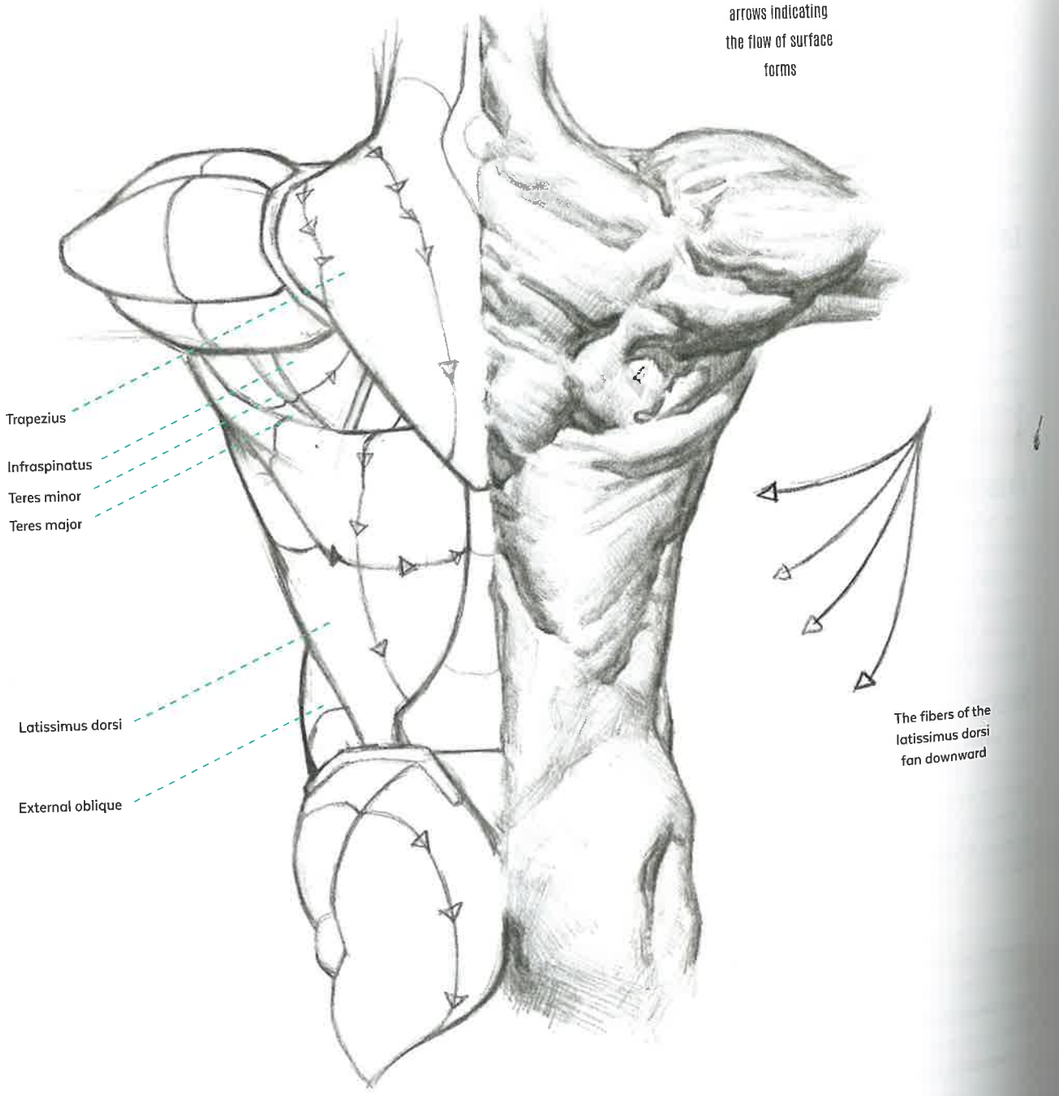


39 Motion of the pectoralis when the arm is raised

Back view

Image 40 shows a back view of the male torso. Here we can see the whole shape of the trapezius as it comes down from the neck, spreading out to the shoulders and then meeting at the spine, creating an "arrowhead" shape.

40 A back view of the male torso with arrows indicating the flow of surface forms



All images by Matt Smith

Shoulder muscles

Next are the muscles of the shoulder blade: the **infraspinatus**, **teres minor**, and **teres major**. This section of the back can be very complicated to discern, so a closer view has been provided in **image 41**. There are essentially three layers: the infraspinatus covers the shoulder blade and pulls up under the collarbone. The teres minor is the next ring of muscle, wrapping around and attaching to the front of the humerus. Finally, the teres major attaches to the underside of the humerus. These muscles are most exposed when the arms are in a raised position. You can see the light ridges they create in the skin contours in the rendered half of **image 40**.

Back muscles

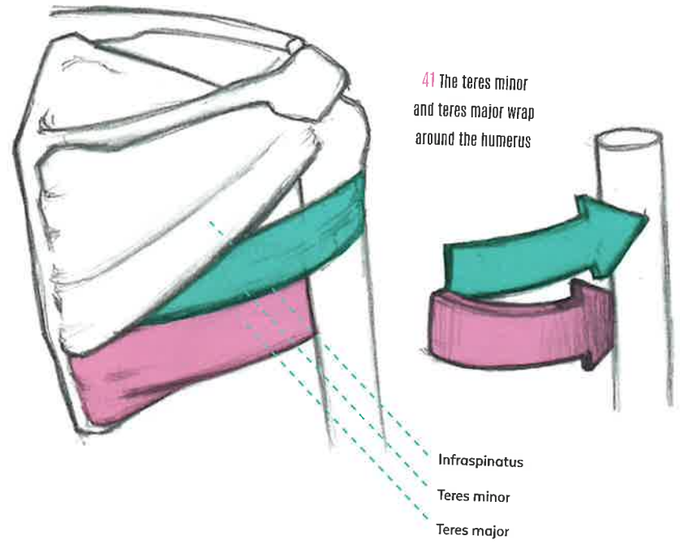
From the back, we can see more of the actual shape of the latissimus dorsi. Notice how it attaches underneath the arms, wraps around the back, and attaches underneath the trapezius and farther down in the pelvic area. If you are having a hard time visualizing it, think of lines radiating out from the arm and deltoid area that wrap around the back. This muscle creates a flattish triangular pad of muscle with very light ridges that indicate how the muscle is being pulled toward certain bones to which it is attached.

Also noticeable from the back is a small portion of the bottom **external oblique**, which forms a small pad of flesh that makes the outline of the torso smoother and less triangular.

Deltoids

In the main diagram, the **deltoids** are rolled back. These large shoulder muscles will be covered in more detail on **page 211**, but for now, **image 42** shows the deltoids in a relaxed position. Compared with **image 40**, you can see how the shoulder muscles all rotate back and forth with the deltoids. It is important to capture a sense of continuity with these muscles. One should feed into the other and there should not be any lone spherical bulges that realistically would not connect with any other part of the body.

41 The teres minor and teres major wrap around the humerus





42 The shoulder muscles and deltoids in a relaxed position

Angled front view

Serratus anterior & external obliques

Image 43 shows the interaction between the **serratus anterior** and the **external obliques**. From this view you can see how they knit together to create a series of interconnected ridges and valleys down the front and side of the torso. This creates a little complication when rendering, simply due to the sheer number of small ridges you may be aiming to capture in your shading (**image 44**).

Pectoralis

Also take note of the **pectoralis**; as the arm is raised up, only the bottom portion of the pectoralis is visible, and the whole muscle is pulled up and elongated. This transforms the muscle from a flat slab that sits across one half of the chest, to an almost tube-like protuberance that will likely change the type of shading and rendering you require to capture it.

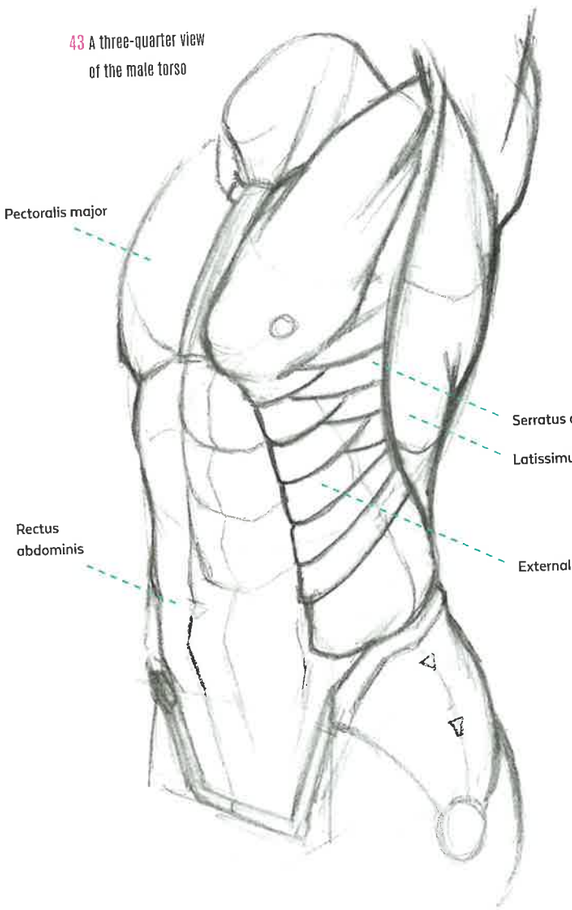
Latissimus dorsi

This is also a good angle to see how the **latissimus dorsi** and the elongated pectoralis meet to form the armpit. As these muscles are very large, they create deep valleys in the skin when tensed upward like this. Be sure to capture the depth of these valleys in your rendering.

Rectus abdominis

The **rectus abdominis** can be difficult to draw at times. Depending on the subject's body type, it can be easier to view these eight areas as either a flatter or a rounder shape. Here they have a rounded but built-up and tense shape, so have been drawn and rendered prominently.

43 A three-quarter view of the male torso



44 A pencil rendering of the male torso in an angled view

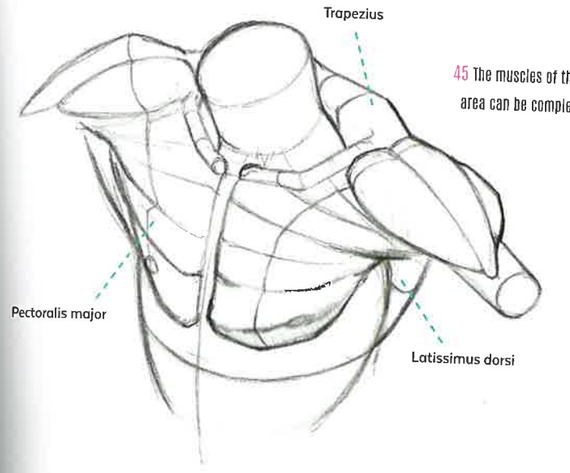


All images by Matt Smith

Top of the shoulders

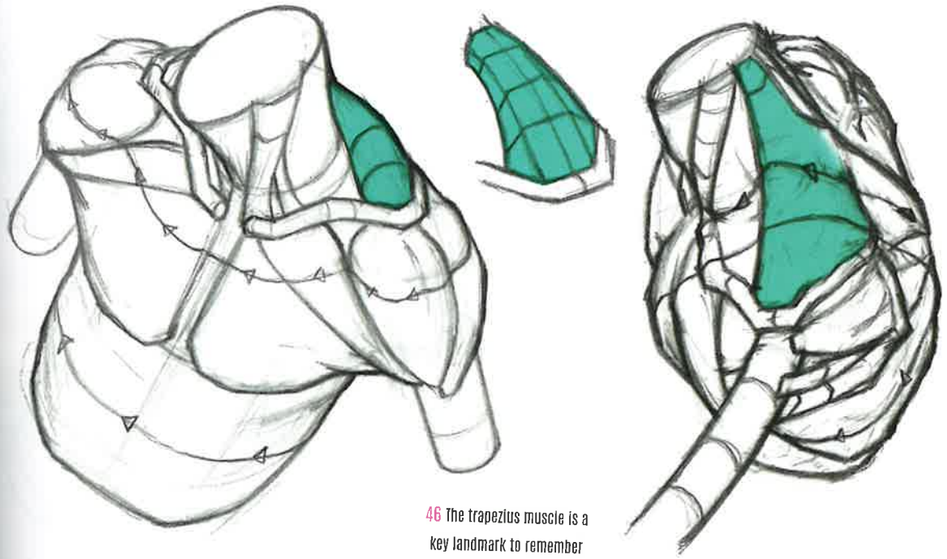
The shoulders can be a particularly challenging feature to capture, as there are so many different muscles attached to the bones in this area, as shown in **image 45**. It can be difficult to discern and draw them all realistically.

Image 46 shows how the trapezius forms a distinctive "lip" or edge from the neck to the shoulders, and creates a dip either side of the neck. This is often overlooked in beginners' figures, which makes them appear too blocky. It is important to note that as this area becomes more muscular and begins to bulge, the length of the neck appears shorter.



45 The muscles of the shoulder area can be complex to draw





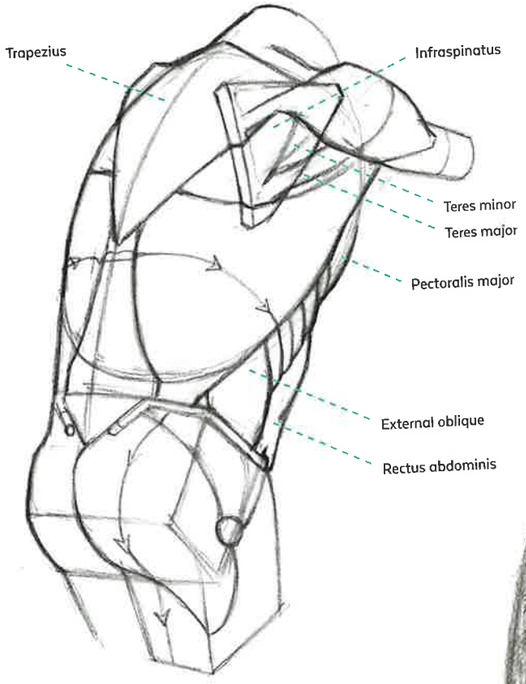
46 The trapezius muscle is a key landmark to remember

Angled back view

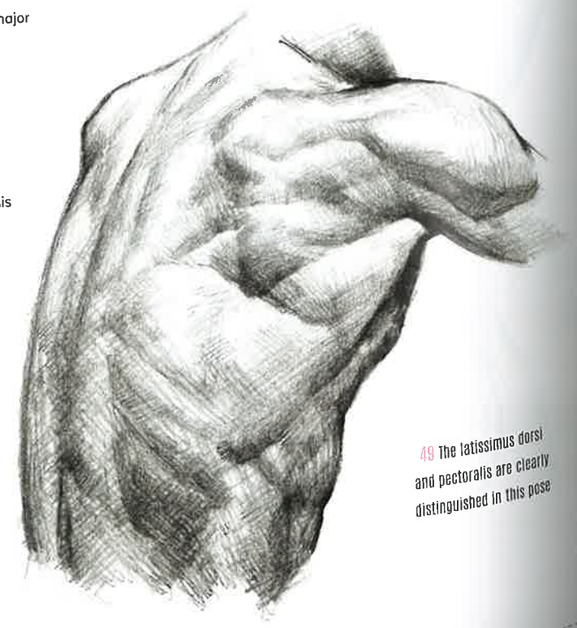
These images show a three-quarter back view of the torso. This is a good perspective for studying how the latissimus dorsi overlaps the obliques, serratus, and the pectoralis. As shown in **images 47** and **48**, it forms a flat, protective, shield-like block of muscle over the rear side of the chest. The bulge of the pectoral muscle is evident in the rendered side view (**image 49**), as it protrudes slightly in shadow behind the latissimus dorsi.



47 An angled back view of the male torso, leaning back with a lowered arm



48 An angled back view of the male torso, leaning forward with a raised arm

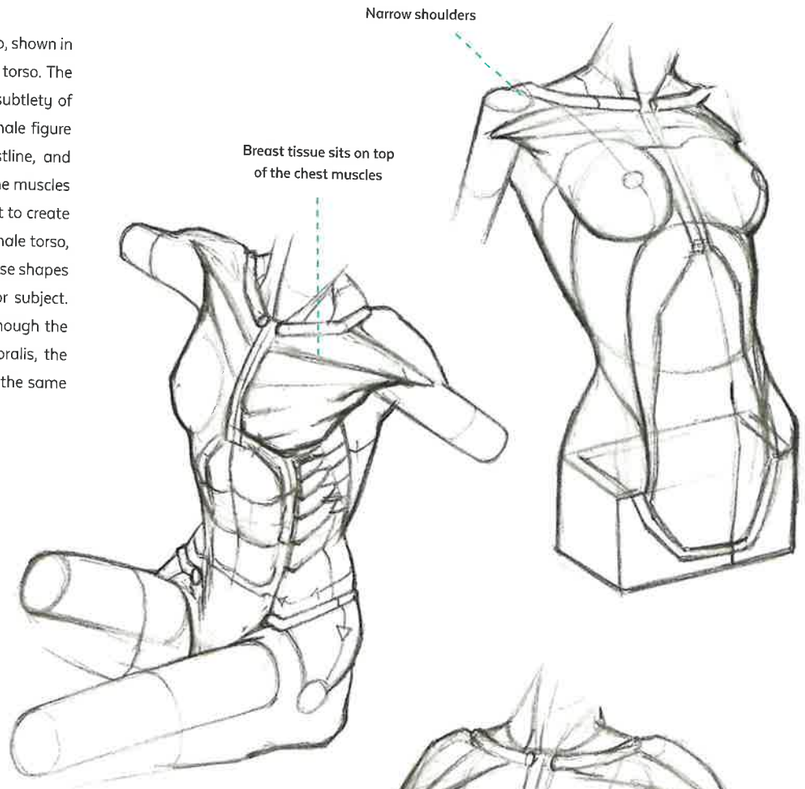


49 The latissimus dorsi and pectoralis are clearly distinguished in this pose

All images by Matt Smith

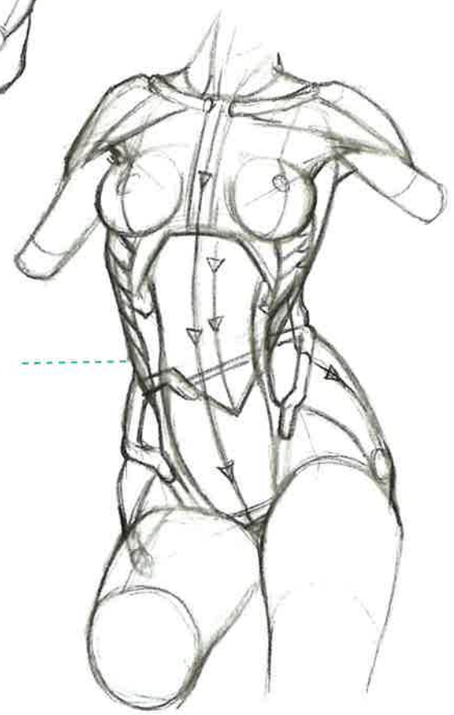
The female torso

The basic anatomy of the female torso, shown in **image 50**, is very similar to the male torso. The biggest differences are the size and subtlety of the form; generally speaking, the female figure is smaller in the shoulders and waistline, and wider in the hips. You can slim down the muscles and cut in more obviously at the waist to create an hourglass shape, but as with the male torso, the extent to which you emphasize these shapes will depend entirely on your model or subject. In these sketches, you can see that though the breast tissue sits on top of the pectoralis, the underlying chest muscles are actually the same as we have previously seen.



50 The female figure may differ from the male in some proportions, but the muscle structure is the same





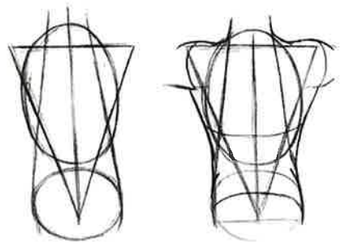
Drawing gestures

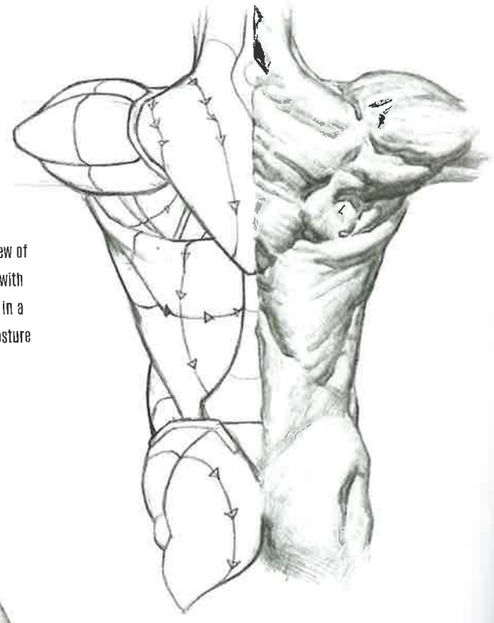
Drawing the torso is a little different to drawing arms or legs. Though you can still create the movement and shape of the body by starting out with an overall gesture line, it can be easier to find the tilt of the shoulders and hips first, and then bulk out the rest of the figure. These images show torsos in various poses, in order to demonstrate how the muscles stretch and contract depending on the pose.

The gesture thumbnails shown with each pose are based on the Reilly Abstraction method of figure drawing, which will be explored in greater detail with full-body poses on **page 257**.

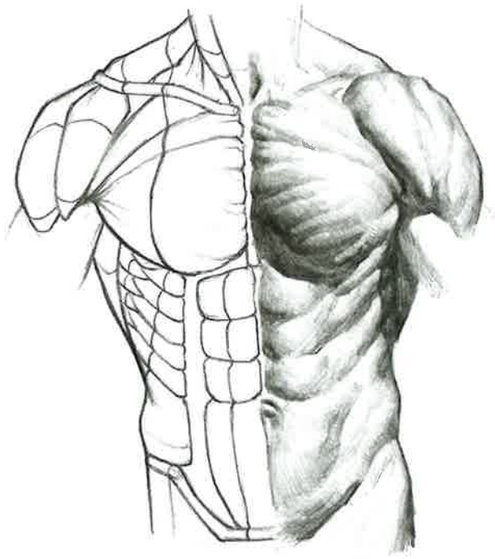
Straight torso pose

Images 51 and **52** depict the torso in a straight back and front view. To achieve this, you need to find the placement of the shoulders and hips, and indicate them using straight lines. Next, find the gesture of the center line, following the line of the spine; in these examples, the gesture is straight. Finding the torso's center line tends to be easier from the back, as all you have to do is follow the spine. When you are satisfied with the shapes, you can more easily construct forms around them, adding lines from the shoulders to the crotch and the neck to the hips.

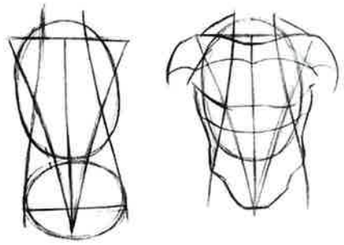


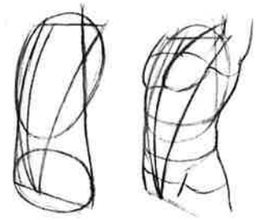


51 Back view of the torso with the spine in a straight posture



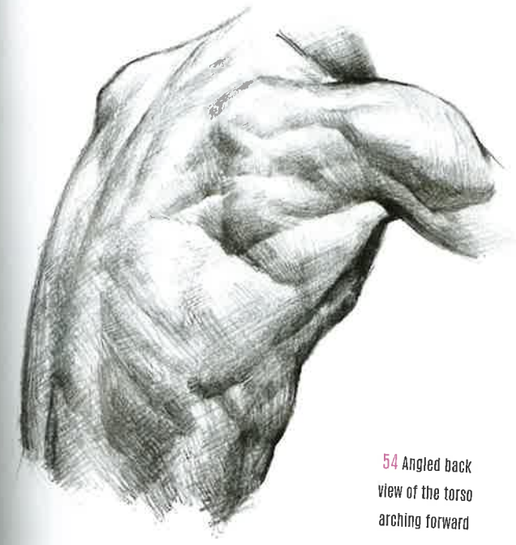
52 Front view of the torso with the spine in a straight posture



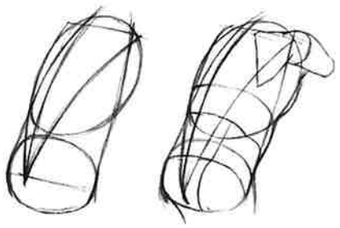




53 Angled front view of the torso stretching upward



54 Angled back view of the torso arching forward



Stretching and bending poses

Image 53 shows the torso in a more dynamic form. After placing the shoulders and hips as before, determine the center line, which in this case would be a gentle C-shaped curve. Add gesture lines to from the shoulders to the crotch and the neck to the hips to complete the base shape of the torso.

In **image 54**, the torso is bending forward, creating a C-shaped curve as the center line. The shoulder-to-crotch rhythm lines will always follow the form of the center line, so they form "C" curves here as well. You can see that this angle uses boxier construction lines for the pelvis, as opposed to the rounder construction lines for the ribcage area; this is due to the shapes of the muscles prominent in this view.

FUNDAMENTALS APPLIED...

VARIOUS LIFE DRAWINGS

Stan Prokopenko

Tools: Graphite and charcoal

A "This graphite drawing was done from life in five sittings of three hours each, totaling about fifteen hours. With a longer drawing like this, my goal is to study the subtle details that I do not typically get to study with shorter poses. It is an opportunity to slow down and observe.

The torso has several muscles with repeating forms: the rectus abdominis, obliques, and serratus. The tendency is to draw them all the same. I tried to design interesting shapes, values, and edges by adding variety."

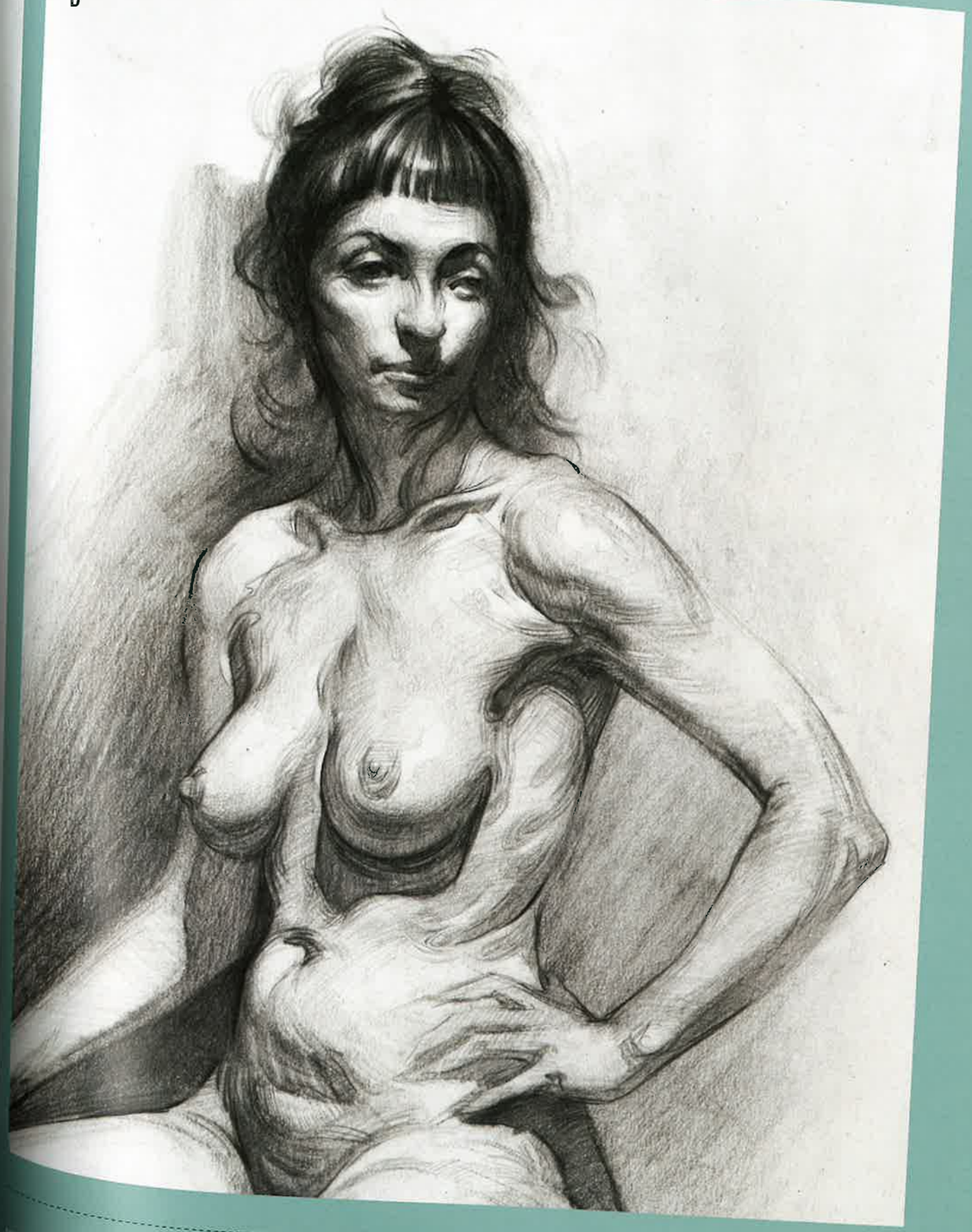
B "A six-hour charcoal drawing from life. This was done in a class where the goal was to apply a stylistic rendering technique to the shading. I chose to add ink-like lines mostly in the midtones. I think it adds an interesting aesthetic to it.

The anatomical challenge lay in designing the smaller forms of the bones, muscles, and skin to carry the subtle gesture of the pose. It would have been easy to make this drawing really stiff because of the static, vertical torso. I tried to exaggerate the fluidity of the arms, fingers, and all the smaller inner shapes throughout the drawing."

A



B



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C "This one was even quicker than the previous at a total of two-and-a-half hours. With such little time, the goal was to capture the gesture of the pose, add form and anatomy on top, and then shade it to a believable finish mostly with quick shorthand indications, capturing the essence or illusions of the light on the anatomical forms.

With such a lean model, you must choose which details to leave and which to simplify to create a figure with a clear focal area. I chose to add a lot of information in the torso and face with many small midtone shapes and contrast."

D "This drawing was made for a video demonstration for my online anatomy course. I wanted to pick a pose that showed clear anatomical forms on the torso. The most challenging part was getting the forms of the armpit to clearly and accurately illustrate the muscles in that area.

When doing a longer anatomical rendering like this, I like to start by studying the anatomy of the pose by tracing it. I imagine what is under the skin and ensure that I understand every form before starting the drawing.

This was especially helpful to clarify the forms of the armpit, biceps, triceps, coracobrachialis, pectoralis major, teres major, latissimus dorsi, serratus, and a neurovascular bundle right in the middle. You can see the tracing I did in my lesson *How to Draw and Shade the Human Torso* on YouTube."

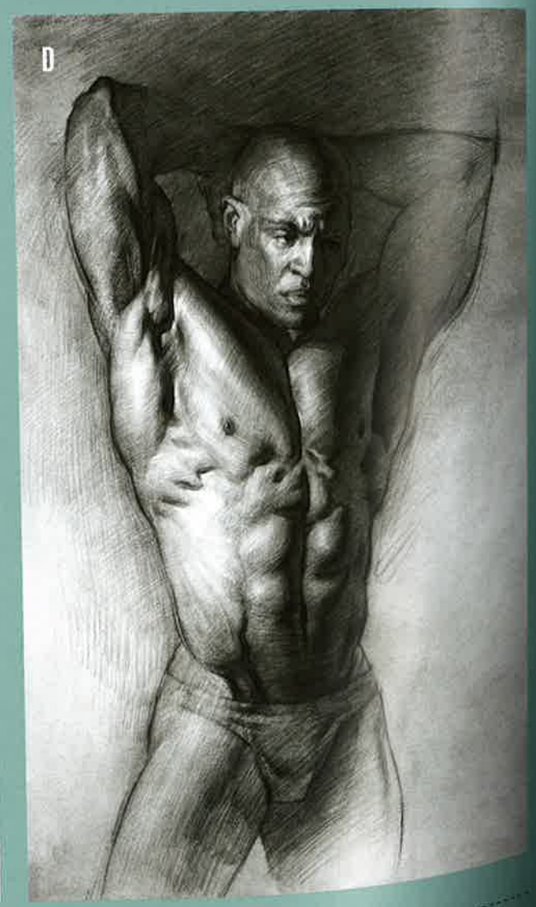
E "My goal for this drawing was to capture an elegant pose with the rhythm flowing through the torso, hands, hair, and neck. Also to render the three-dimensional forms without overstating any anatomical details to keep the youthful character.

I kept the muscular areas soft and mostly rounded while contrasting them with obvious points of hard bone. This adds structure to the figure. The knees are hyperflexed in this pose, which is not a common position to draw. But it reveals the bottom of the femurs as simple flat planes and sharp edges along the condyles."

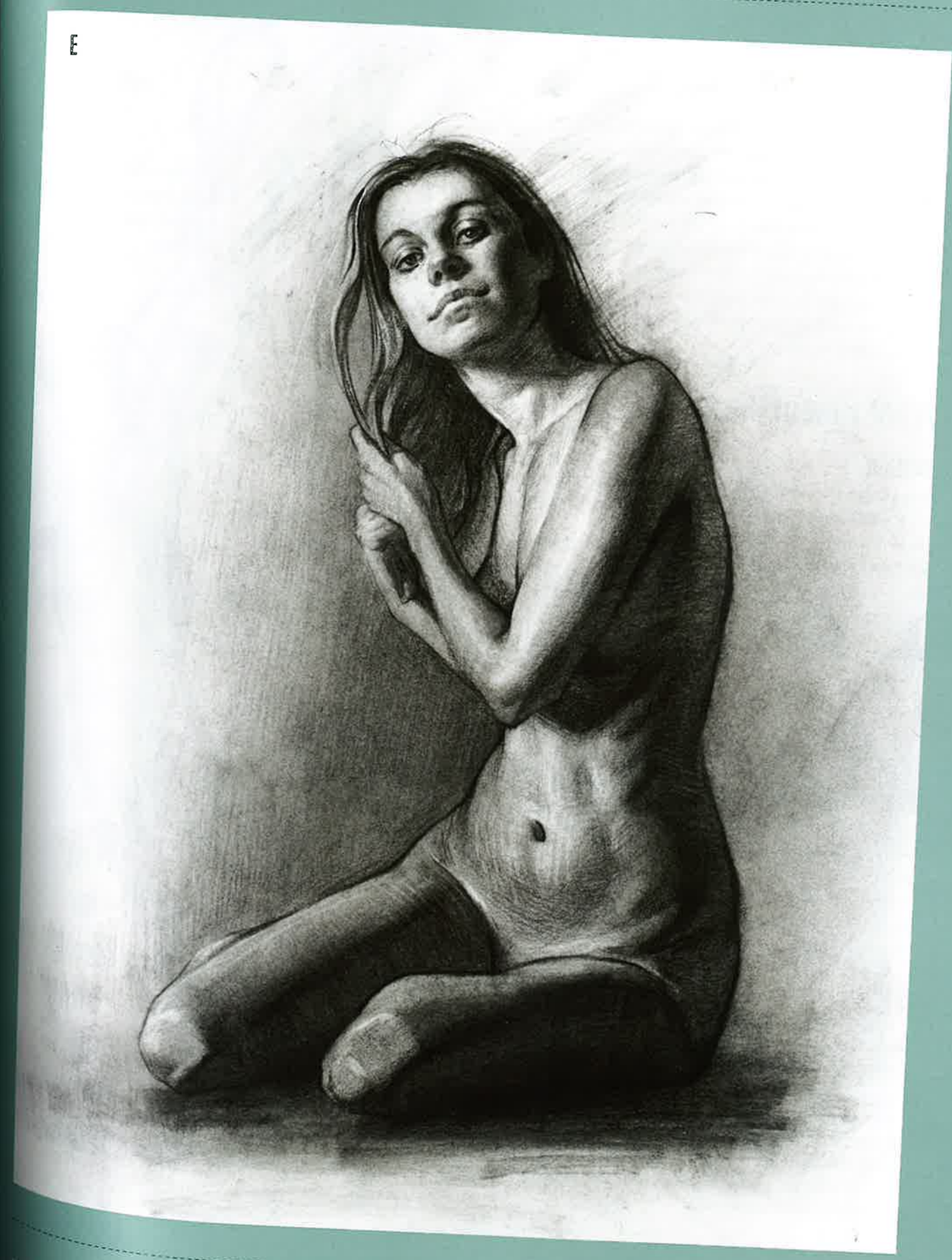
C



D



E



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THE ARM

Now that we have established the torso, we can explore the limbs, starting with the arms. This section will help you to really see the shapes of the muscles under the skin, and imagine how they would relax and contract when moved into certain positions. It is important to understand the muscles, as the contours of the body and skin over the top will shift depending on which muscles are used. Knowing how to portray this effectively will help you to create realistic figures.

Front view of the arm

Deltoid

Image 55 shows an arm in the basic frontal view and a fairly relaxed pose. The main muscle reaching over the top of the arm is the **deltoid,** which is divided into three sections or "heads." In this view of the arm, you can only see the first head and part of the second head of the deltoid.

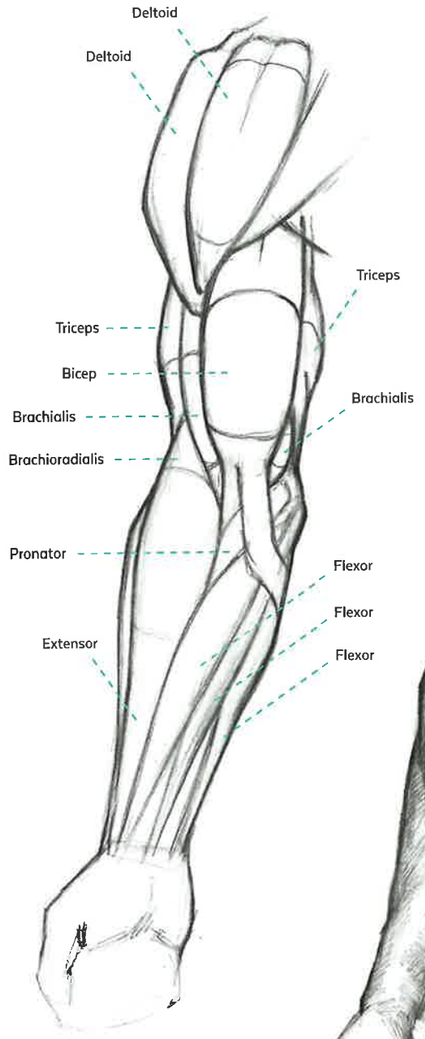
Bicep

The next muscle down is the **bicep**, which sits on top of the next muscle, the **brachialis**, which is attached to the humerus. Attached to the back part of the humerus are the **triceps**.

Forearm muscles

The forearm is made up of the **brachioradialis**, **pronator**, **flexors,** and **extensors**. Only the brachioradialis, pronator, and flexors are visible from this view. Take note of how the brachioradialis originates on the upper arm in between the brachialis and the triceps.

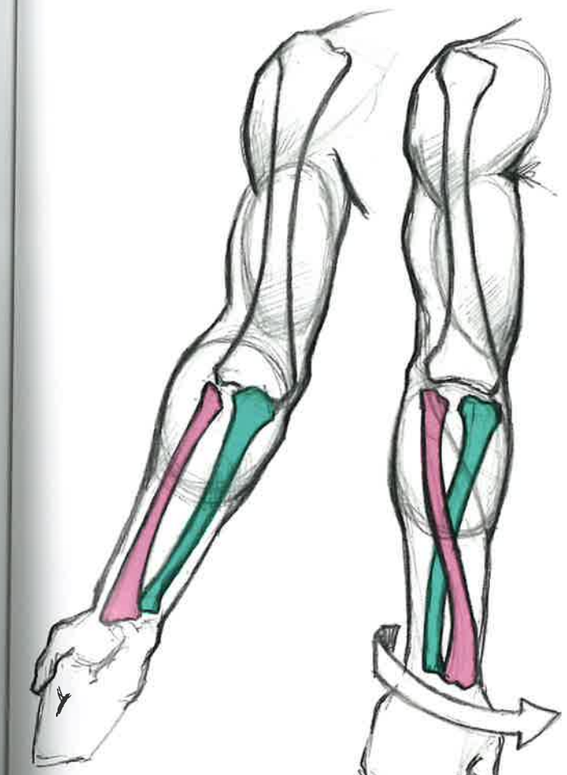
The pronator and brachioradialis are the muscles that rotate the arm back and forth, as shown in **image 56**. The rotation of the forearm is what makes tracking the muscles very difficult and can be hard to decipher when drawing from life or from reference. **Image 57** shows the forearm after it has rotated inward, so the thumb side of the hand is facing toward the body. From this view, the brachioradialis is pulled down and around the forearm, and the extensors are turned to face forward.



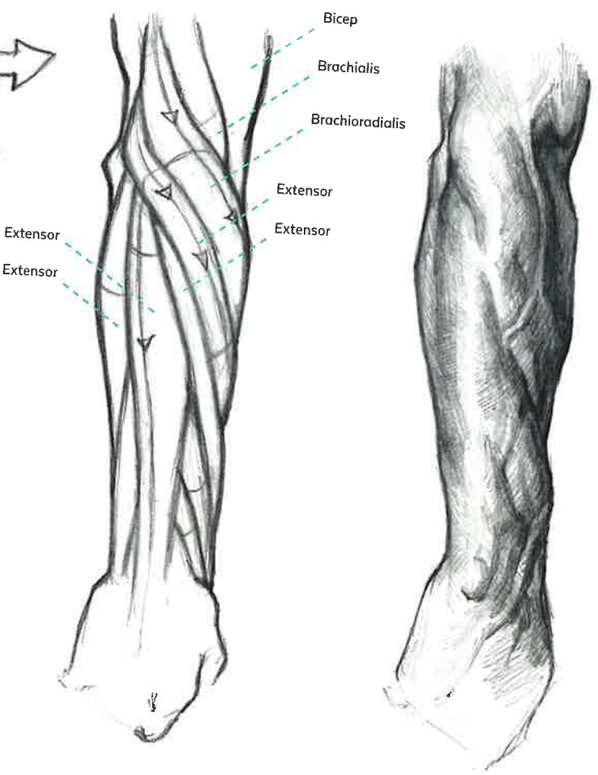
55 Front view of the arm rotated outward with the palm facing the viewer



All images by Matt Smith



56 The bones of the forearm twist as the arm rotates in toward the body



57 Refined shading and muscle flow of the forearm rotated inward

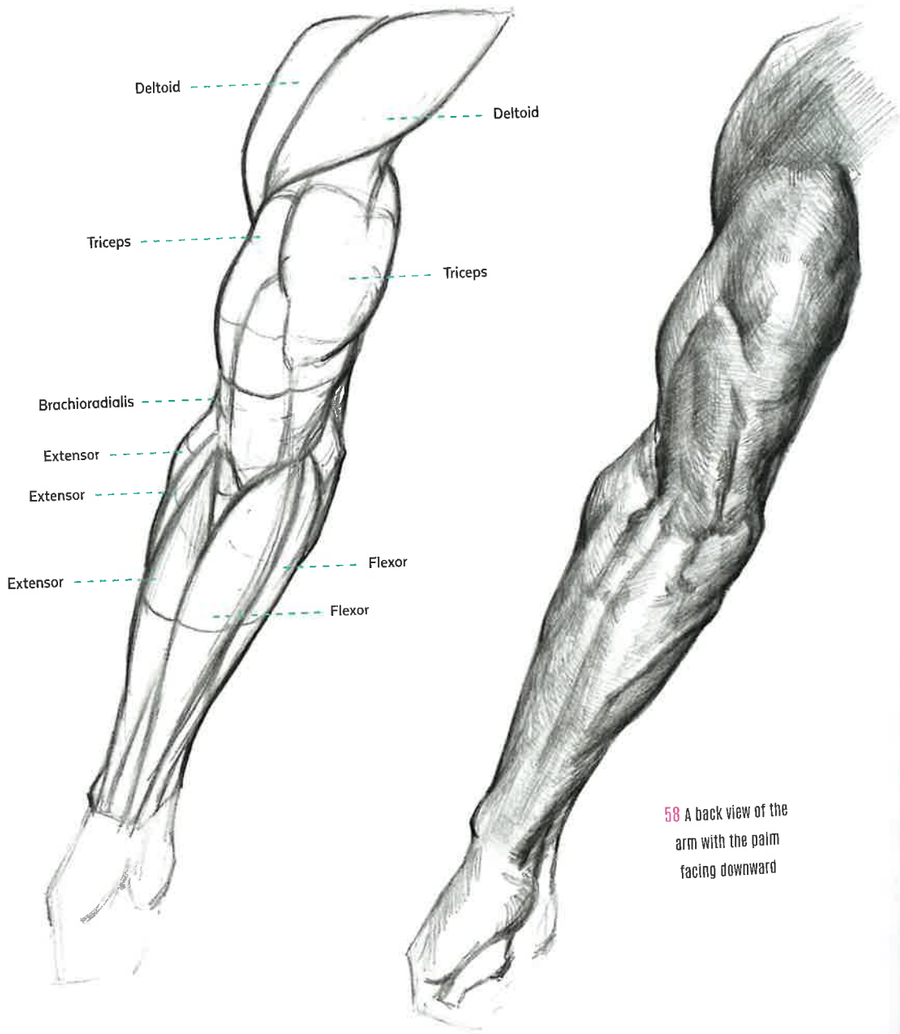
"It is important to understand the muscles, as the contours of the body and skin over the top will shift depending on which muscles are used"

Back view of the arm

To get a better idea of the muscle network, **image 58** shows the back of the arm with the wrist rotated so the palm faces back toward the viewer. From this view, the third head and part of the second of the deltoids are visible, as well as the three heads of the triceps. On the forearm, only a small portion of the brachioradialis is visible, with part of the extensors and flexors.

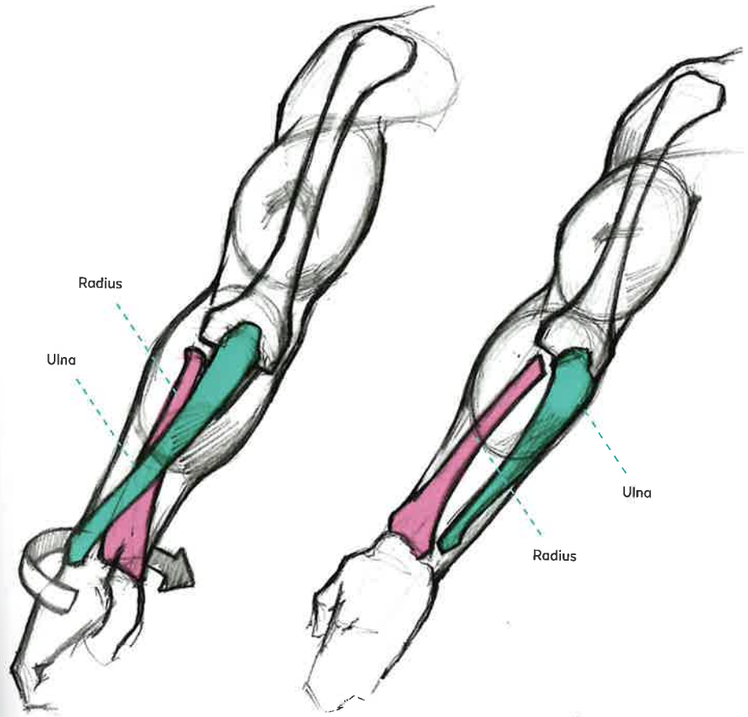
Image 59 shows how the forearm can rotate outward so the back of the hand is facing toward the viewer. As the forearm bones do not overlap in this pose, all of the extensors become visible and the flexors rotate out of view, as shown in **image 60**.

Notice how the silhouette changes between these poses. In the first pose, which is more relaxed, the wrist is seen from the side and appears thinner. As the forearm rotates, you see the back of the wrist, which is wider, and the muscles change position as the arm is turned.

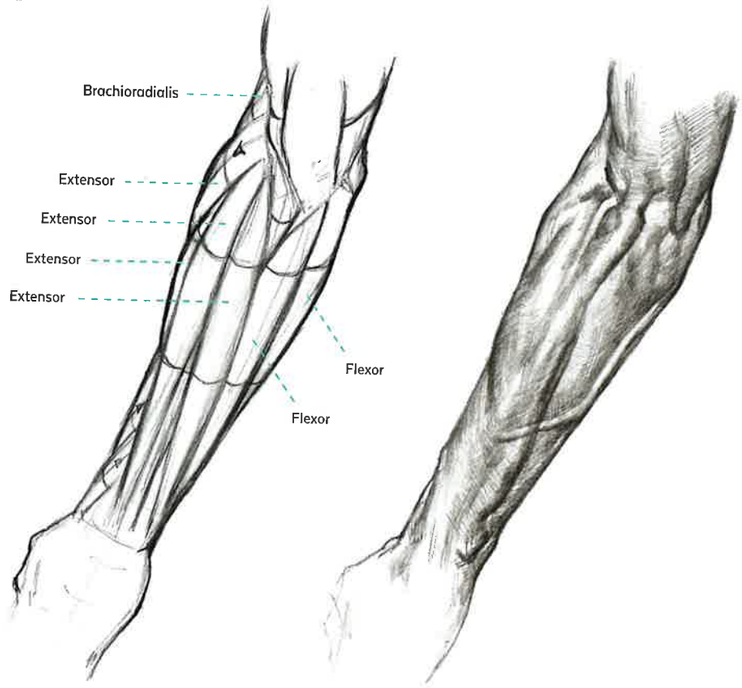


58 A back view of the arm with the palm facing downward

All images by Matt Smith



59 The bones of the forearm overlap as the arm twists



60 The arm with the palm facing forward

The flexed bicep

Now that the basic muscle structure has been established, we can start to pose the arm and take a closer look at how the muscles bulge or slacken. In a relaxed position, all of the muscles are relatively flat, but when lifting the arm or clenching the fist, the shapes of the arm begin to change.

Flexed bicep

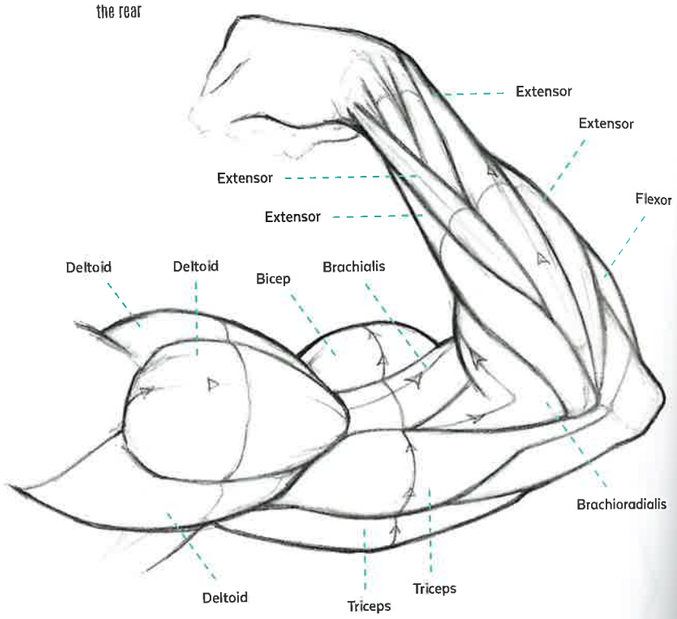
Images 61 and **62** show the arm muscles with the bicep flexed. The most obvious changes to the form occur in the upper arm as all of the larger muscles become more pronounced and begin to bulge and round out. The bicep forms a distinctive ball shape and significantly changes the contours of the upper arm. The triceps are also tensed, but less so than the bicep. The tricep under the arm is stretched out and pulled taut as the arm is lifted up, though it still retains some prominence in the arm's silhouette.

Be sure to capture the deeper crevices created by the gaps between the tensed muscles, and change the starkness of them depending on how muscled your model is, as shown in **image 62**. In the forearm, notice how the brachioradialis is pushed out as it is compressed between the extensor and the brachialis. This creates a moderate bulge around the inside of the elbow, and exposes the shape of the bone (the ulna), which brings the outside corner of the elbow almost to a point. The extensors become taut and twisted as they thin out, moving toward the wrist.

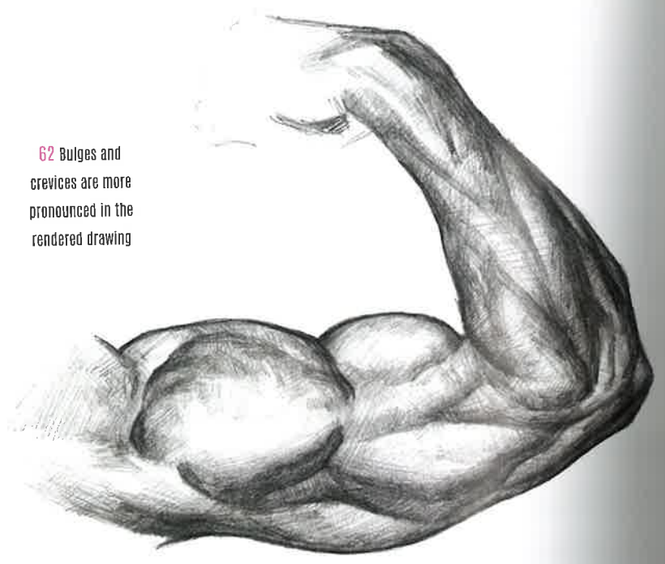
Bicep & tricep

To give a better idea of the interaction between the bicep and tricep, **image 63** shows basic line drawings of the two muscles in varying states of being flexed or extended. As the arm is straightened, notice how the bicep is flat and the tricep is flexed. As the bicep brings the forearm up, the bicep becomes flexed and forms more of a ball shape, and the tricep flattens out. The third drawing shows where the tendon of the bicep connects to the bones of the forearm that move the forearm up and down. At certain points while flexing, this tendon can become pronounced in the shape of the arm.

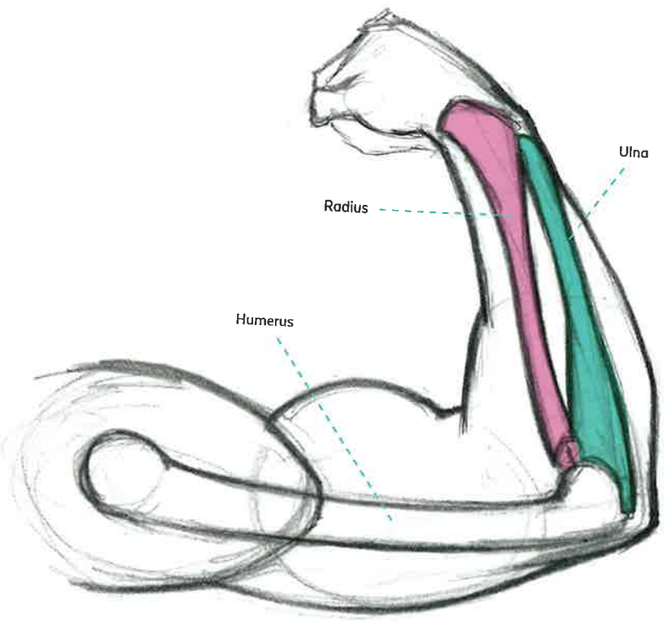
61 Muscle breakdown of the flexed bicep seen from the rear



62 Bulges and crevices are more pronounced in the rendered drawing

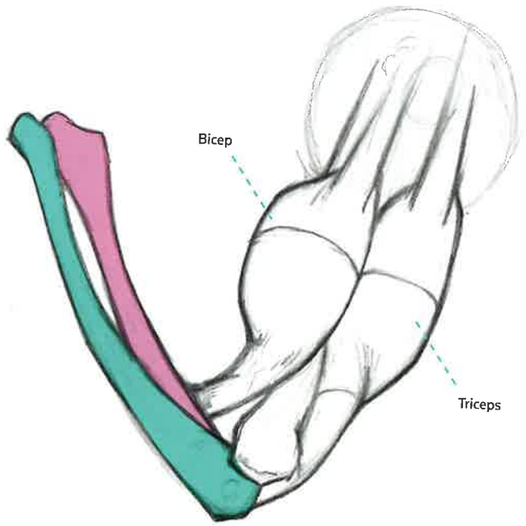


All images by Matt Smith





63 The bicep, triceps, and underlying bones of the forearm in various positions

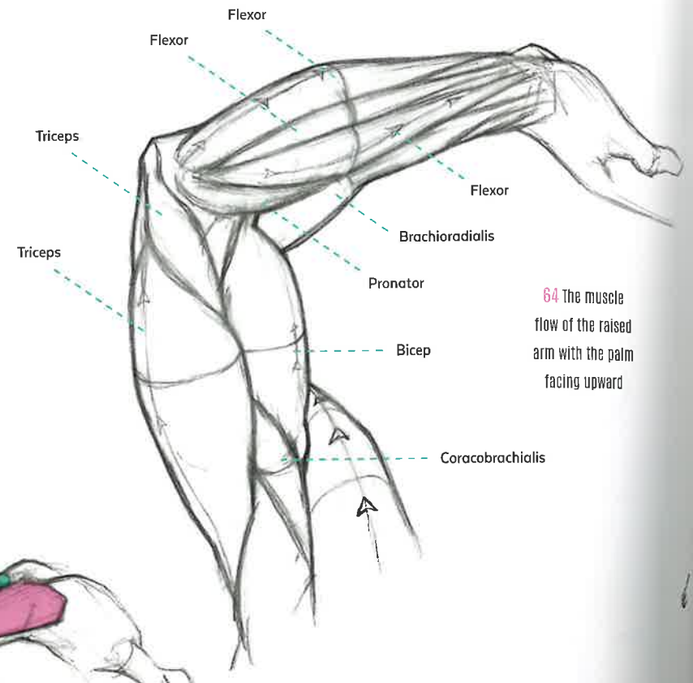




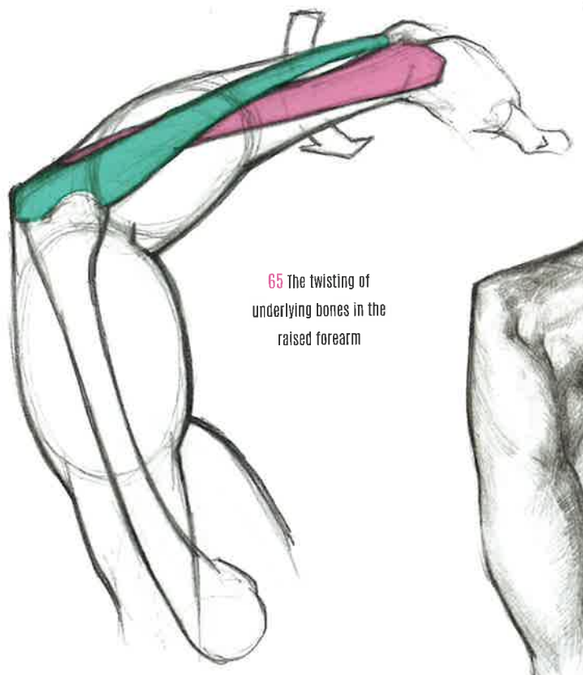
The raised arm

Images 64 and **65** show the arm in a raised position that exposes the underside of the arm. One of the most obvious muscles here is the pectoralis as it wraps over the arm and attaches to the bicep/tricep area. The biceps and triceps are visible, as well as the coracobrachialis, which is near the armpit and was not visible in previous poses; all three are easily defined as quite separate bulges of muscle in this pose.

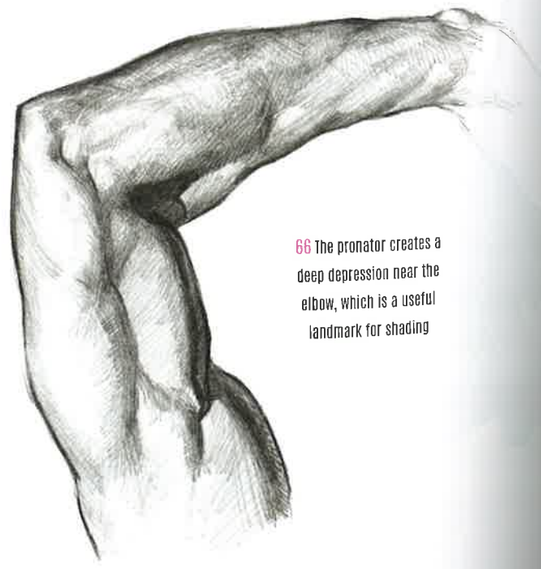
Again, the ulna is visible, forming a sharp point and adding an angle to the arm's silhouette. From the elbow bend, there are three main sections to take note of: the prominent brachioradialis; the pronator, which causes a stark depression just after the elbow bend; and the flexors, which cause a gentle swell on the underside of the arm from the elbow to wrist (**image 65**).



64 The muscle flow of the raised arm with the palm facing upward

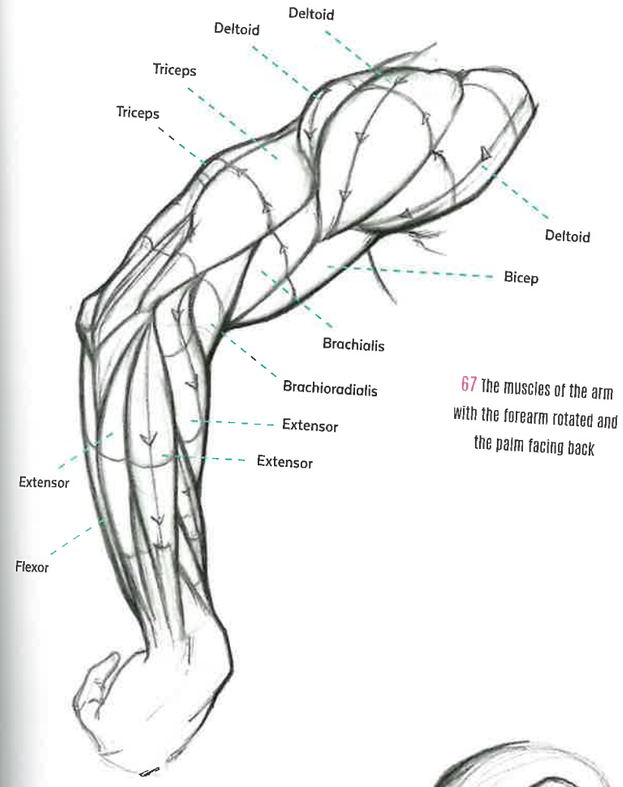


65 The twisting of underlying bones in the raised forearm



66 The pronator creates a deep depression near the elbow, which is a useful landmark for shading

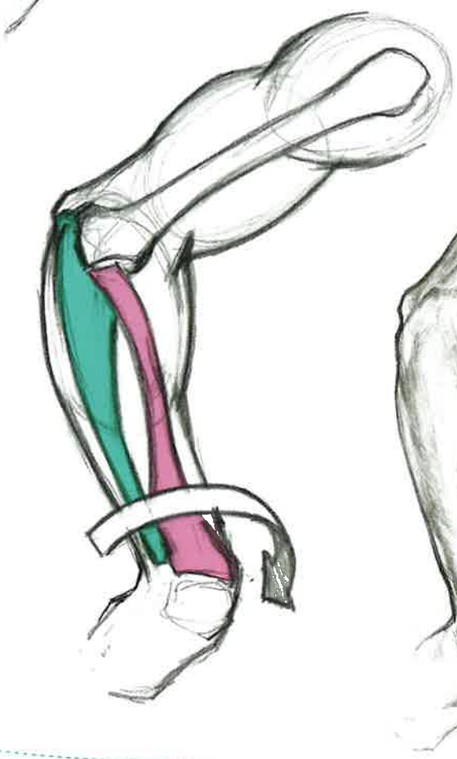
All images by Matt Smith



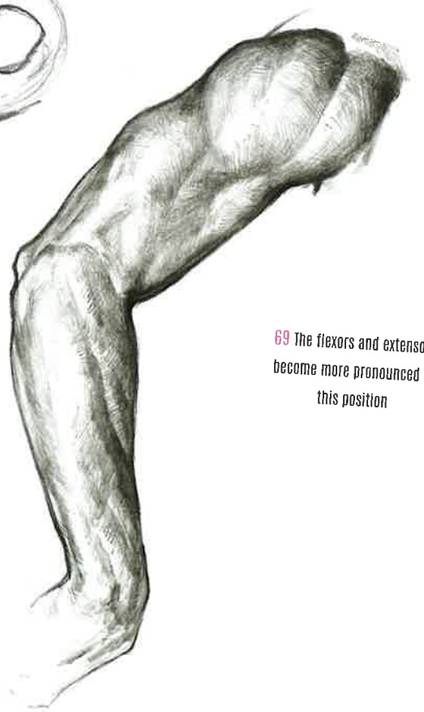
67 The muscles of the arm with the forearm rotated and the palm facing back

Rotations of the arm

Images 67 and **68** show the arm with the forearm rotated so the palm is facing backward. Notice that as the forearm muscles are twisted, the upper arm uses a different combination of muscles to those we have seen so far. The bicep is clearly flatter and less pronounced, and the underside tricep bulges a little in its place. The brachioradialis tenses as it wraps around the forearm and therefore protrudes a little in the crook of the arm. From the ulna toward the wrist, the extensors and flexors are more visible, creating one or two ridges in the natural contours of the forearm (**image 69**).



68 Bone placement of the rotated arm with the palm facing back



69 The flexors and extensors become more pronounced in this position

Drawing gestures

When drawing an arm, always start out with some basic gesture lines. These will establish dynamism in your figure and keep your drawing from becoming stiff. These sketches show a range of simplified gestures based on the arm poses we have previously studied. When attempting gestures such as these, be sure to keep in mind the form and contours of the muscles, even in your initial rhythm sketches.

Bent arm facing back

The gesture in **image 70** shows the arm with a simple C-shaped curve. If the elbow is visible, as it is here, you need to find the perspective of the arm first. The structure lines will follow the perspective of the elbow, so it is important to clarify which angle you will be depicting. The structure and form lines will follow.

Back view of straight arm

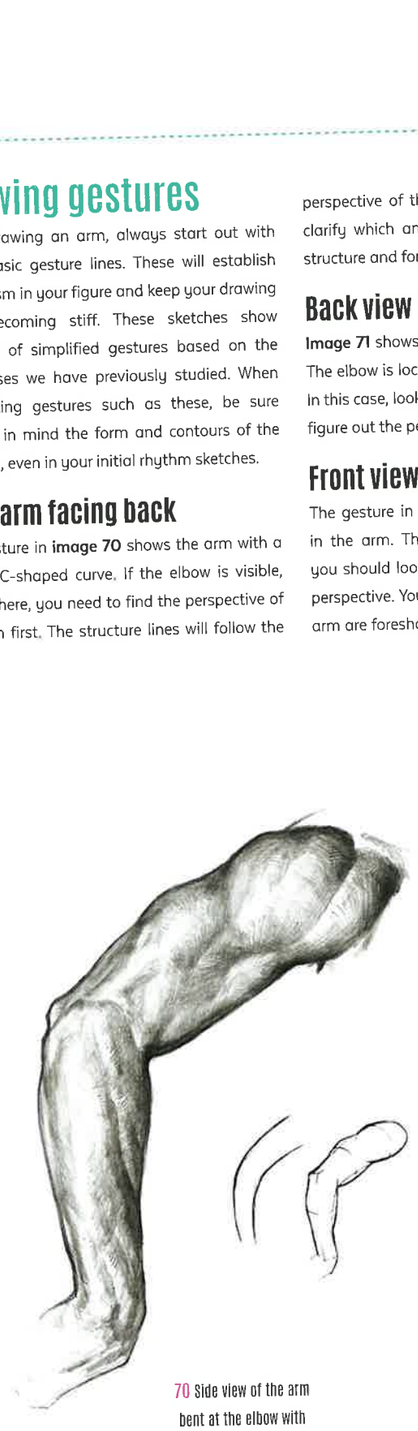
Image 71 shows a diagonal, straight arm pose. The elbow is locked, which makes it hard to see. In this case, look at the box shape of the wrist to figure out the perspective of the arm.

Front view of straight arm

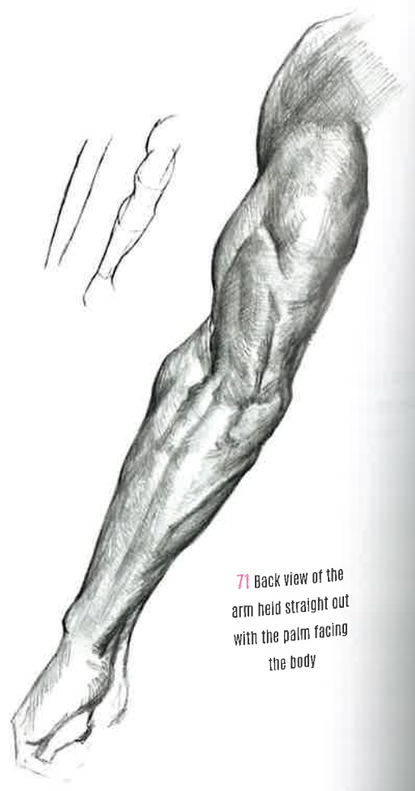
The gesture in **image 72** shows a subtle curve in the arm. The elbow is behind the arm, so you should look at the wrist to find the correct perspective. You will find that some parts of the arm are foreshortened the closer they get to the eye-level of the viewer. It is important to notice these proportional changes and reflect them in your work.

Raised bent arms

In the final two poses (**images 73** and **74**), the arms have a tighter bend. The elbow is more apparent in these, and so the sharp angle of the arm is more emphasized. These gestures contain three C-shaped curves: one to establish the inside bend of the arm, and two for the outside (elbow side) of the arm. After the initial rhythm sketches of the gesture are made, next find the perspective of the elbow and wrist, and then add structure lines to indicate the muscles and contours.

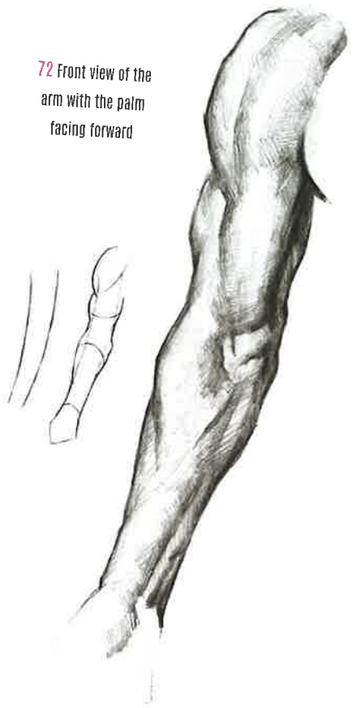


70 Side view of the arm bent at the elbow with the palm facing back

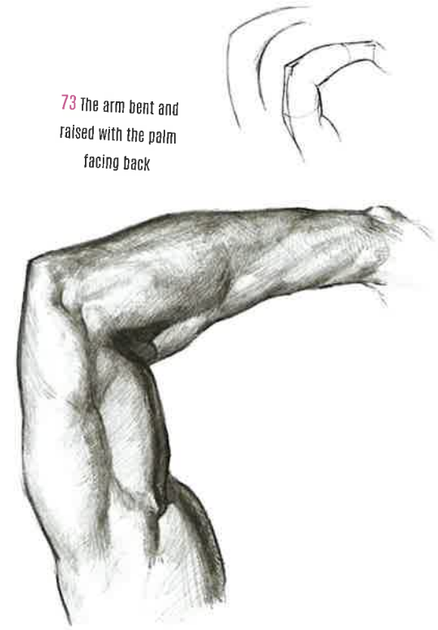


71 Back view of the arm held straight out with the palm facing the body

All images by Matt Smith

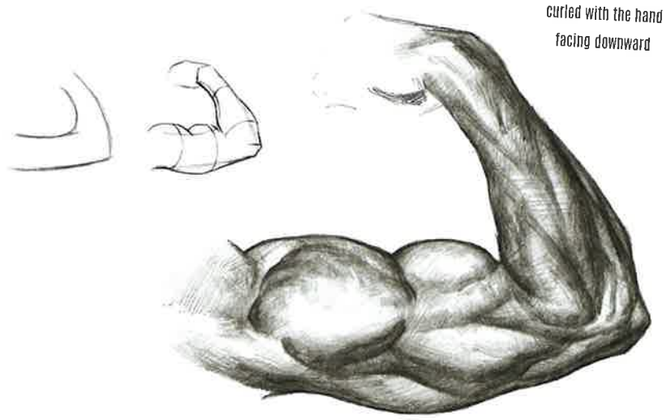


72 Front view of the arm with the palm facing forward



73 The arm bent and raised with the palm facing back

"When attempting gestures such as these, be sure to keep in mind the form and contours of the muscles"



74 The arm flexed and curled with the hand facing downward

FUNDAMENTALS APPLIED...

VARIOUS LIFE DRAWINGS

Charlie Pickard

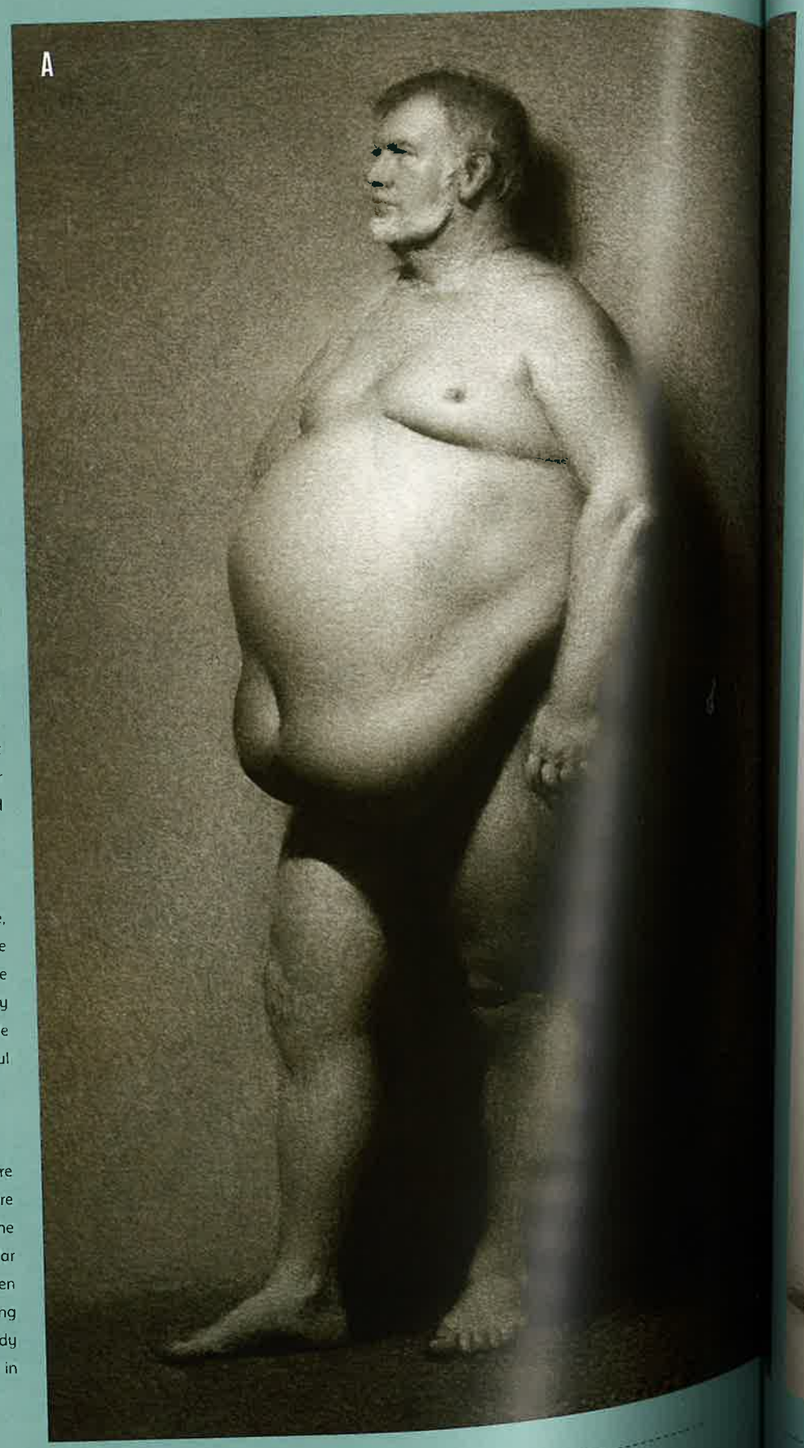
Tools: Charcoal and oils

A "Much of the specific challenge of this life drawing related to the model's body type, with more body fat covering up the superficial areas of the form. Special attention needed to be given to properly represent the more structural elements that are always present."

B "The model for this drawing was particularly slender, which gave me a lot of opportunity to explore superficial bony landmarks. The main challenge lay in expressing these bony moments without taking away from the model's femininity. Choosing what to emphasize and what to omit was the main concern; things can often be far more engaging when suggested instead of stated outright."

C "This academic figure study was painted from life, with the goal of creating an exacting likeness of the model with a pleasing gesture. The main challenge here lay in representing the back, a notoriously difficult element in figure drawing. In order to tackle a subject such as this, I always start with careful observation of the bony landmarks."

D "This is another academic figure painting where capturing a precise likeness and pleasing gesture were high priorities. Expressing the fullness of the ribcage was something I had to pay particular attention to in this pose, considering it was hidden by the arm. It is important to have an understanding of the figure such that you can picture the body parts you cannot see. Thinking through the form in this way is paramount for any draughtsman."









All images © Charlie Pickard

E "This portrait was created with an *alla prima* approach – painting wet on wet for a fast result. I was interested in the mysterious quality in the past-profile posing of the head. I wanted to achieve a characterful likeness of the model without relying on conventional portrait posing.

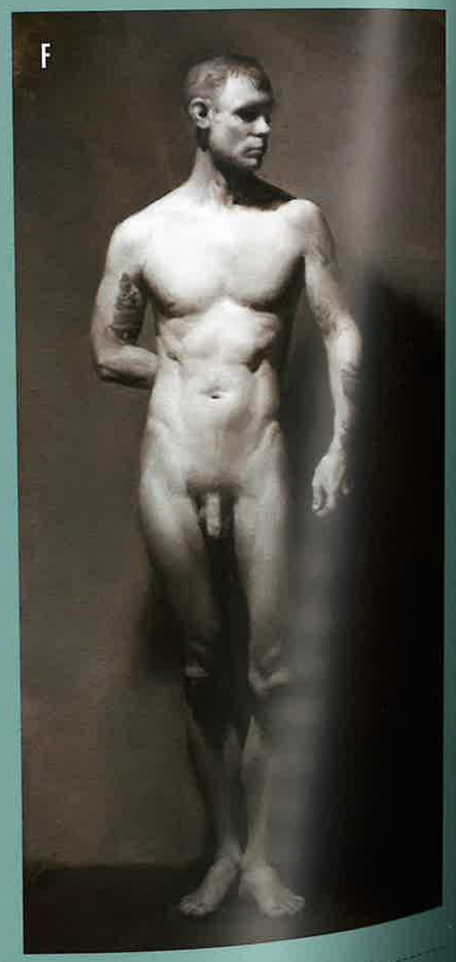
The main challenge of this image lay in conveying a believable sense of structure in the head without the typical landmarks used for this (such as the center line of the face and brow). The main help in controlling this lay in how I handled the relationship between the ears and brow, along with a careful observation of the zygomatic bone."

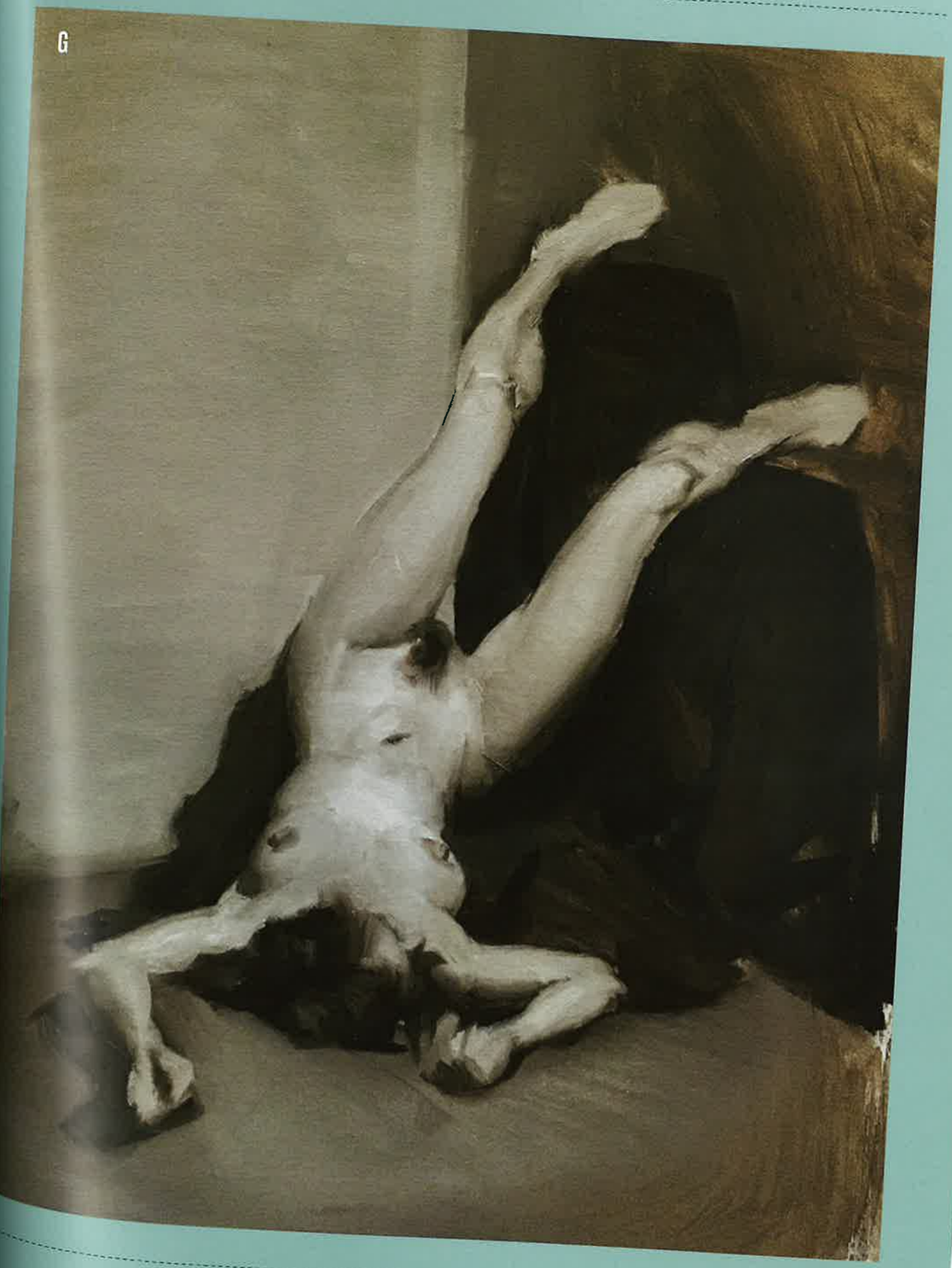
F "This is an academic *grisaille* (monochrome) figure study, painted exclusively from life. As well as capturing the model's likeness, the main goal of this painting was to explore the use of values for the creation of form – a core element of all painting.

This model had an athletic build that provided a particular challenge in expressing the various sub-forms of the body. Many times these forms can become overstated, leading to a busy, broken-up look. The main way to deal with this is to prioritize the large planes of the form."

G "This is an *alla prima* figure painted in *grisaille*. I was largely interested in the rhythm of the pose in this image. The foreshortening of the head and torso were the biggest challenges; paying close attention to the overlaps as one form wedges into another can be a huge help in describing the fullness of the form in scenarios like this."







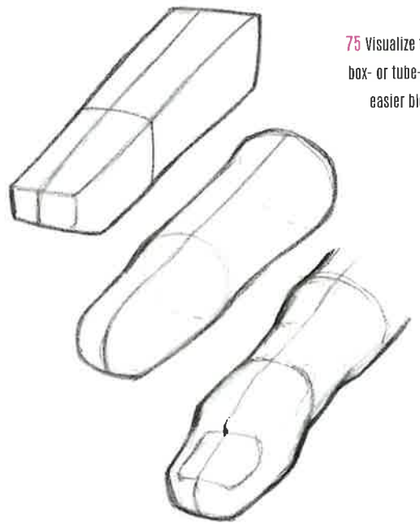
Bill Sienkiewicz © Charlie Pickard

THE HAND

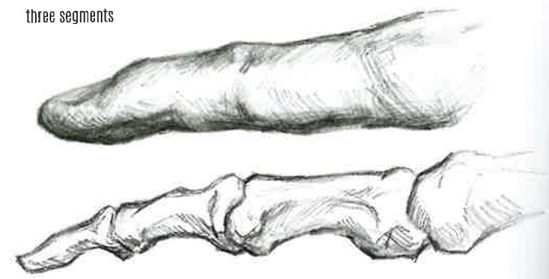
The hand can be a very complicated structure to draw, but as with drawing anything, it can be simplified into forms that are easier to understand. In this section we will look at how to approach the challenging anatomy of the hands and see some examples of believable poses.

The fingers

First, let's look at the anatomy of the fingers. As illustrated in **image 75**, you can visualize a finger as a round, tube-like shape or a long, box-like shape. Always start out with simple, basic forms and do not let the complexity of the fingers get in the way. Little details can always be added later when the basic form has been established. **Image 76** shows the underlying bones and placement of the finger joints.



75 Visualize the finger as a box- or tube-like shape for easier blocking out

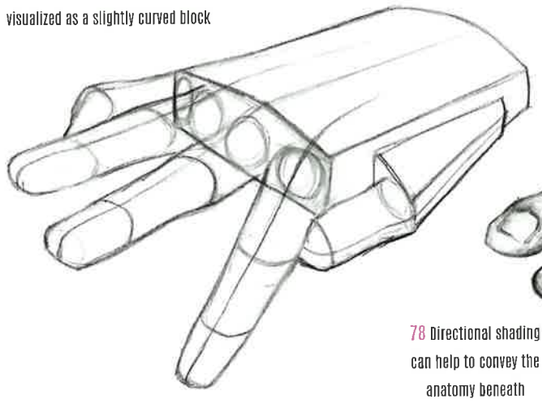


76 The underlying bones of the fingers create three segments

The back of the hand

Image 77 shows a drawing of the top part of the hand, broken down into basic geometry. You can see that the structure can be simplified into a broad box shape, though the top of the hand curves a little, peaking at the middle knuckle.

In the rendered version of the hand (**image 78**), pencil strokes pass across the hand from the pinky to the middle finger. From the middle finger to the thumb, however, the strokes change direction to follow the underlying forms. Construction lines and rendering can be used in this way to suggest the subtle muscle and bone variations under the skin.



77 The back of the hand can be visualized as a slightly curved block



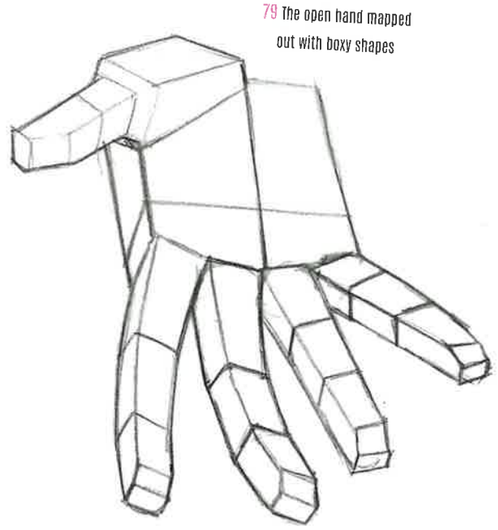
78 Directional shading can help to convey the anatomy beneath

All images by Matt Smith

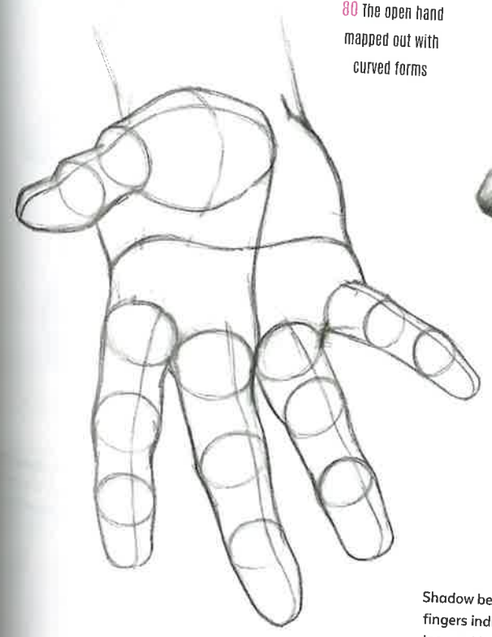
The palm of the hand

Drawing the palm side of the hand can also be simplified into a box shape, but you have to take into account the greater peaks and valleys of the palm. **Image 79** shows the hand with the palm side up. From this angle, the bulges of muscle in the palm are blocked out using box-like protrusions. The large muscle leading to the thumb almost sits on top of the palm. The more organic construction style of **image 80** shows how to round out those boxes to create a more muscular, human feel.

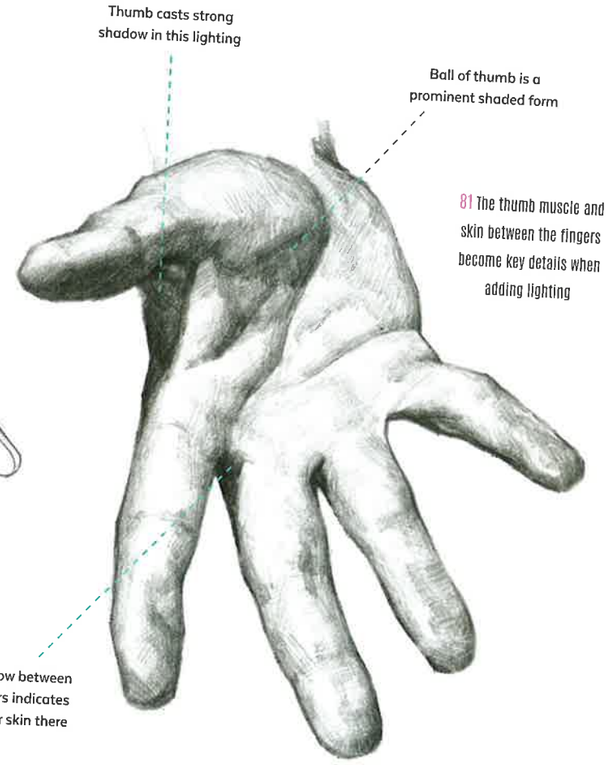
When rendering the hand, it is helpful to think in both a circular and more box-like manner. To simplify the hand, approach it in a box-like way, creating straight strokes that go across the form. To achieve more complexity, take the more organic approach, creating strokes that wrap around the form. The rendered hand in **image 81** shows how the strokes should follow the construction lines, either with the form or against it, to realistically depict the pull and stretch of skin over the muscles and bone structure.



79 The open hand mapped out with boxy shapes



80 The open hand mapped out with curved forms



81 The thumb muscle and skin between the fingers become key details when adding lighting

Drawing tendons

Image 82 shows the way the tendons come down from the forearm and branch out in the hand. When the hand is arched in extreme emotion, or when the skin is drawn (as in aged skin), these tendons stand out vividly in the hand and bulge over the knuckles. Be sure to capture the intensity of these ridges, as they can have a massive impact when you are trying to convey an emotion or personality through your subject's hands.

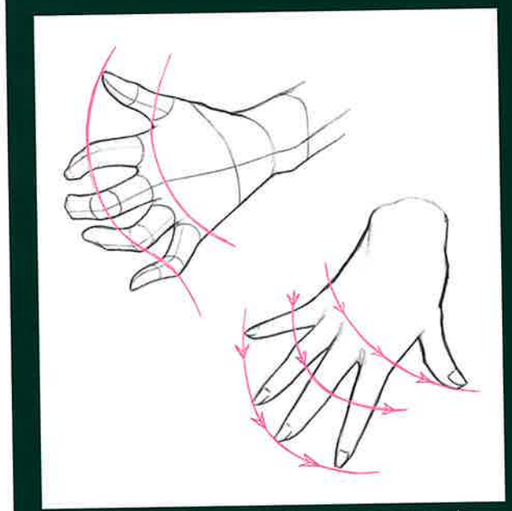
Image 83 shows the hand as a basic outline rather than a block of constructions. From this point, the tendons can be sketched in to show how the surface of the hand would be broken up by ridges of tendons (**image 84**). Many artists like to include a line down the center of each shape, in this case flowing down the fingers, to add a three-dimensional element and help with understanding the forms of the subject.

The finished drawing (**image 85**) shows how the sketched tendons have been incorporated into the skin texture of the hand. On the index finger, you can see how finding the central construction line of the subject helped to draw the tendon and the crevice in the middle of the knuckle.

Rhythm lines

A valuable technique for drawing hands is using rhythm lines. Pictured below are two drawings demonstrating the use of rhythm lines to create dynamic hand poses. A rhythm line is simply a way to create a sense of flow in your work, keeping the proportions of the structures correct while transferring them into a new position. This is essential when trying to gauge the lengths of the bones between the knuckles, for example, which can have a massive impact on the believability of the hand.

You can invent any rhythm lines when it comes to drawing, but following the lines of the knuckles always works well when drawing hands. For example, in the second pose shown here, the rhythm line of the knuckles flows smoothly into the thumb, which helps when drawing its length and direction.

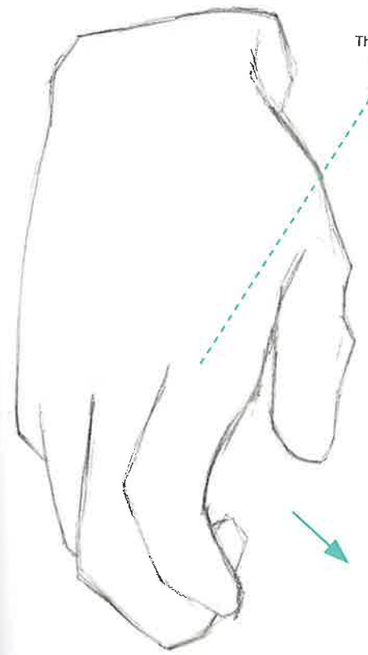


▲ Use rhythm lines to draw dynamic hand poses without losing proportion

82 Depending on the pose of the hand, the tendons can be a distinctive feature

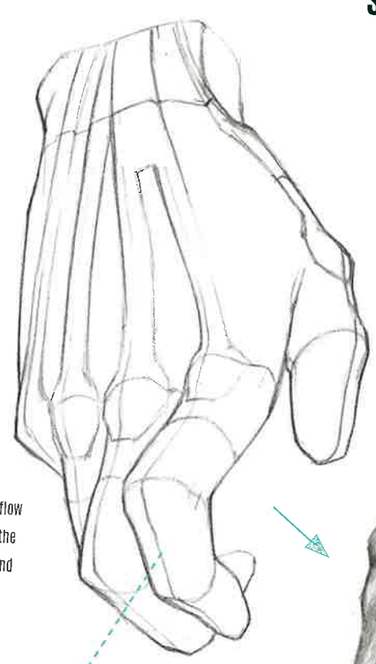


All images by Matt Smith



83 The base of a posed hand can be sketched very simply

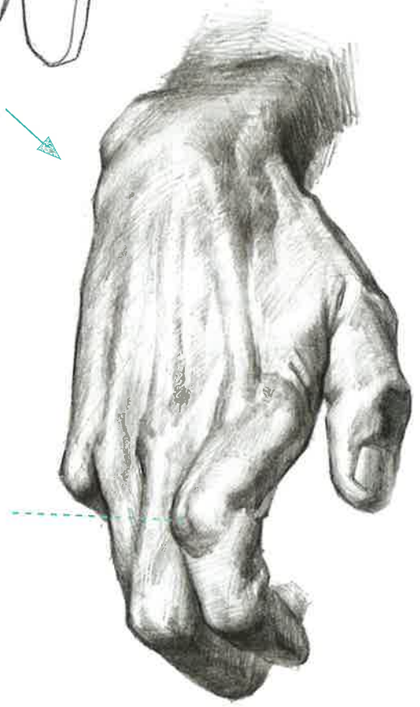
"When the hand is arched in extreme emotion, or when the skin is drawn (as in aged skin), these tendons stand out vividly"



84 Finding the flow of tendons on the back of the hand

Center lines help to keep the fingers in perspective

85 The rendered hand with pronounced tendons and knuckles



Creating hand variety

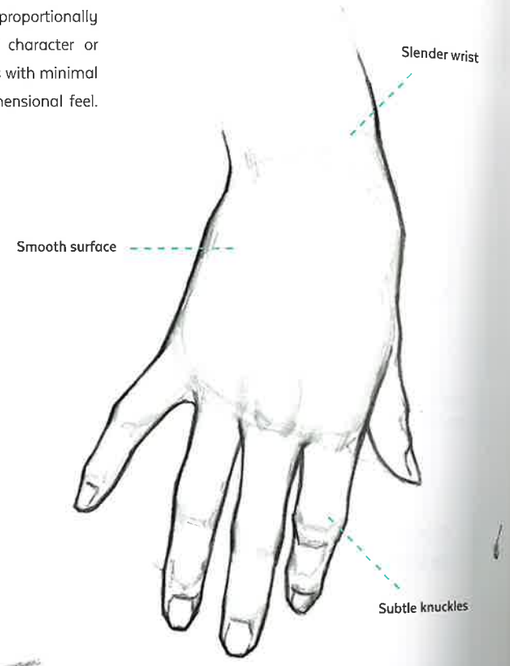
The same construction rules apply to most hands, but when drawing female hands, you may wish to be more subtle when designing the features. Think elegant and simple, as shown in **image 86**. When drawing male hands, you can exaggerate the joints more and make the fingers look more muscular; playing these features down will create a more feminine look.

It is important to study hands in a variety of forms, trying to depict how the muscles create bulges and the tendons create ridges, as shown in **image 87**. This will help you to get a strong idea of how all these aspects are placed in the hand, and to create realistic and proportionally correct results for any type of character or figure. Notice how even the hands with minimal rendering have a solid, three-dimensional feel.

A good test of your progress in understanding form is to create a basic line drawing and see if it still reads as three-dimensional.



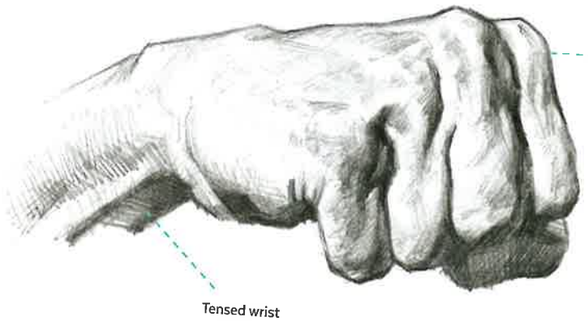
86 Downplaying the prominence of the joints and tendons creates a more delicate hand



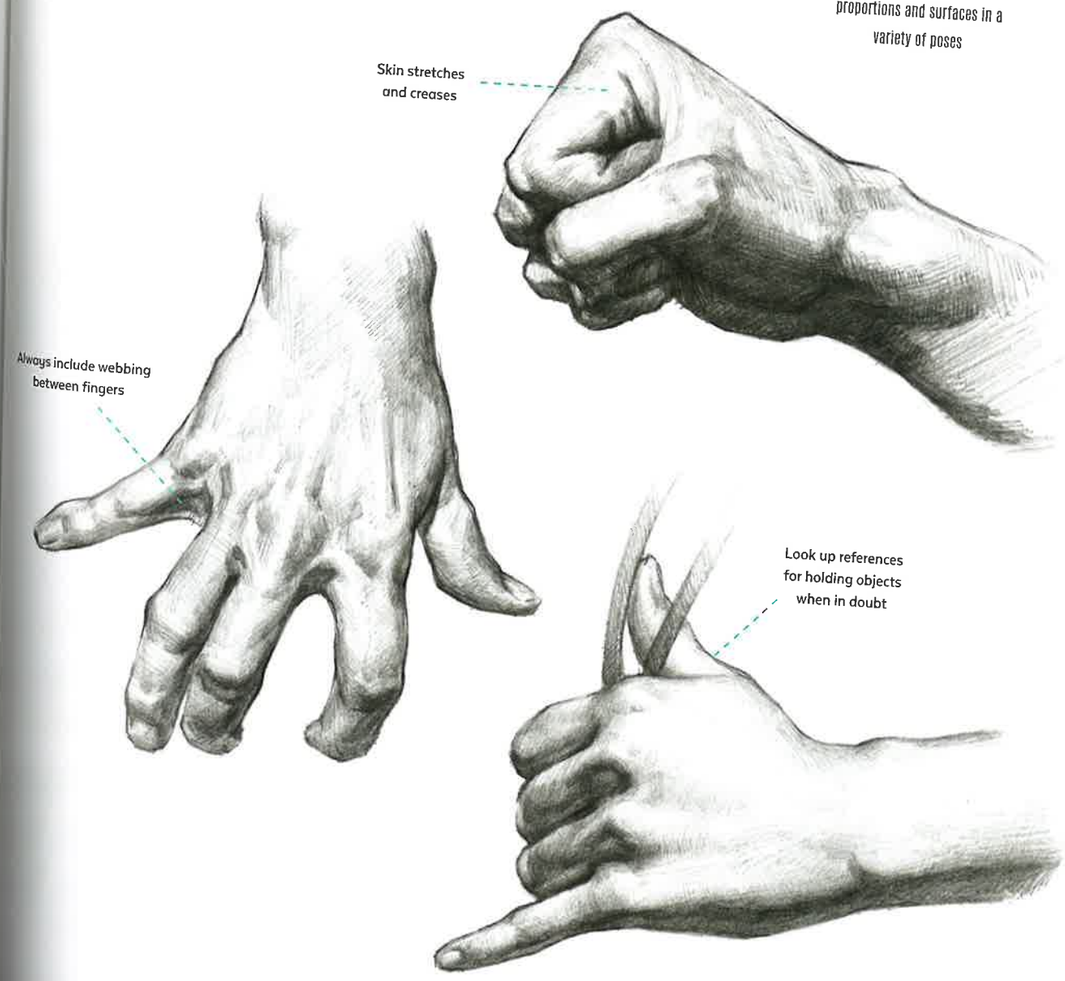




All images by Matt Smith



87 Practice drawing different hands, experimenting with proportions and surfaces in a variety of poses



THE LEG

In this section, we will look at a full-length breakdown of the leg's muscle structure. The leg has a large amount of muscle, and those muscles are directly related to the contours and shape of the leg, so it is important to understand how they interconnect under the skin.

The upper leg

The upper half of the leg features several distinctive masses and bands, which we will explore from the top of the thigh to the knee.

Top of the upper leg

Image 88 shows a front view of the full leg. Starting from the top of the upper part of the leg, you can see the **sartorius**, **tensor fasciae latae**, and part of the **gluteus medius**. The sartorius connects to the hip bone, wraps down the top part of the leg and around the inside of the leg, before finally connecting to the top part of the lower leg just above the **gastrocnemius**. This muscle is particularly prominent in the rendered drawing (**image 89**) as a long, tube-like ridge that wraps across the upper leg.

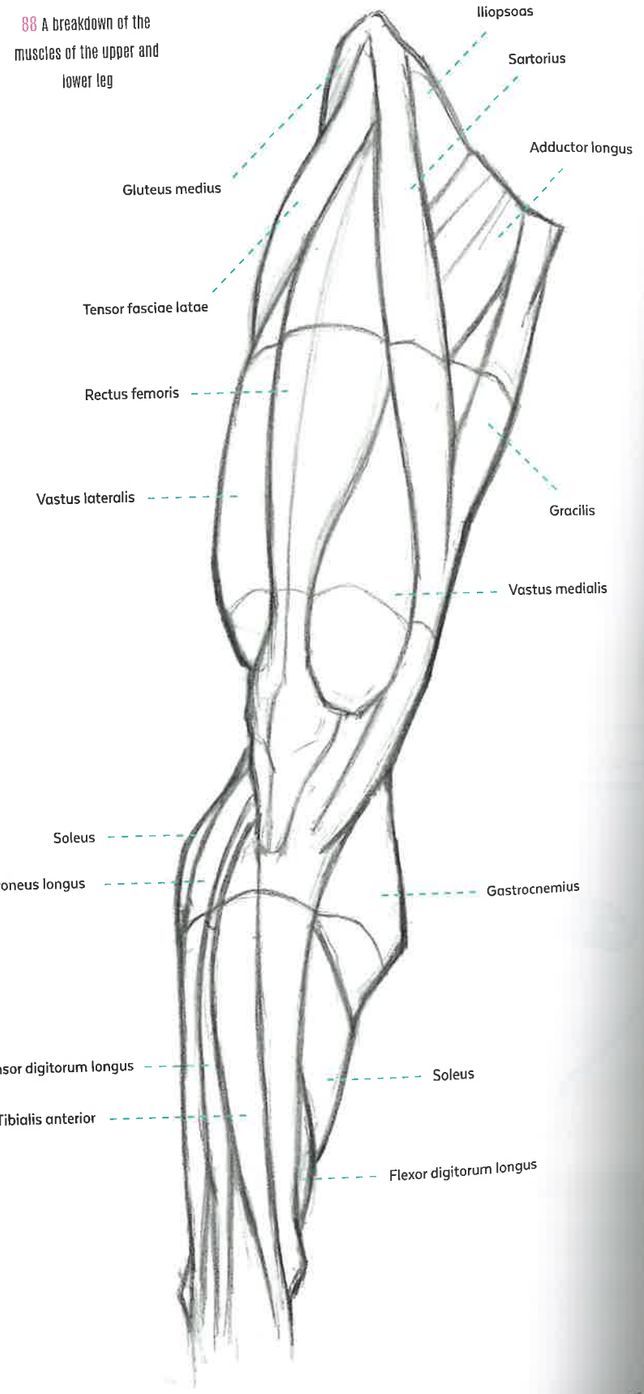
The tensor fasciae latae has a similar shape to the sartorius; it starts from the hip bone and rests on the top outside part of the leg. This muscle is overshadowed by the large muscles below it in the rendered version, yet is still visible by the slight valleys created between it and the surrounding muscles.

Inside of the upper leg

The next three muscles from the inner top of the leg are the **iliopsoas**, **adductor longus**, and **gracilis**. The iliopsoas and adductor longus connect to the pelvis and go underneath the outer muscles of the leg, and are not as visible as other muscles. The gracilis originates from the pelvis on the inner leg and links up with the sartorius.

Muscles above the knee

The last three muscles of the upper leg are the **vastus lateralis**, **rectus femoris**, and **vastus medialis**. The vastus lateralis is a big muscle that shapes much of the outer side of the leg. In **image 89**, you can see how it bulges out just above the knees and tapers off as it moves under the muscles at the top of the leg. It is important to use your shadowing and pencil marks to create an impression of solidity in the bulging areas; this will make your bodies seem more realistic.



88 A breakdown of the muscles of the upper and lower leg

All images by Matt Smith



89 In this example, muscles such as the vastus muscles and gastrocnemius remain very pronounced under the skin

The rectus femoris is the main muscle that runs from the knee and over the front of the upper leg, connecting to the pelvis. It has a split down the middle of the muscle, which creates the appearance of two muscles. If you look closely at **image 89**, you can see where this light split has been added using slightly darkened pencil strokes. The **vastus medialis** is wedged between the rectus femoris and the sartorius, creating a teardrop-like shape above the knee.

The lower leg

The lower half of the leg has fewer masses and features, but these are essential for capturing its distinct shape.

Outside of the lower leg

Starting from the outside of the lower leg in **image 88**, we can see the **soleus**, **peroneus longus**, **extensor digitorum longus**, and **tibialis anterior**. Other than the soleus, these muscles are rather straightforward; they attach to the large head of the tibia bone, sweep down the leg, and attach to the foot. The soleus originates from the back of the leg and wraps around it, making it visible from each side. This combination of muscles creates a smooth, cylindrical contour on the outer lower leg.

Inside of the lower leg

On the inside of the leg is the gastrocnemius, the aforementioned soleus, and the flexor digitorum longus. Only part of the gastrocnemius is visible here, as it wraps around to the back of the leg, though it still creates a prominent bulge in the silhouette of the lower leg (**image 89**). The flexor digitorum longus forms underneath the soleus and wraps behind the ankle.

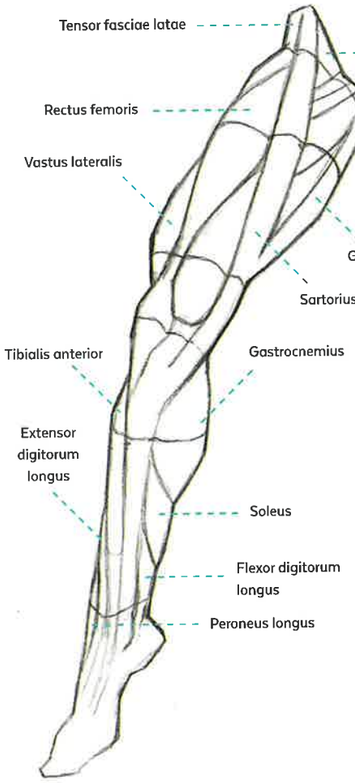
The inner leg

Extended leg pose

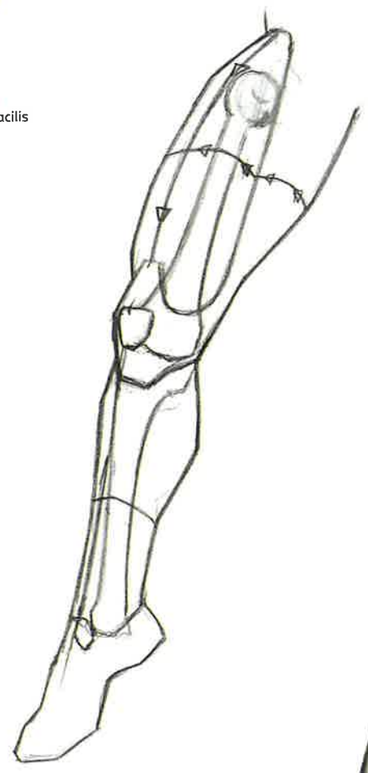
Image 90 gives a better view of the inner leg in a slightly extended pose. The important thing to note here is how the muscles wrap around the leg bones.

The simplified version of the leg in **image 91** shows the positioning of the leg bones. Due to the size and positioning of the leg muscles, it is unlikely that these will be visible under the skin – barring the kneecap – but it is useful to know where they start and end, so you can correctly position the angles of the leg joints.

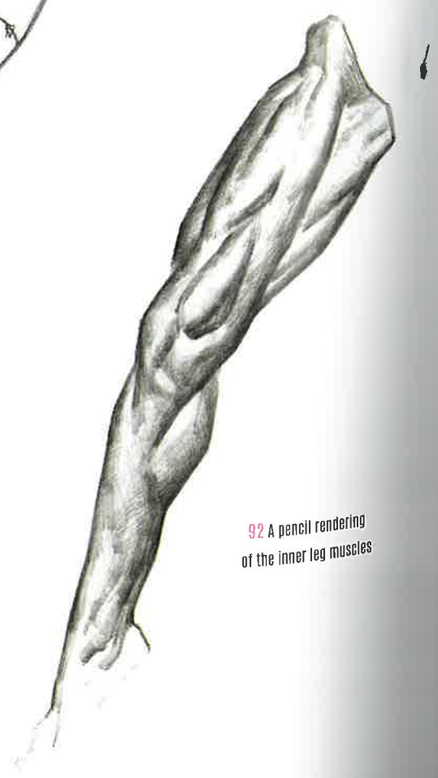
Unlike the arms, there is actually no twisting or knotting of the muscles, so the muscle structures here are easier to track and understand. This, in turn, makes rendering the leg easier (**image 92**).



90 A view of the inner leg muscles

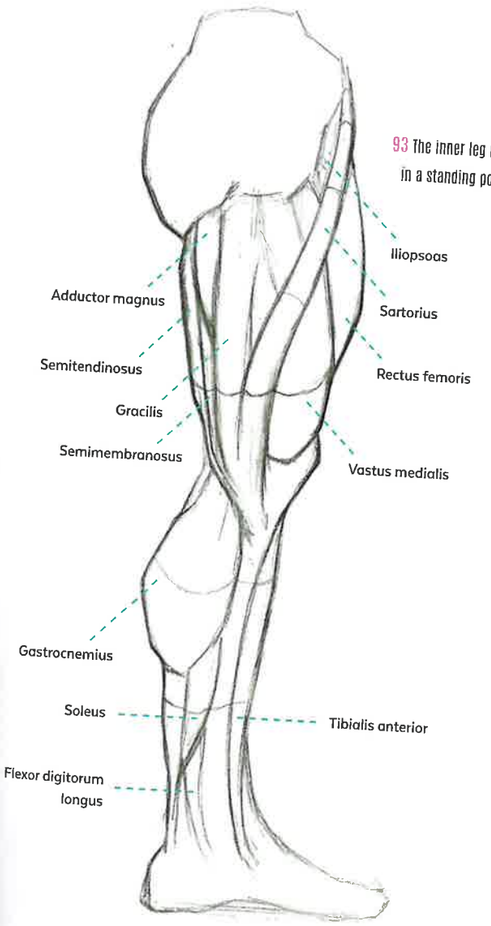


91 The underlying bones of the leg

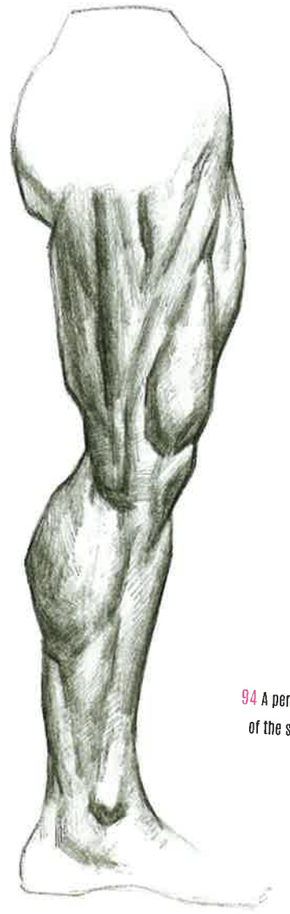


92 A pencil rendering of the inner leg muscles

All images by Matt Smith



93 The inner leg muscles in a standing position



94 A pencil rendering of the standing leg

Standing leg pose

Image 93 shows an inside view of the leg with the foot planted flat on the ground. From this angle, many of the muscles from the front are still visible. On the upper back side of the leg, we can see three new muscles: the **semitendinosus**, **semimembranosus**, and **adductor magnus**. The adductor magnus is a small, wedge-shaped muscle, which connects underneath the gluteus maximus (the buttock muscle) and tapers down between the gracilis and the semimembranosus.

The semimembranosus comes out from underneath the semitendinosus and connects to the front inside of the leg where the gracilis and sartorius connect.

The sartorius starts at the top of the outside of the leg, and wraps down and around to the inside of the leg. This muscle can be used to create appealing rhythm lines when it comes to drawing legs, so always make sure to get a good flow to it (**image 94**).

On the lower leg, no new muscles are visible. In **image 94** you can see the tibialis, soleus, and gastrocnemius from previous images, and get a better view of the two-headed shape of the gastrocnemius. Take note of how the muscle changes shape from each angle; in profile, the bulges are evident, while from a top view, it loses dimension and becomes smoother.

Back view of the leg

Back of the upper leg

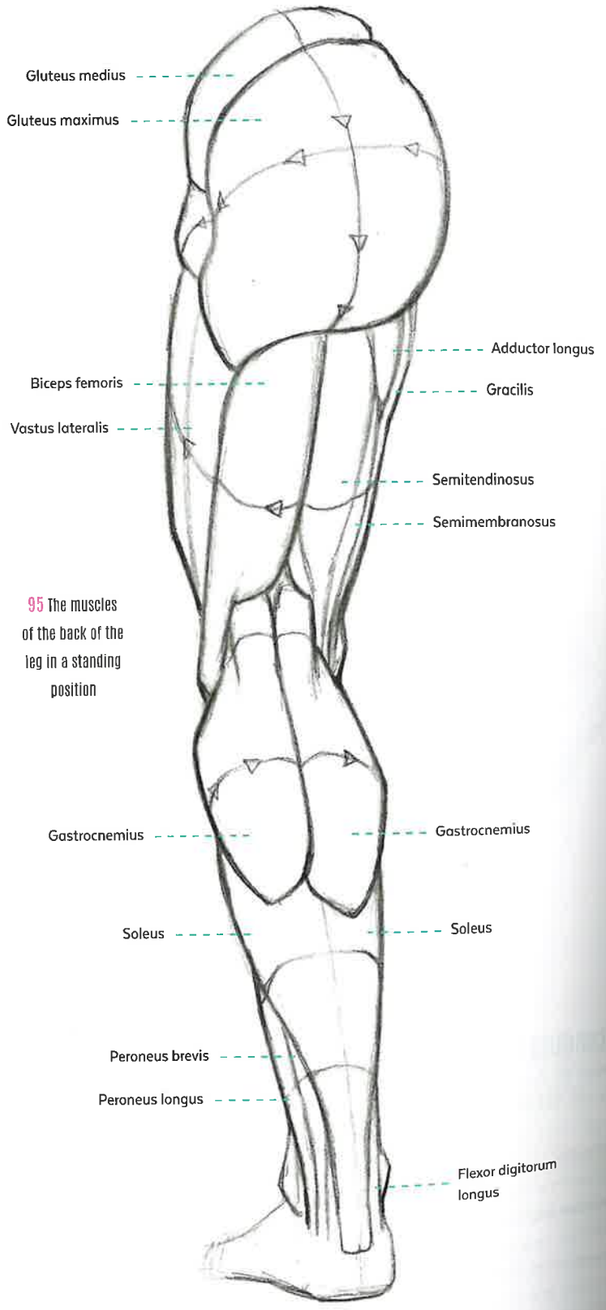
Moving around the leg, **image 95** shows the back view of the leg in a slightly bent position. Here we have a full view of the **gluteus maximus**, **gluteus medius**, **semitendinosus**, and a new muscle: the **biceps femoris**. The biceps femoris wraps around the gastrocnemius and attaches to the head of the tibia.

On the outside of the upper leg, the large **vastus lateralis** is visible above the biceps femoris. As the vastus lateralis wraps up toward the front of the leg, the two muscles separate from each other, as you saw on **page 242**.

Back of the lower leg

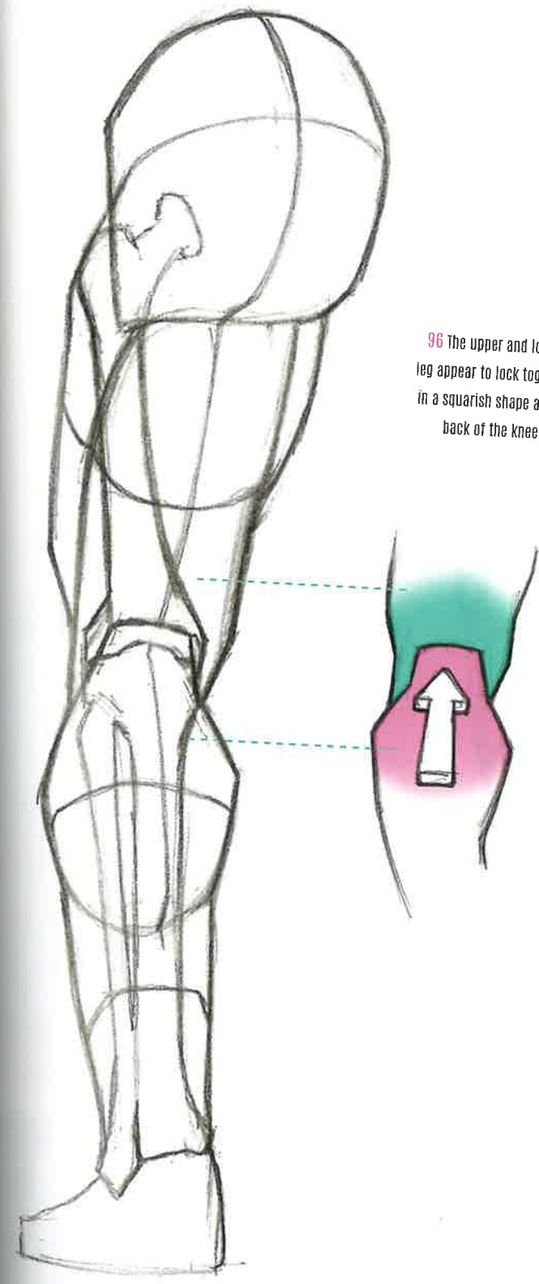
On the lower leg, we now have a clear view of the gastrocnemius. Notably, this muscle has two separate heads, and though similar in shape, the inside muscle is slightly larger and travels down the leg a little farther. **Image 96** shows a simplified demonstration of how the muscles connect from underneath the muscles of the upper leg, creating a distinctive blocky shape that is very pronounced in the final pencil drawing (**image 97**).

Finally, at the bottom of the leg, you can see the soleus emerging from the gastrocnemius and tapering down the back of the leg to the heel.

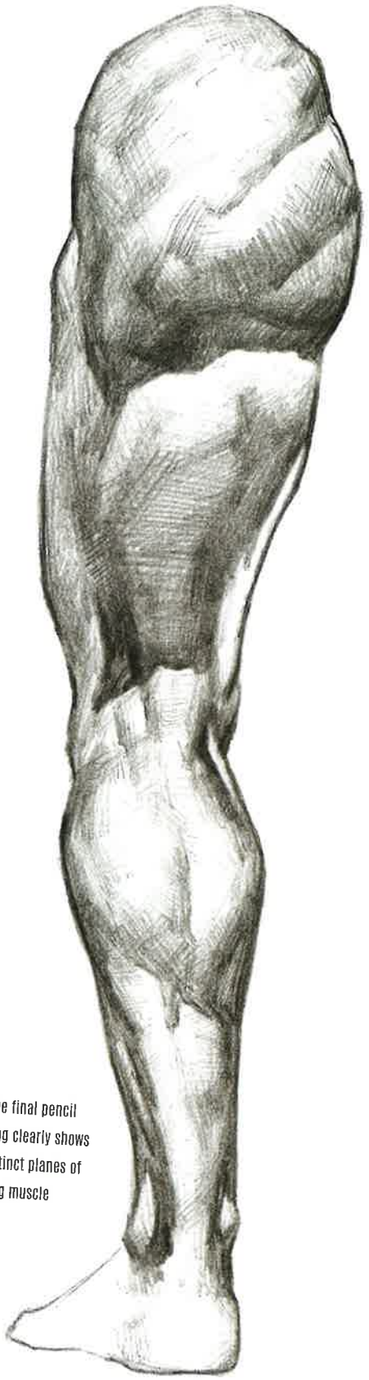


95 The muscles of the back of the leg in a standing position

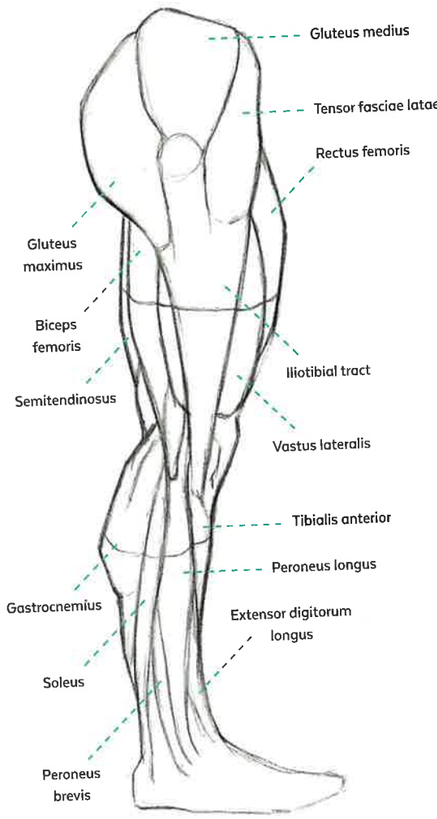
All images by Matt Smith



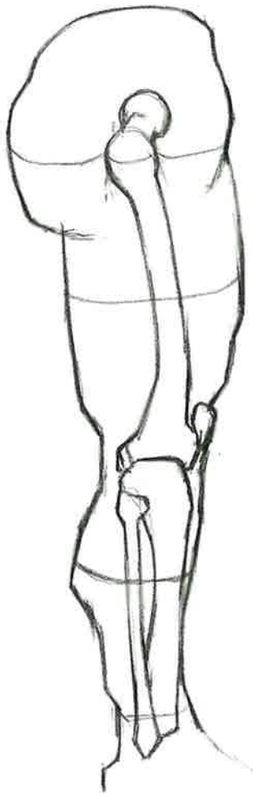
96 The upper and lower leg appear to lock together in a squarish shape at the back of the knee



97 The final pencil rendering clearly shows the distinct planes of leg muscle



98 A muscle overview of the outer side of the standing leg



99 The bone structure of the standing leg viewed from the outer side



100 The final drawing of the outer leg shows the flow of vertical muscle ridges

The outer leg

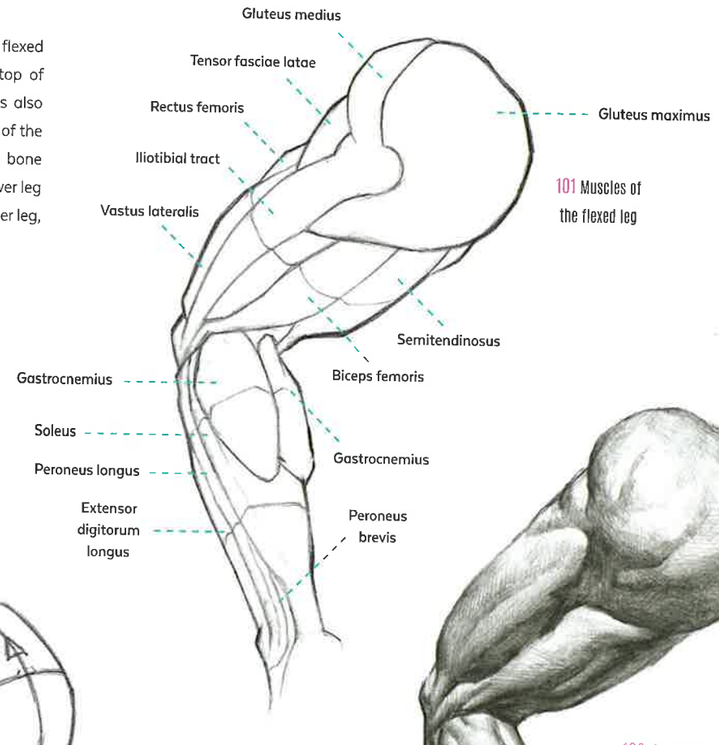
Images 98 and **99** give an outside view of the leg. Here we can see all of the vastus lateralis. The **iliotibial tract** – which is not a muscle, but a reinforcing fibrous band – connects to the gluteus and the tensor fasciae latae, covers much of the vastus lateralis, and connects to the head of the tibia bone.

We can also see the biceps femoris protruding slightly as it moves down the back of the leg and over the peroneus longus, which in turn flows down the side of the leg and wraps around the ankle. The overall effect is a series of different-sized vertical ridges that flow down the length of the leg and taper in at the knee and ankle. Be sure to capture the different sizes and contours of the muscle in your drawings (**image 100**).

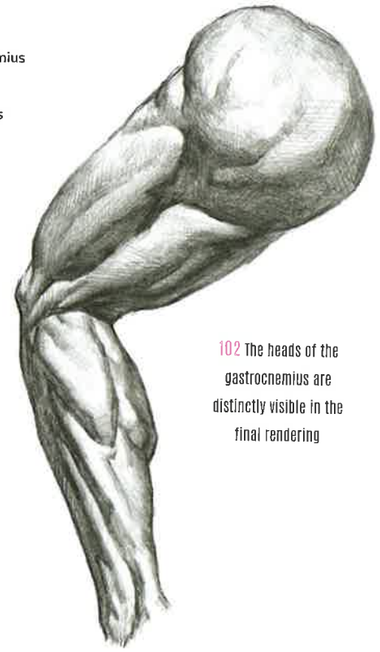
All images by Matt Smith

The flexed leg

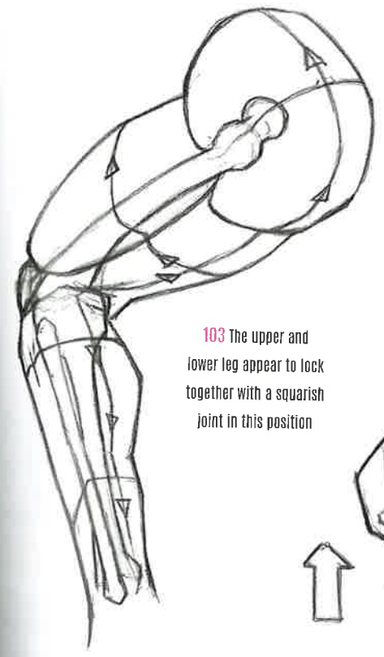
The leg in **images 101** and **102** is so flexed that you can see the iliotibial tract on top of the vastus lateralis. The gastrocnemius is also flexed, showing off the two bulged heads of the muscle. **Image 103** shows the underlying bone positions of the flexed leg, and how the lower leg appears to slot into place beneath the upper leg, as was introduced in **image 96**.



101 Muscles of the flexed leg



102 The heads of the gastrocnemius are distinctly visible in the final rendering



103 The upper and lower leg appear to lock together with a squarish joint in this position

Drawing gestures

This page shows a series of different leg poses to help you understand how some of the aforementioned muscles adapt and change. The key to remembering these gesture techniques is repetition. Find the knee and establish the perspective, add form to the gesture, and then add structure to the form.

Front view of straight leg

Image 104 shows a simple straight leg. Once the rhythm lines have been established, form can be added to flesh out the lines, considering the bulges and refined areas of muscle.

Back view of bent leg

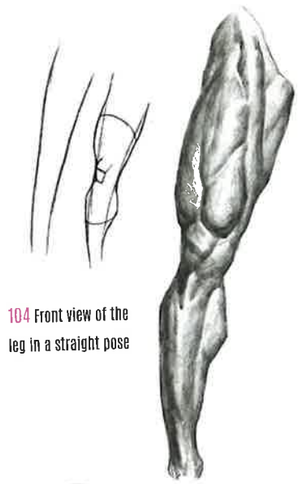
Image 105 shows a bent, C-shaped curve. The knee is pointing away from the viewer, so the structure lines naturally taper away from the viewer. There is an overlapping line that shows how the lower leg bulges over the upper leg in the bend. From a different angle, this overlap may appear different or not exist at all.

Front and back curved leg

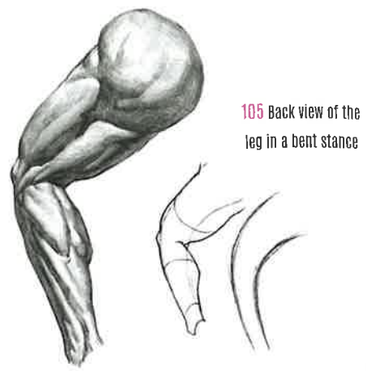
Images 106 and **107** have a subtle C-shaped curve. Though the knee is not visible in the former, there is still a bend in the leg to be aware of, noting how the structure lines change perspective in the upper and lower leg.

Inner and outer standing leg

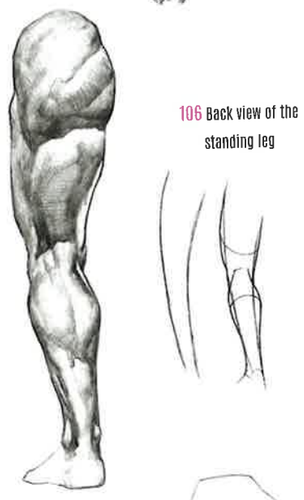
The gestures for **image 108** and **109** drawings are a little different as they use an S-shaped curve. When drawing the leg closer to profile view, the gesture will always be an "S" curve; this is due to the shape of the bones in the leg. Incorporating the feet in your drawing will add to this S-shaped curve.



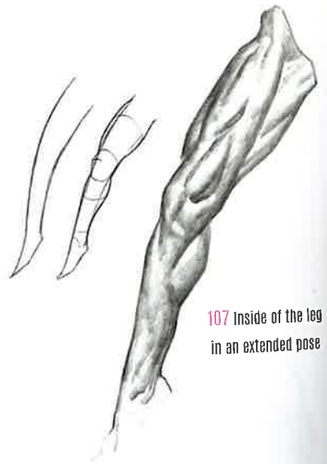
104 Front view of the leg in a straight pose



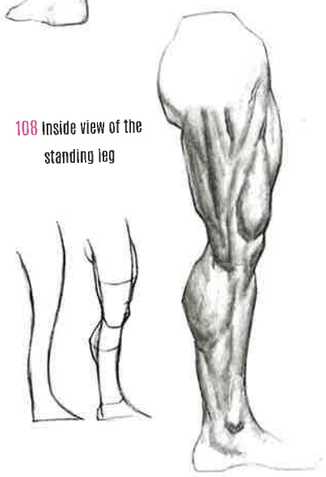
105 Back view of the leg in a bent stance



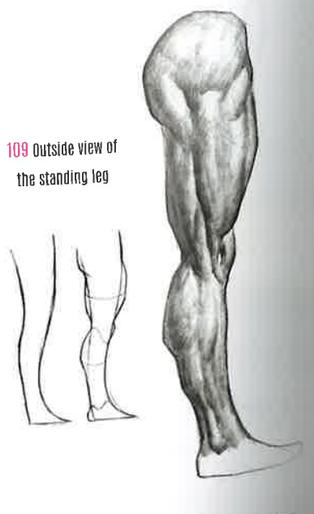
106 Back view of the standing leg



107 Inside of the leg in an extended pose



108 Inside view of the standing leg



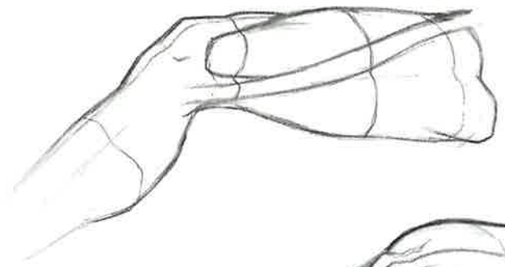
109 Outside view of the standing leg

All images by Matt Smith



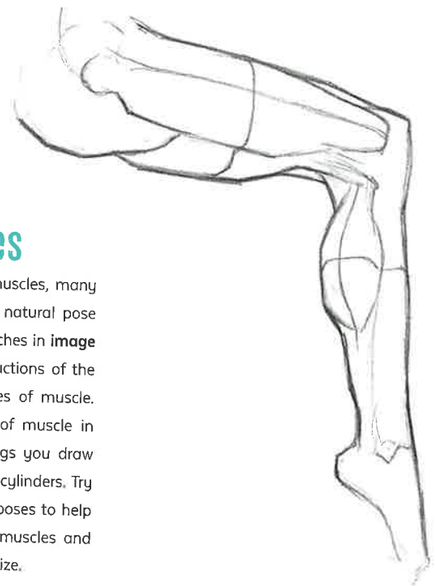


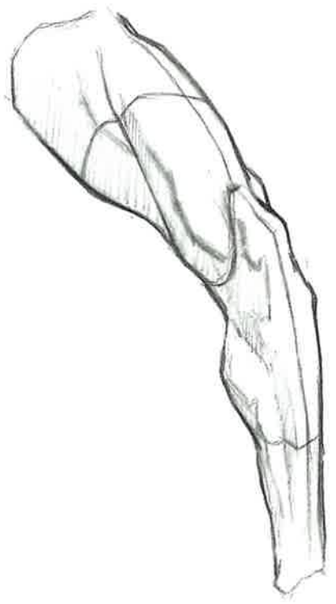




110 With practice you will be able to interpret and simplify the leg in a variety of poses







Practice a variety of poses

While the leg contains a lot of muscles, many of them may never appear in a natural pose or in certain body types. The sketches in **image 110** show some simplified constructions of the leg that focus on the big masses of muscle. Capturing these notable bulges of muscle in your silhouettes will make the legs you draw appear more realistic than simple cylinders. Try to study a variety of people and poses to help develop your judgment of which muscles and landmarks to downplay or emphasize.

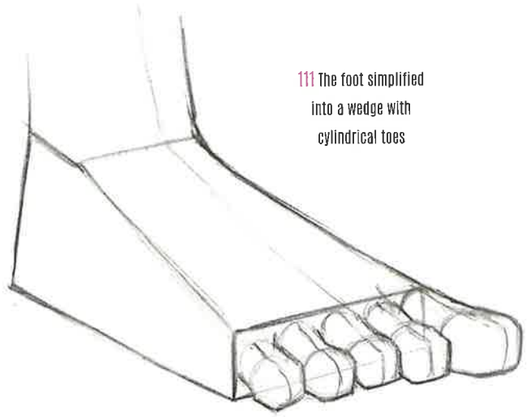
THE FOOT

When it comes to drawing feet, the foot can be simplified down to a wedge shape, like a doorstop or a slice of cake. Obviously a foot is more complicated than just a wedge shape, but when starting a drawing, this approach can help you achieve correct perspective for your feet.

Overview of the foot

Image 111 shows the wedge-shaped base of a foot with cylinders for the toes. This can be built up into a more complex structural drawing of the foot, as shown in **image 112**. The toes themselves are still cylinder shapes with "bumps" that indicate the knuckles of the toes. Notice how the top of the foot slopes down from the inside (the big toe side) to the outside (the little toe side); the foot is not a flat, level plane.

Finally, **image 113** shows a fully rendered foot. Note the sheer number of pencil marks used to carve out the forms. Many of the marks follow the structure lines of the foot, indicating solid fleshiness. This level of detail is important in capturing the finer contours of the foot.



111 The foot simplified into a wedge with cylindrical toes

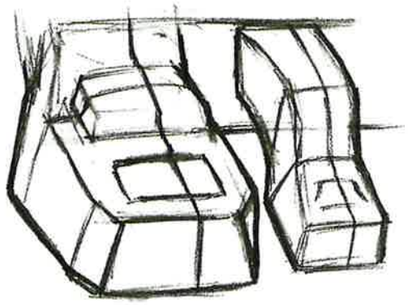


112 The top of the foot is sloped rather than flat

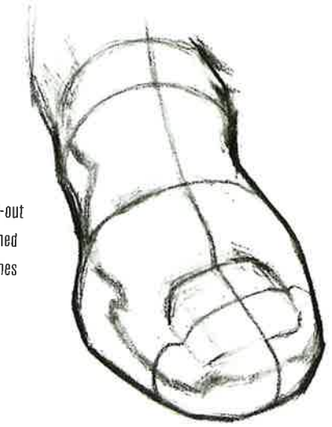


113 Use varying pencil strokes to capture the many planes of the foot

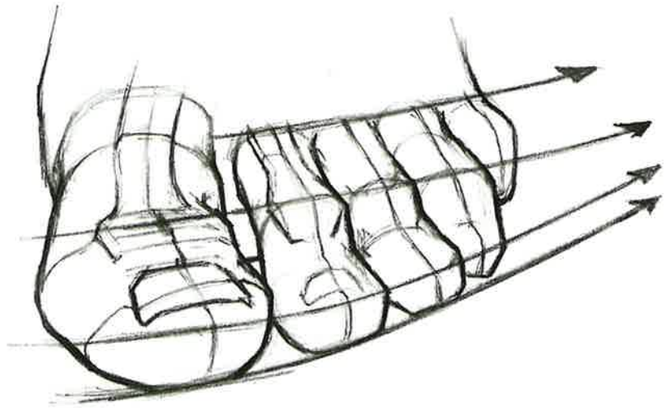
All images by Matt Smith



114 The toes can be roughly sketched out as planar blocks



115 The blocked-out toe can be refined with rounded lines



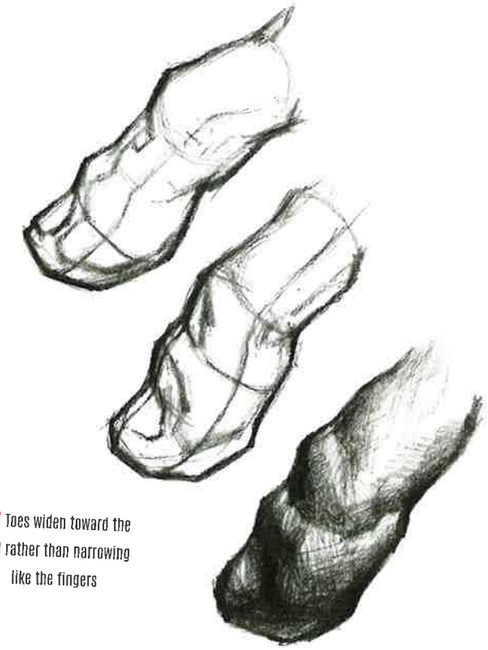
116 Flow lines such as these can help you to place all the toes

The toes

Image 114 is a planar structural diagram of the first two toes to help you visualize their basic block mass. These blocks can then be rounded and refined into a more organic drawing, such as in **image 115**.

In **image 116**, a structural drawing of the toes with guidelines shows how the joints line up with each other. Notice how the smaller toes protrude from a separate line than the big toe, which originates slightly farther back.

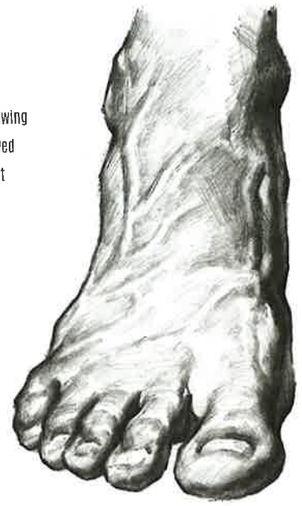
Image 117 shows structural sketches and a rendering of one of the smaller toes. The ends of the toes are thicker and padded compared to a finger; also unlike fingers, the toes do not taper as they reach the tip.



117 Toes widen toward the end rather than narrowing like the fingers



118 Structural drawing of the foot viewed from the front



119 Pencil rendering of the foot from the front

The front of the foot

Images 118 and **119** show two straight-on front views of the foot to demonstrate how its shapes shift when posed. As mentioned earlier, notice in the sketch how the structure lines from the inside of the foot slant down at an angle as they reach the outer foot. The four smaller toes line up with each other and the big toe is somewhat separated from the others.

Images 120 and **121** depict a top-down view with the foot stretched out and the toes slightly bent out and just touching the ground. The structural drawing shows how the smooth flow of muscle moves down the leg toward the big toe. Since the four smaller toes are bent away from the line of the big toe, they create a slightly dipped plane in the rendered drawing where the four toes protrude from the foot.

In **image 120** you can see a cross-contour line that starts at the big toe and moves across this plane, finally wrapping around the little toe on the outside of the foot. This line indicates where the first set of toe joints occur, though they are often hard to see as they are placed deeper within the foot; the joints are more noticeable when the toes are bent downward, as shown on the opposite page.

120 The contour line across the foot indicates the first joints of the toes





121 The joints of the toes are not very prominent in a relaxed pose such as this

All images by Matt Smith

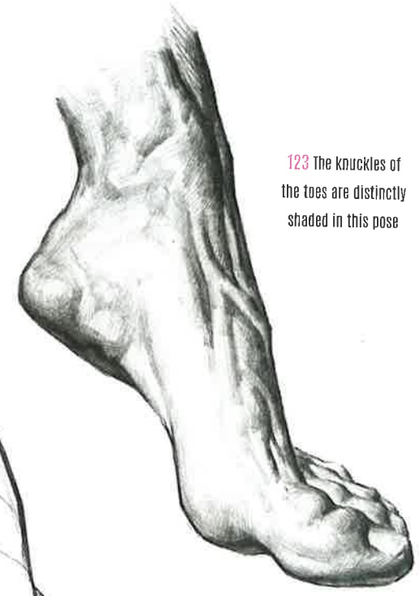
The sides of the foot

Now let's look at the inner and outer sides of the foot in more detail. **Images 122** and **123** show the inside of the flexed foot. At this angle, the top of the foot and the other toes are largely hidden from view, though it is still important to have the correct proportions of those smaller toes; see the smaller ridges that indicate knuckles and how they realistically pan backward and down toward the outer foot.

In **images 124** and **125**, the foot angles downward as it moves from the inside to the outside. Compared to the inside view, you can see most of the foot at this angle. The toes are curled downward, showing the hidden joints mentioned previously, and the pencil rendering helps to indicate the slope in the foot and each of the bony knuckle protrusions.

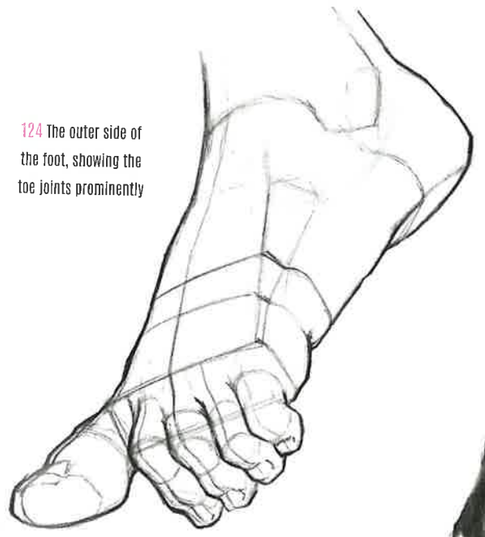
122 The shape of the foot viewed from the inner side





123 The knuckles of the toes are distinctly shaded in this pose

124 The outer side of the foot, showing the toe joints prominently



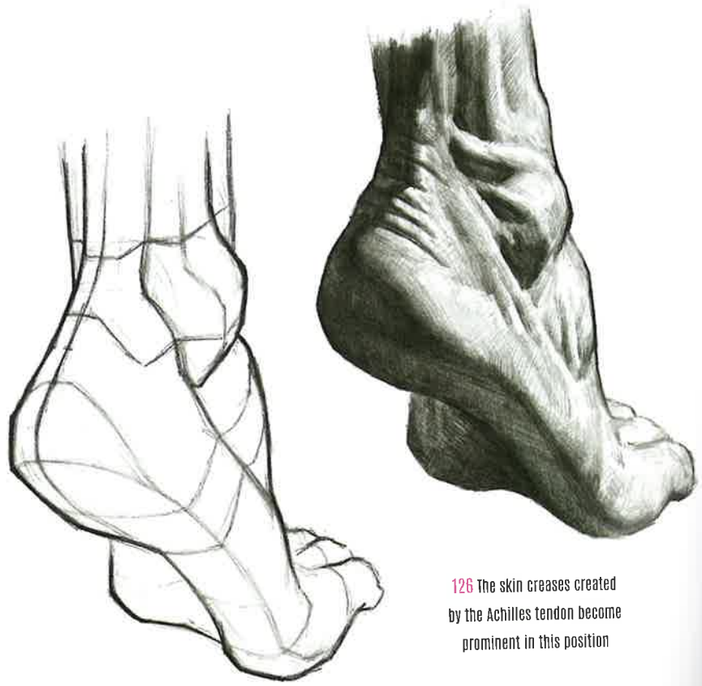


125 The creases and veins of the foot are especially noticeable in this clenched pose

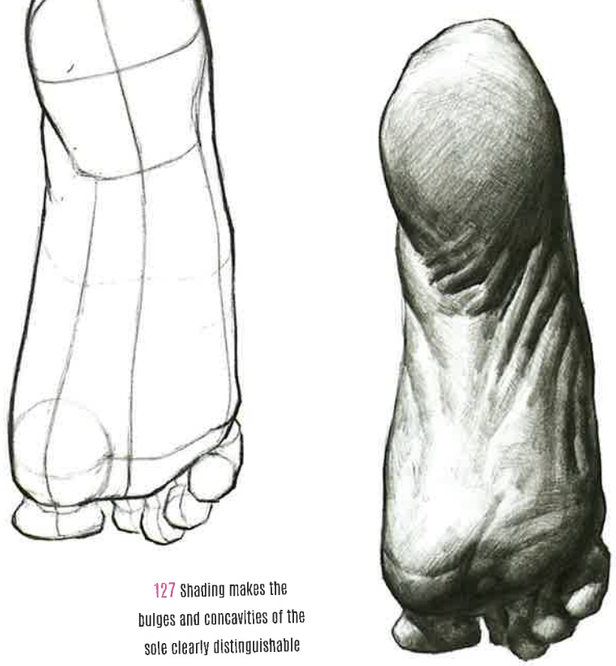
The back & sole of the foot

Image 126 depicts an angled back view of the flexed foot, showing the valleys at the bottom of the foot. Note how the interaction between the ankles and the Achilles tendon (which runs down the back of the leg to the heel) creates almost stair-like folds at the back of the flexed foot.

Image 127 shows a direct view of the sole of the foot. You can see that there is a lot of padding on this side, especially around the toe and heel. The contour lines change as you move from the heel to the toes, with a noticeable valley appearing down the center of the foot.



126 The skin creases created by the Achilles tendon become prominent in this position

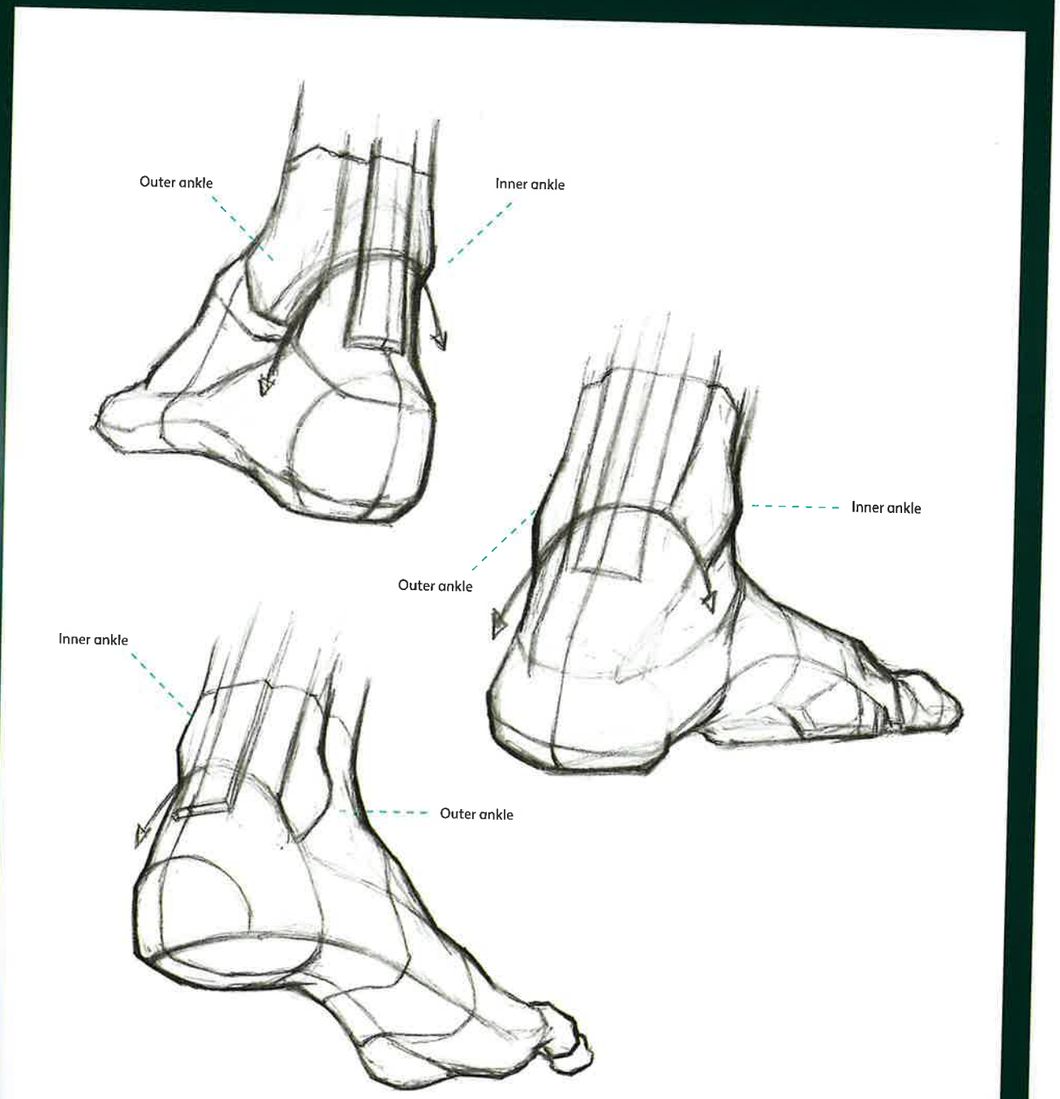


127 Shading makes the bulges and concavities of the sole clearly distinguishable

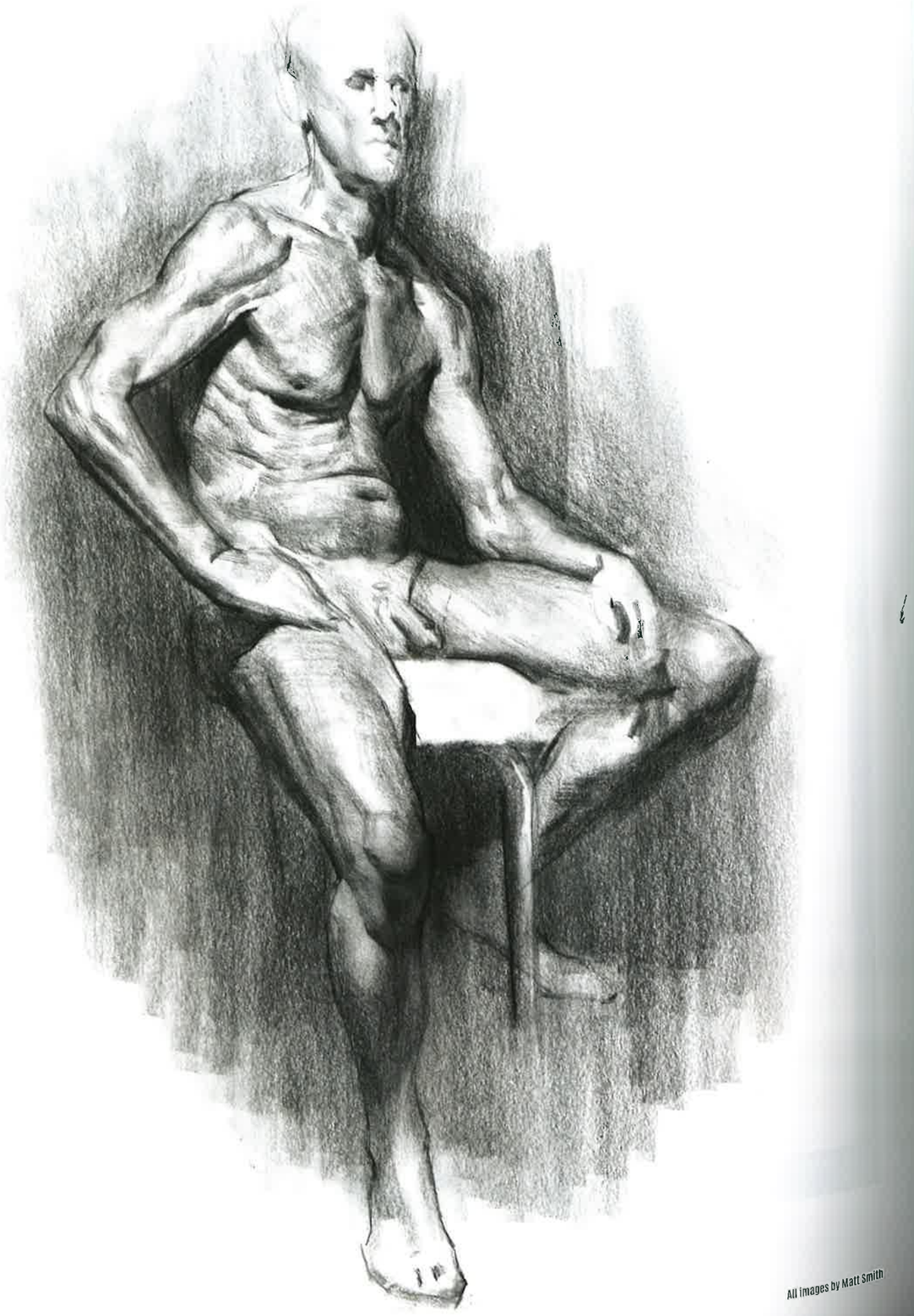
All images by Matt Smith

Ankles

When depicting the lower leg and foot, always remember that the inside ankle sits slightly higher than the outside ankle. This asymmetry has been highlighted with a contour arrow in the construction drawings below. Including this detail will add immediate believability to the silhouette of any legs and feet you draw.



▲ The ankles do not sit at the same height on either side of the leg



All images by Matt Smith

FUNDAMENTALS APPLIED...

POSES

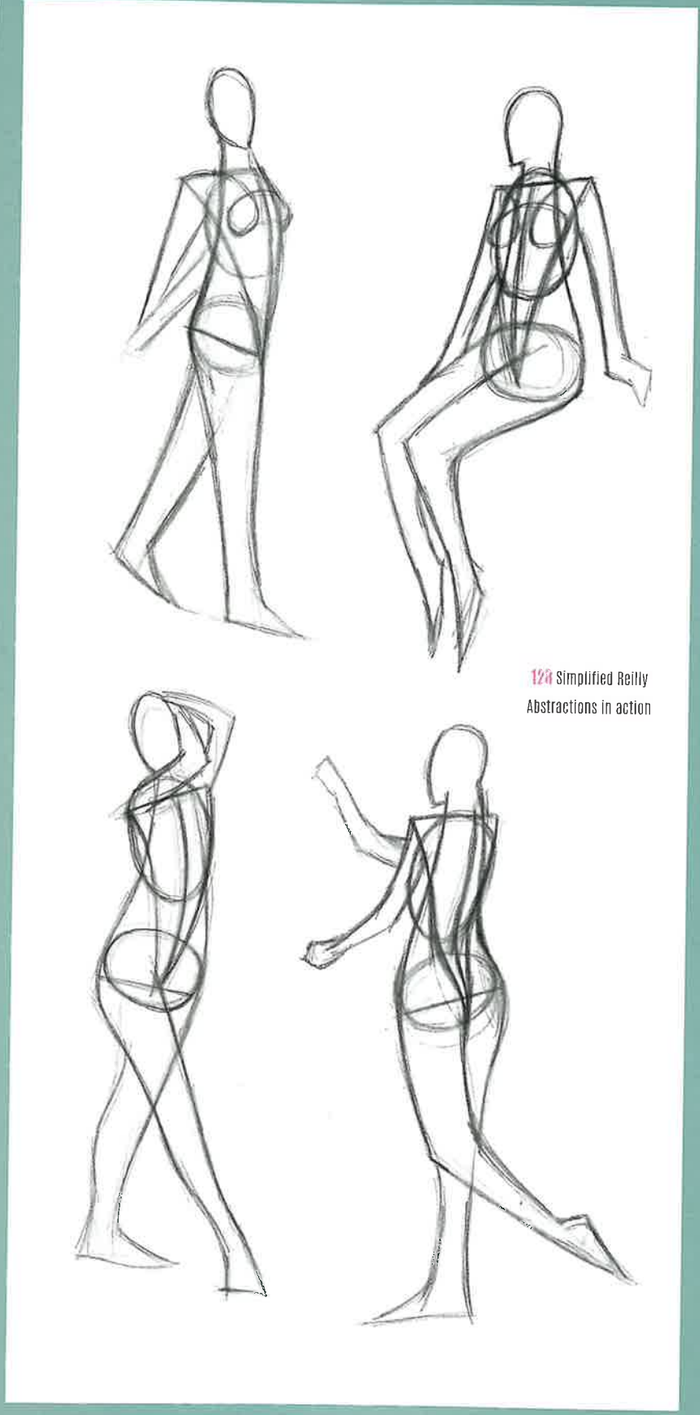
This section will focus less on the specific anatomy of a person, and more on how to correctly proportion and render full-figure poses, incorporating the previous elements we have looked at.

When it comes to drawing a full-figure pose, there are many ways to begin. Some artists begin with a simple stick-figure skeleton frame; others may start by massing out the large forms of the body. While these are both good ways to approach drawing, this section will explore a method called the Reilly Abstraction, created by American painter and teacher Frank Reilly.

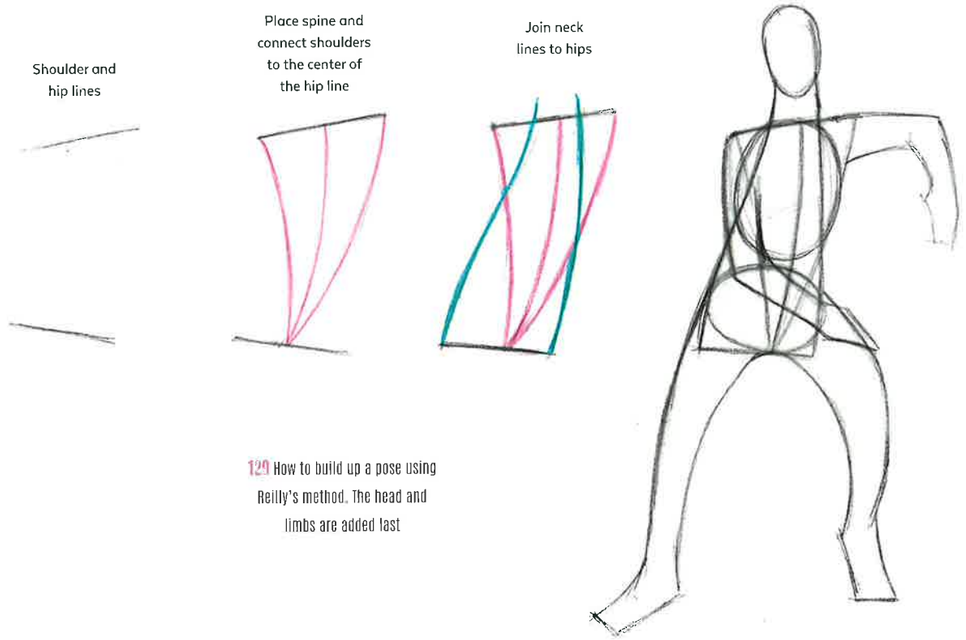
The Reilly Abstraction method

The Reilly Abstraction is a method of drawing based on using a set of rhythmical lines to capture the figure. **Image 128** shows eight quick sketches that demonstrate how Frank Reilly's method can be adapted for different poses, ranging from basic, simple poses to complicated poses with overlapping and foreshortened elements.

The goal of Reilly Abstraction is to capture the flow of the figure and achieve the correct placement and proportions of the body's major forms. You should not be concerned with the exact contours and finer details of the body during this process.



128 Simplified Reilly Abstractions in action



129 How to build up a pose using Reilly's method. The head and limbs are added last

How to use the method

There are many ways to start the Reilly Abstraction. You can begin by drawing out the rib cage and pelvis, or by drawing a center line for the spine. The entire method uses three types of line: C-shaped curves, S-shaped curves, and straight lines. In image 129, we will begin by placing the angle of the shoulders and hips.

The center line is placed next, following the shape of the spine, which in this case is a C-shaped curve. Next, two more curved lines connect the outer points of the shoulder line down to the crotch (where the spine meets the hip line). Whatever type of line the center line is, the shoulder lines will match with it. For example, this sketch uses three C-shaped curves for the center and shoulder lines; you would never match a C-shaped center line with S-shaped shoulder lines, as they would not correspond with the natural shape of the body.

The next two lines extend from the neck, flaring downward to the ends of the hip line. For this asymmetrical pose, these lines consist of an S-curve on the left and a C-curve on the right. This creates something resembling a torso.

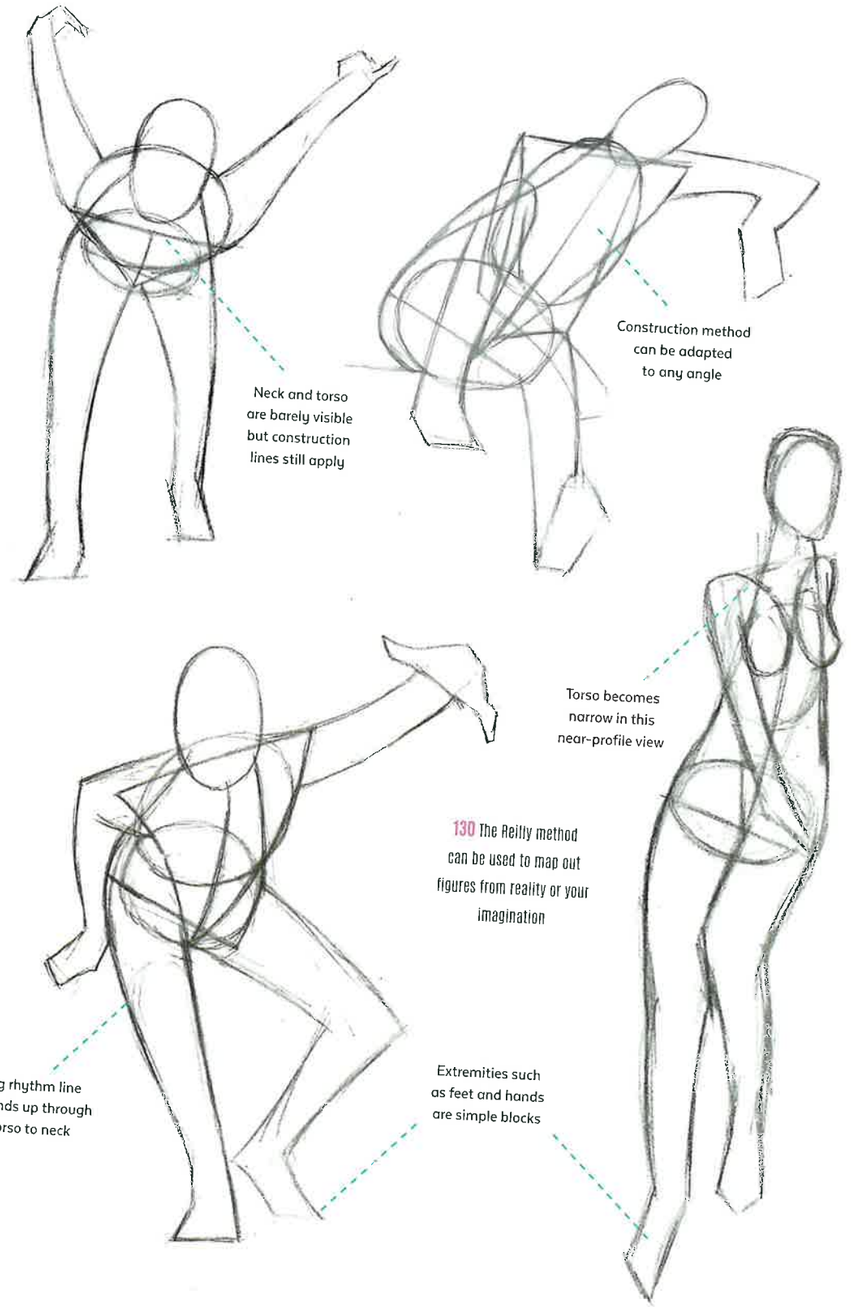
The legs, arms, and head are added next, using simple outlines. Two ovals indicate the pelvis and rib cage. In some instances, such as this pose, you can extend the neck-hip rhythm line all the way down to the foot. Now we have something that resembles a simple human figure.

If you struggle to place your abstraction lines, find a photo reference and use a piece of tracing paper to trace out the lines over the figure. Then it is simply a case of practicing until you are able to visualize those rhythm lines on live or imagined models (image 130).

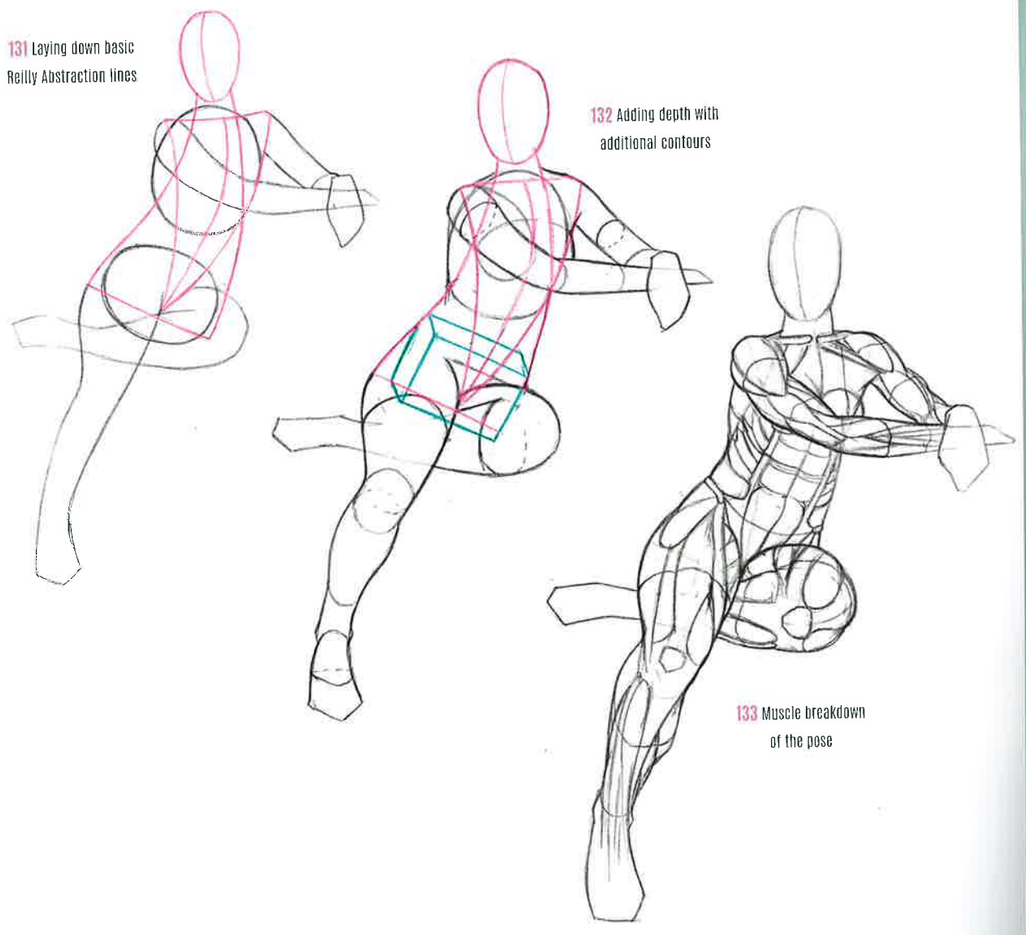
The method in action

The rest of this section (image 131 onwards) will demonstrate how to set up simple figures using the Reilly Abstraction, and how to flesh out the figure from the simplified base to create a finished drawing. Each exercise will also feature an anatomical breakdown in the style used earlier in this chapter, to provide a reference point for the underlying muscles.

All images by Matt Smith



130 The Reilly method can be used to map out figures from reality or your imagination



Front view of a seated woman

This study of a seated female model took two to three hours. As shown in image 131, the basic flow of the pose is a C-shaped curve; everything else is built around that C-shaped center line using C-curves, S-curves, and straight lines.

Building up form

After the initial sketch, three-dimensional elements are gradually added, still using only basic structural lines (image 132). These focus slightly more on the contours of the body, creating overlapping lines to get the feel of one form in front of another. For example, on the right side of the body, create a line for the chest muscle overlapping the arm to show that the chest muscle is in front of the arm. Being aware of where some parts of the body overlap others helps to add solidity, believability, and complexity to your drawings.

More solidity is added to the lower legs, shoulders, and sides of the body, but the figure is still simple. Some cross-contour lines can also be added to give the body a more three-dimensional look and help you work out the angle and perspective of the limbs. These lines appear on the arms and legs as an indicator of how the angles change.

In image 132 a box has been added to indicate the pelvis. This is not a necessary step in the drawing process, but helps to show the perspective of the pelvis in this pose. The pelvis is often mistakenly depicted at a consistent 90-degree angle to the spine, which creates a rigid and uncomfortable-looking result.

All images by Matt Smith



▲ 134 The final rendered pencil study

Developing the anatomy

When the abstraction of the body is in place, rendering the final figure can begin. An anatomical diagram, such as image 133, can be useful to create and refer to if you are drawing a difficult pose. Always keep the anatomy in mind when drawing; knowing the correct anatomy is important to making your drawings believable. If there are any ambiguous shapes that you struggle to render on a figure, knowledge of anatomy will help you to flesh them out. (image 134).

Side view of a seated man

This drawing is a thirty-hour study of a muscular model – an ideal subject for studying anatomy. The figure is in a side view, which requires some adjustments to Reilly's method.

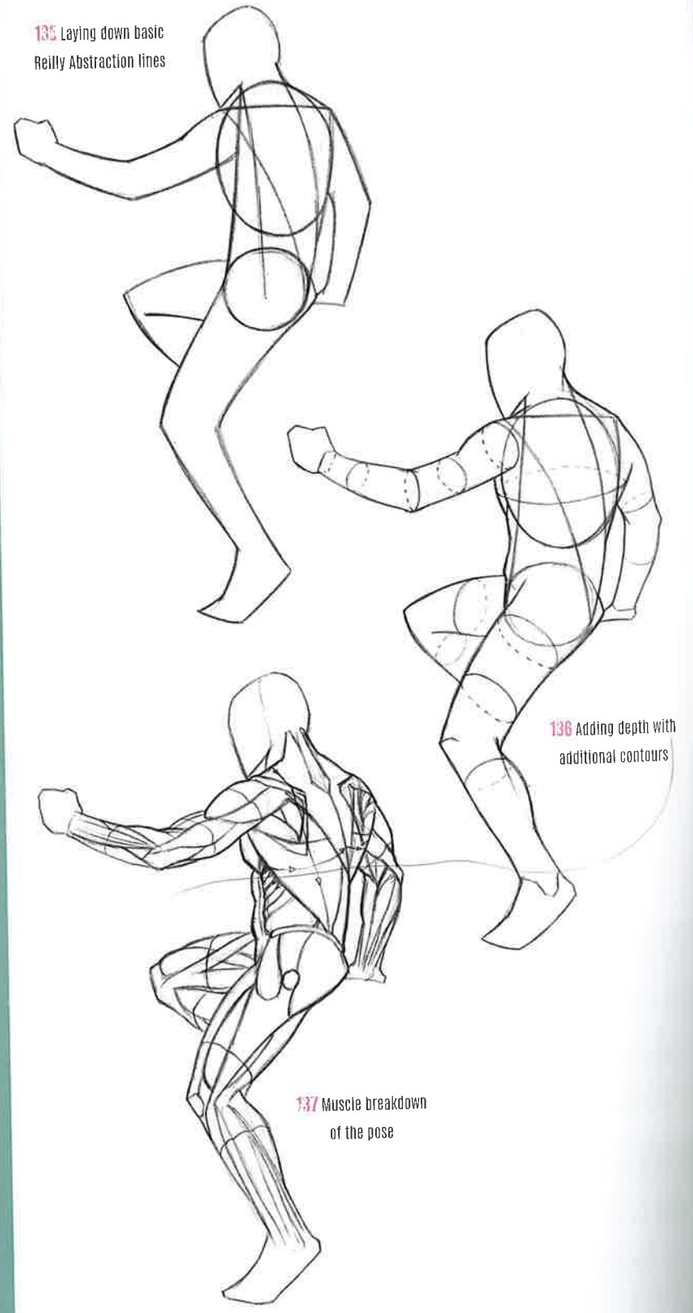
Adapting the Reilly base

After drawing in the center and shoulder lines in image 135, you can see that the line from the neck to the hips has changed; while you can still follow the neck down to the hip, as demonstrated in the final drawing, it does not help when constructing the figure. In this pose, the lines from the neck extend down to the front of the pelvis instead.

Adding muscle contours

In image 136, overlapping contour lines help to show that the deltoids and forearm are in front of the bicep. Similarly, the line for the back passes in front of the right arm, and the line for the lower leg passes in front of the upper leg. These lines may not seem like much to start with, but they add a definite solidity to the figure and how the forms interact spatially.

An understanding of the muscle groups (image 137) helps when shading the model's muscular figure. As mentioned before, it is key to stay aware of the underlying anatomy of the human form at all times in your artwork; you will be able to use that knowledge in your Reilly-inspired sketching to create perfectly proportioned and anatomically realistic figures (image 138).

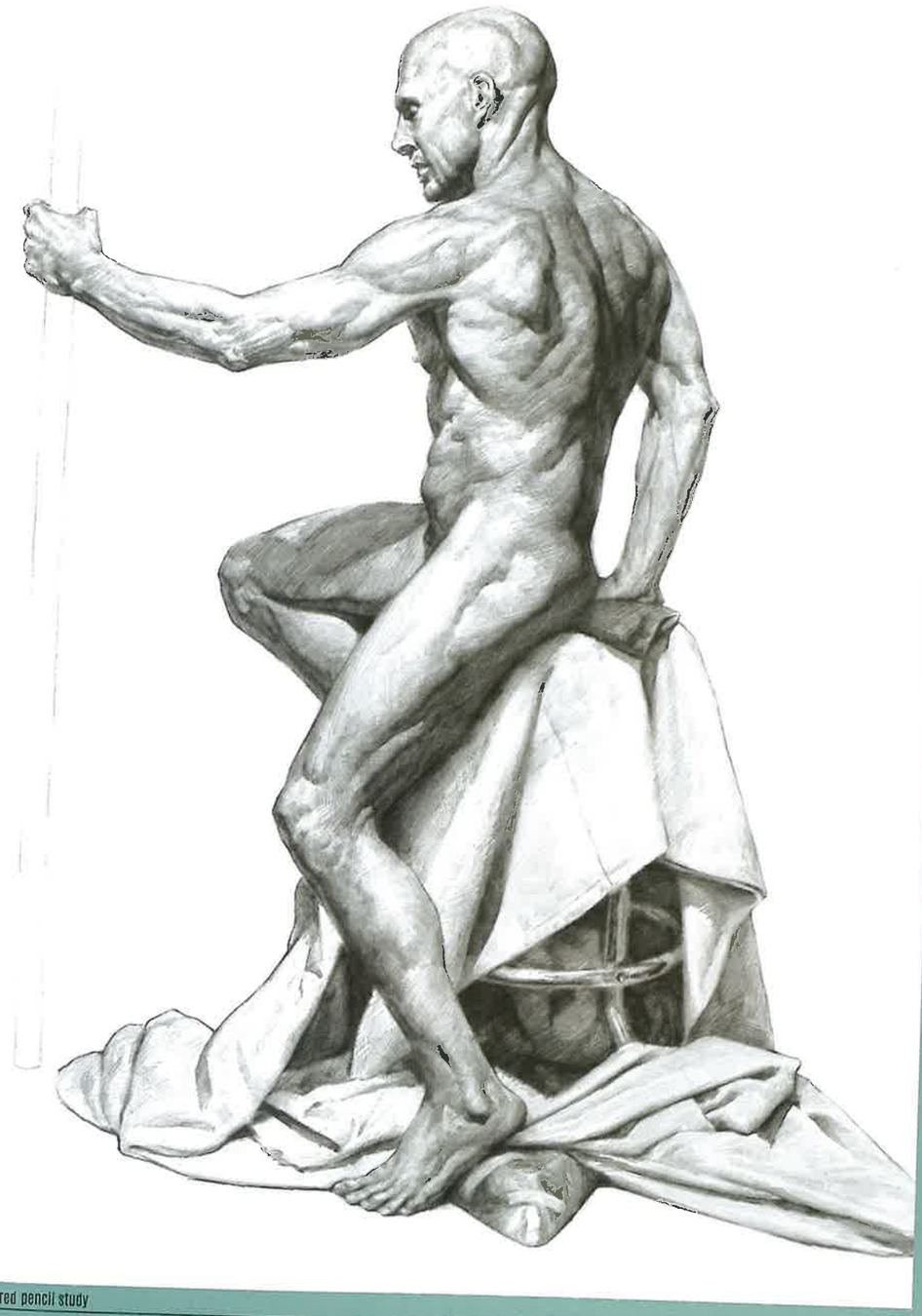


135 Laying down basic Reilly Abstraction lines

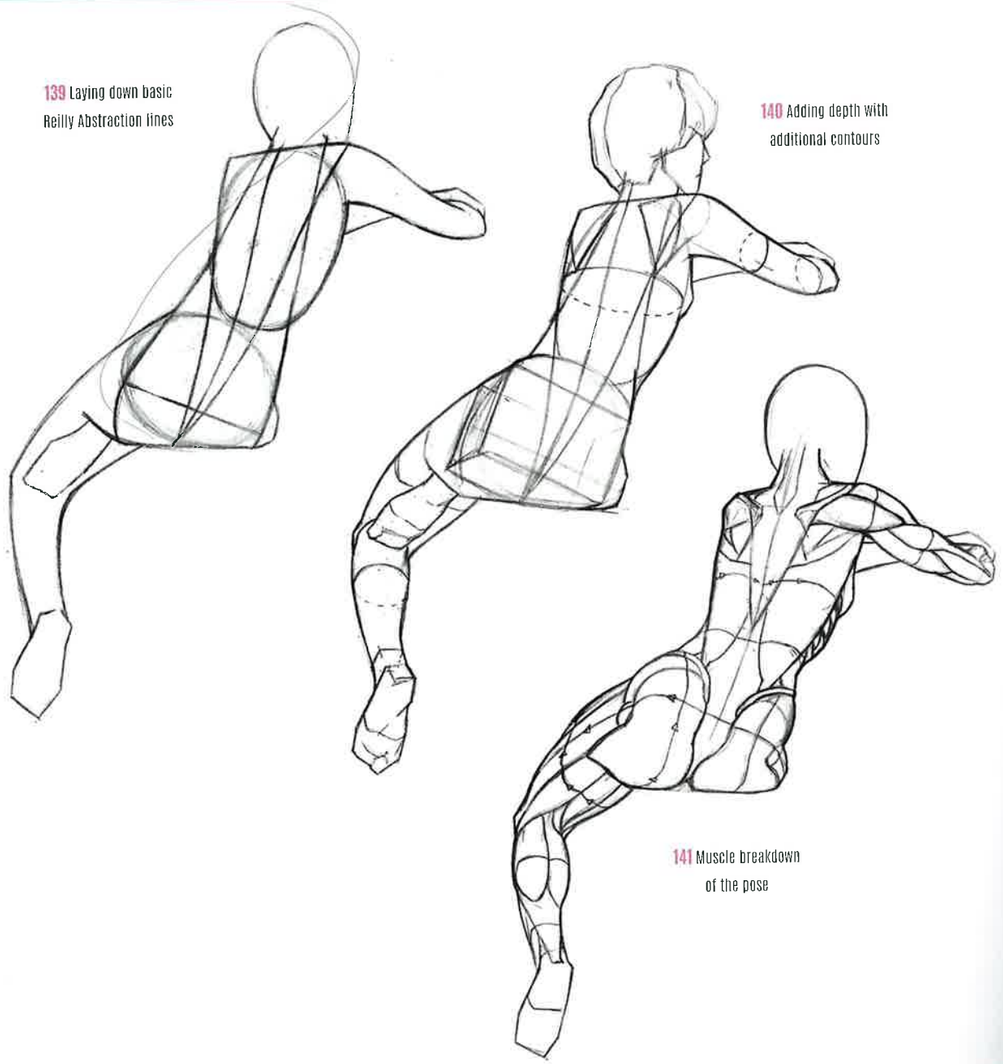
136 Adding depth with additional contours

137 Muscle breakdown of the pose

All images by Matt Smith



▲ 138 The final rendered pencil study



139 Laying down basic Reilly Abstraction lines

140 Adding depth with additional contours

141 Muscle breakdown of the pose

Back view of a seated woman

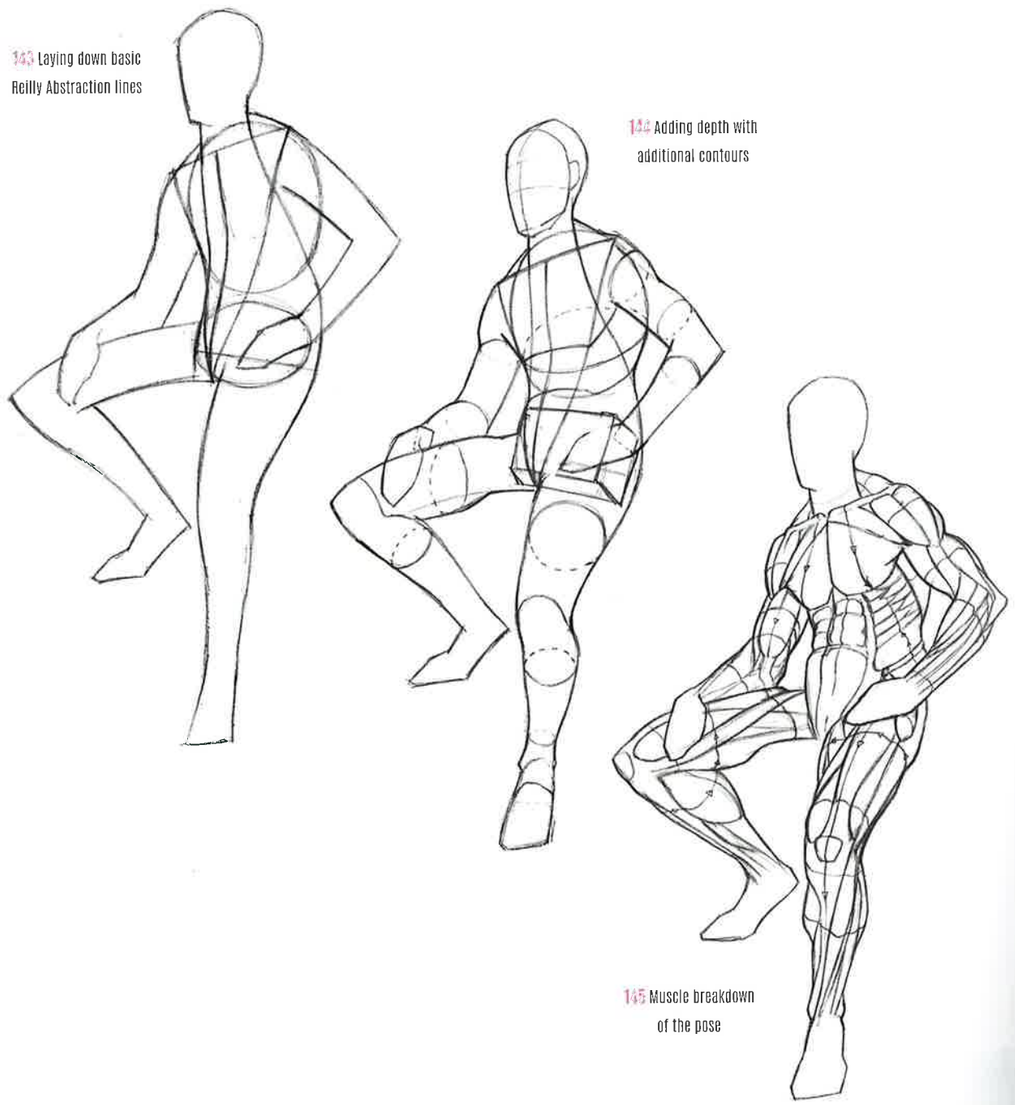
This back view of another posed female model was drawn in two to three hours. The twist caused by the rib cage and pelvis creates an S-shaped curve in this pose. As before, the first stage is kept simple, using flowing, rhythmic lines (image 139).

In image 140, you can see where an overlapping contour line helps to separate the pelvis from the rib cage, moving the pelvis forward and tilting it out toward the viewer. The legs are a little more difficult as some foreshortening (see page 151) is required. This is where a sound grasp of anatomy is important, as it will enable you to capture how the muscles bulge out and the crevices that affect the silhouette of the body when viewed at different angles (image 141). The difference in direction between the torso and pelvis can be seen more clearly in image 142, where the upper and lower halves of the torso catch the light differently.

All images by Matt Smith



▲ 142 The final rendered pencil study



143 Laying down basic Reilly Abstraction lines

144 Adding depth with additional contours

145 Muscle breakdown of the pose

Front view of a seated man

This final quick Reilly study reiterates what we have covered so far, starting with simple rhythm lines (image 143), followed by contour lines that flesh out the body with perspective and direction (image 144). Knowledge of anatomy and musculature (image 145) can then be used when rendering the final drawing and adding realistic details to the figure (image 146). With practice and repetition, you will come to truly understand this process and be able to apply it to any figure, whether drawing from life or the imagination. Do not be discouraged if you make mistakes at first; it will take practice and constant observation to achieve first-class renders.

All images by Matt Smith



▲ 146 The final rendered pencil study

FUNDAMENTALS APPLIED...

CRAFTING

Gaboleps

Tools: Oil on canvas

"I created this oil painting as a change from focusing on commercial work. At the time, I felt like a robot, so had this idea in my mind for a figure that appeared both dynamic and static. The result was a jumping pose making a contrasting precise gesture with the hand; in my mind, this represented the idea of 'crafting.'

I took many photos to make sure I had reference material available, and to help me approach the muscles' shapes on the torso. The way I like working on anatomy in a painting is not just taking reference photos, but studying shapes from other references, such as books or even in a mirror, to get a deeper understanding of what is going on under the skin.

First, I created a digital sketch to plan my color palette, and then I began to paint with oils and brushes. Painting with oils is a test of patience and love. I worked by adding contrast and layers very gradually, working from fat to lean areas, starting with a few tones of medium gray with two or three base colors. It was difficult to achieve a realistic contrast to define the many transitions of the rib cage, which is where reference material was key. To keep the painting process organized, the most saturated colors, background details, and rim lighting around the figure were added last."



Image © Gaboleps

FUNDAMENTALS APPLIED...

VARIOUS STUDIES AND DRAWINGS

Anand Radhakrishnan

Tools: Pencil, ink, and mixed media

A "This is a spread from my observational sketchbook, showing studies from the comic festival Thought Bubble in 2018. I carry this sketchbook around everywhere I go and usually it is reserved for reporting or recording what I see. Recently, though, the line is getting more blurred and some amount of free drawing seeps in as well. Although I do exaggerate form in these sketches, I feel like the exaggeration is very different when I am drawing from my imagination.

I think my observational sketches are quite based in realism, although I tend to simplify shapes and values. One thing on my mind while drawing from life is to always capture some amount of movement or passage of time. I try to do this by observing the part of the figure leaning, sitting, or standing against a surface that is unlikely to move and is 'grounding' the subject. This helps when capturing figures outside of a life drawing class."



Image © Anand RK

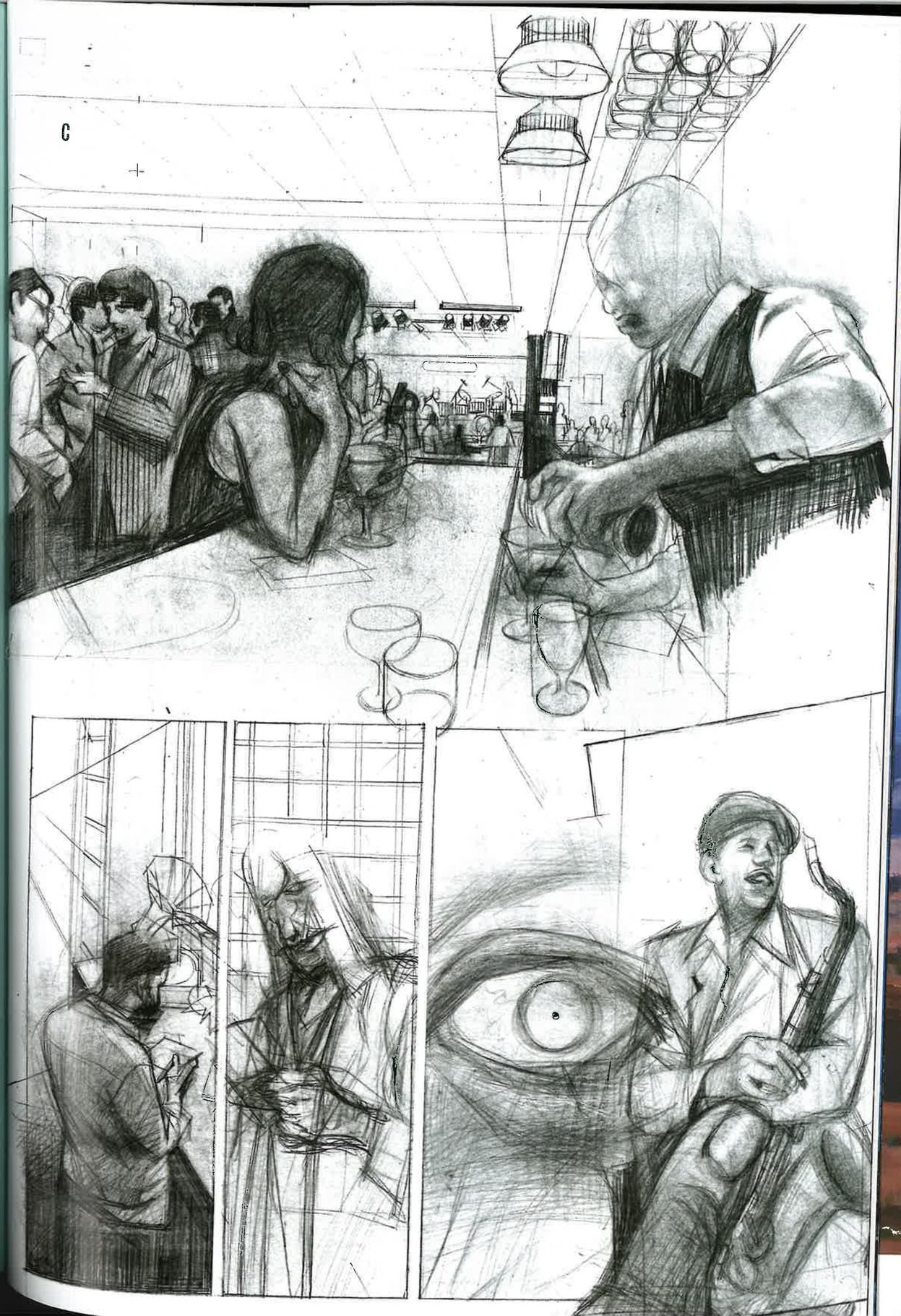
B This image is part of a sketchbook series called *Square*. I have been trying to explore the line between the weird and the ridiculous in some of my personal work, and this is one such project. One of my motives with these is exploring shape design and pulling or pushing anatomical forms until they break.

C This is a penciled page from my latest yet-to-be-released graphic novel with the writer Ram V (ram-v.com). This book has themes of horror, jazz, and body dysmorphia. Unlike most of my work, I have kept to a fairly 'realistic' approach with this book, so that when I do stray away from it, the exaggeration is striking.

B



C



All images © Anand RK

FUNDAMENTALS APPLIED...

WELL, WOULD YOU LOOK AT THAT

Peter Polach (Apterus)

Tools: Adobe Photoshop & Corel Painter

"I often start my personal projects with just one face and no particular plan. I work out the story and composition based on the expression I see in that face, trying to guess what could be causing it. In this painting, my attention was focused on the woman's eye, which looks both concerned and excited. A second character was added and positioned behind it, so it appears that he is looking through the same eye.

I wanted to have some fun and ideally learn or try something new. The male character has some irregular anatomical features to consider – he has six fingers on his hand and wings that are basically modified arms. The hand was easy to do, just adding three fingers between the index and pinky finger instead of two.

The anatomy of the wings is a hybrid of a bird's wing and a human arm. The middle finger is massive and elongated, fused with the fourth finger to provide structure. The fifth finger is transformed into a hook, while the index finger and opposing thumb still look like a human hand, adding to the image's unsettling atmosphere."



Image © Peter Polach

GLOSSARY

Ambient light
The soft, non-directional lighting present in a scene, as if from an overcast natural light source. See also **diffuse light**.

Analogous colors
Similar colors that sit beside each other on the color wheel, such as blue, blue-green, and green.

Atmospheric perspective
The effect of distant objects appearing pale and hazy due to the natural scattering of light in the air. Also called "aerial perspective."

Bounce light
Illumination created by light bouncing off a nearby surface and onto the subject. Also called "reflected light."

Cast shadow
The hard-edged shadow created by an object blocking the light.

Color harmony
This refers to the theories of color combination and how to achieve visually pleasing color palettes. **Complementary**, **analogous**, and **triadic color** combinations are common color harmonies.

Color palette
The selection of colors present in an image, especially if chosen to create a specific effect.

Complementary colors
Contrasting colors that sit opposite each other on the color wheel, such as red and green.

Composition
The process of arranging the elements of an image, or the results of such a process.

Contrast
The quality created by juxtaposing different or opposing elements in a scene, such as light and shadow or hardness and softness.

Core shadow
The darkest part of a shadow.

Diffuse light
Light that has the quality of being softened or scattered, either by environmental elements or matte surface materials.

Focal point
Also called a "point of interest." An area of an image to which the viewer's attention is intentionally drawn.

Foreshortening
The perspective effect of an object becoming shortened as it is pointed in the viewer's direction.

Form
A subject that has shape or volume in an image.

Gesture
A simple sketch that captures the essence of a subject's form, pose, or movement.

Golden ratio
A mathematical formula that can be used to measure the "perfect" proportions for an image.

Grayscale
The range of monochrome shades encompassing black, white, and grays (or an image made using these).

Half-tone
The tone that is halfway between light and dark on a range of values. See also **midtone**.

High-key lighting
A lighting setup that is evenly illuminated and does not feature heavy contrast or very dark shadows.

Highlight
The brightest area on an illuminated subject.

Hue
A color's fundamental category or type, such as red, blue, or green.

Key light
The main light source in a scene.

Local color
The basic color of a subject when it is not lit or influenced by external sources.

Low-key lighting
A lighting setup that features dramatic contrast and predominantly dark values.

Midtone
The tone or range of tones that are neither bright nor dark.

Negative space
The "empty" space around and in between the objects in an image.

Perspective
The effect of objects appearing smaller as they recede away from the viewer.

Plane
A flat surface with corners and edges.

Plein air
Painting outdoors as a form of observational study. From the French *en plein air* ("outdoors").

Primary hue
One of the three hues (blue, red, and yellow) that cannot be made by mixing other hues.

Proportion
The relationship between differently-sized sections or objects in an image.

Rendering
Refining the appearance of an image by adding detail, texture, shading, and blending.

Rim light
A fine contour of light created by a light source catching the edges of the subject.

Saturation
The intensity and purity of a color.

Secondary hues
A hue created by mixing two **primary hues**.

Shade
The result of darkening a hue with black.

Shadow
One of the darker or darkest values in an image, or the darkness caused by the subject being turned away or blocked from reach of the light.

Tertiary hues
A hue created by mixing a **primary hue** with a **secondary hue**.

Thumbnail
A very small, rough drawing used to quickly explore an idea or composition.

Tint
The result of lightening a hue with white.

Tone
The result of mixing a hue with a shade of gray.

Triadic colors
Three colors that sit in a triangle on the color wheel, such as orange, purple, and green.

Value
The quality of lightness or darkness in an image, with the lightest value being white and the darkest being black.

Vanishing point
A point toward which a scene recedes when drawn in perspective.

Variance
The level of difference between an image's lightest and darkest values.

Visual weight
A subject's visual impact or importance, dictated by factors such as its size, color, value, and relationship to other subjects in the image.



Image by Matt Smith

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Roberto F. Castro is a concept artist and architect with extensive film credits including *Avengers: Infinity War*, *Star Wars: The Last Jedi*, *Dumbo*, *Doctor Strange*, and *Guardians of the Galaxy*.

robertofc.com




Jacob Duncan

Jacob Duncan works in the animation industry, mostly doing visual development and color work, with the occasional bit of illustration work.

jacobduncanart.com




Martina Fačková

Martina Facková is a freelance illustrator from Slovakia, creating fantastical imagery heavily based in realism, with clients including Wizards of the Coast and R. Talsorian Games.

martinafackovaart.com




Rita Foster

Rita Foster's medium of choice is charcoal pencil on toned surfaces. She uses a certain technique of crosshatching in which lines wrap around three-dimensional objects. Her favorite subject is the human figure.

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Gaboleps

Gaboleps has been working in the creative industry since 2005. He is currently a freelance illustrator and concept artist for films, advertising, and video games, as well as being an amateur oil painter.

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Isabel Garmon

Isabel Garmon is an academically trained traditional painter who creates colorful artwork full of expressive brushstrokes. She creates work for commissions as well as teaching in her studio.

isabelgarmon.com




Rinat Khabirov

Rinat Khabirov graduated from the Stieglitz Art and Industry Academy in 2015, majoring in graphic design, and now works at the Skills Up school of computer graphics while freelancing in his free time.

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Maxim Kozhevnikov

Maxim Kozhevnikov graduated from the Art Center College of Design with a degree in Entertainment Design. He has worked in illustration and AAA games, and today works in concept art for films.

artstation.com/graphmaximus




Lorenzo Lanfranconi

Lorenzo Lanfranconi is a freelance environment concept and background artist who has collaborated with clients such as Epic Games, West Studio, Tatai Lab, Sun Creature Studio, and NetEase.

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Sean Layh

Sean Layh is a Melbourne-based multi-disciplined visual artist. Working across oil painting, charcoal, and digital media, Sean creates narrative-based art series dealing with themes of transitions, searching, and loss.

seanlayh.com




Valera Lutfullina

Valera Lutfullina is a freelance artist from Russia, experienced in concept art and illustration for video and board games, with clients including Paizo Publishing and Wizards of the Coast.

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Iris Muddy

Iris Muddy is a forest pond creature and freelance visual development, concept, and illustration artist working in games and animation, particularly interested in storytelling, nature, and adventure.

irismuddy.com




Charlie Pickard

Charlie Pickard is a fine art gallery painter and academic painting teacher whose work exists in collections worldwide. He currently lives and works in London.

charliepickardart.com




Peter Polach (Apterus)

Peter Polach is a freelance illustrator and concept artist specializing in all things creepy and colorful, creating fantasy, sci-fi, and horror-themed illustrations, mainly for card games.

artstation.com/apterus




Stan Prokopenko

Stan Prokopenko is world-renowned for teaching life drawing. He has taught workshops and atelier classes, and has a library of over a thousand online video lessons. Making art education enjoyable is at the core of his teaching.

proko.com




Anand Radhakrishnan

Anand RK is a visual artist based in Mumbai. His work is an eclectic mix of illustration, painting, sketchbooking, and comics. He is currently drawing his second graphic novel, writing, and juggling personal projects on the side.

behance.net/anandrk




Andrei Riabovitchev

Andrei Riabovitchev studied engineering before moving into the film and VFX industry, with credits including *Aladdin*, *X-Men: First Class*, and *Harry Potter and the Deathly Hallows*. He is now a freelance artist.

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Dave Santillanes

Dave Santillanes is a self-taught painter whose passion for the medium has led to a number of recent awards, including first place in the Landscape category at the 12th Annual International ARC Salon.

davesantillanes.com




Axel Sauerwald

Axel Sauerwald is a concept artist and illustrator for games and print, working on many titles, including *Mortal Kombat 11* as part of the team at Atomhawk Design in Newcastle, UK.

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Konstantinos Skenteridis

Konstantinos Skenteridis was born in Greece and currently resides and works in Corfu. He currently works as a freelance concept artist and illustrator, mainly for NetEase and other clients on various projects.

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Matt Smith

Matt Smith was born in upstate New York and now lives in San Diego. He creates figurative-based art and is a classically trained artist and teacher at Watts Atelier.

mattksmith.com




Andy Walsh

Andy Walsh is a freelance digital artist who has been working in games, and sometimes in illustration, for around a decade.

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Jessica Woulfe

Jessica Woulfe has a background in classical animation and concept art, and now works as a visual development artist for animation, with clients including DreamWorks, Amazon Prime, and Titmouse.

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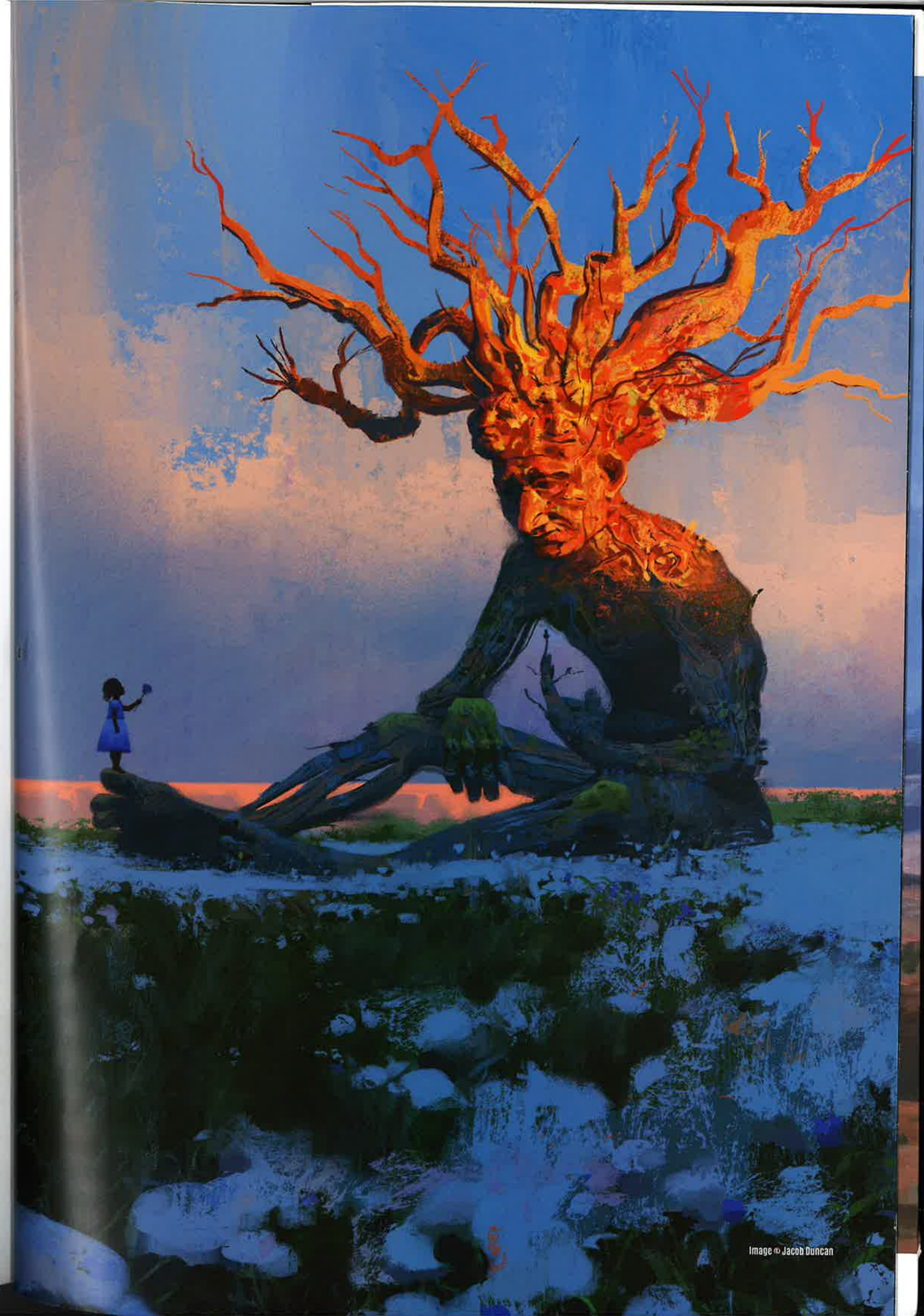
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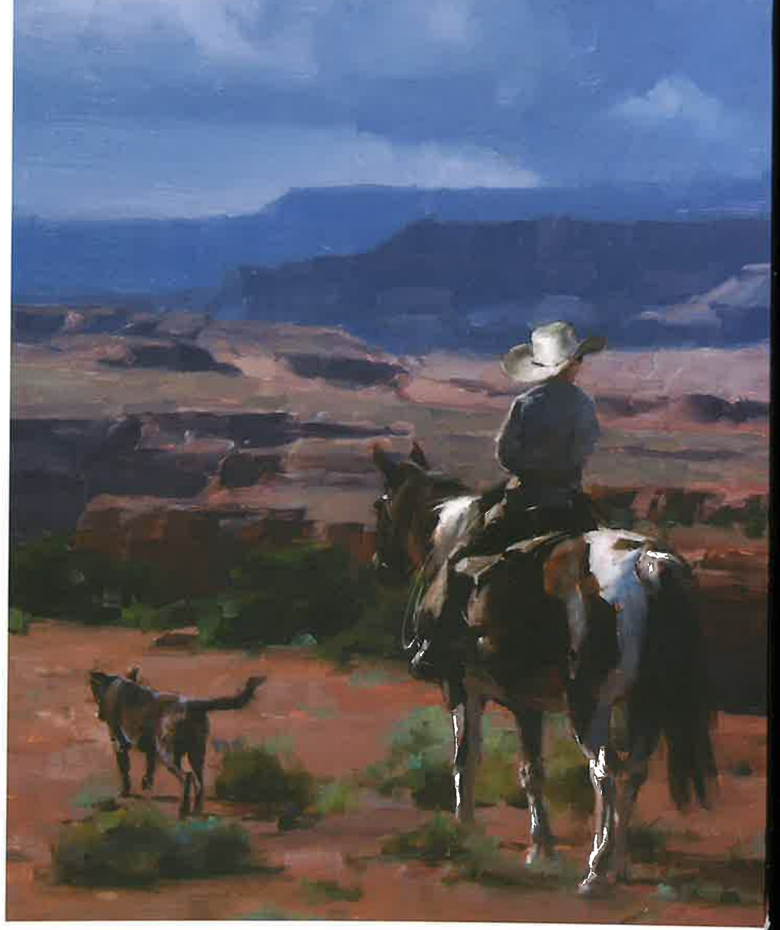
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"While part of creativity is freedom from rules, there are guidelines and universal concepts that can help anyone to create stronger images"

Gilles Beloeil
Senior concept artist at Ubisoft



Proportion The relationship between differently-sized sections or objects in an image.

Rendering Refining the appearance of an image by adding detail, texture, shading, and blending.

Rim light A fine contour of light created by a light source catching the edges of the subject.

Saturation The intensity and purity of a color.

Secondary hues A hue created by mixing two **primary hues**.

Shade The result of darkening a hue with black.

Shadow One of the darker or darkest values in an image, or the darkness caused by the subject being turned away or blocked from reach of the light.

Tertiary hues A hue created by mixing a **primary hue** with a **secondary hue**.

Thumbnail A very small, rough drawing used to quickly explore an idea or composition.

Tint The result of lightening a hue with white.

Tone The result of mixing a hue with a shade of gray.

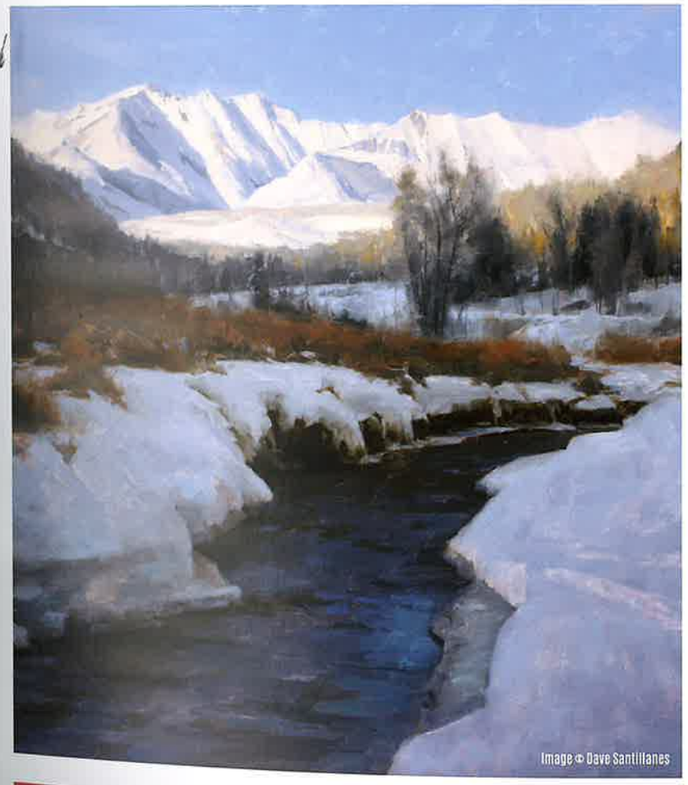
Triadic colors Three colors that sit in a triangle on the color wheel, such as orange, purple, and green.

Value The quality of lightness or darkness in an image, with the lightest value being white and the darkest being black.

Vanishing point A point toward which a scene recedes when drawn in perspective.

Variance The level of difference between an image's lightest and darkest values.

Visual weight A subject's visual impact or importance, dictated by factors such as its size, color, value, and relationship to other subjects in the image.



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