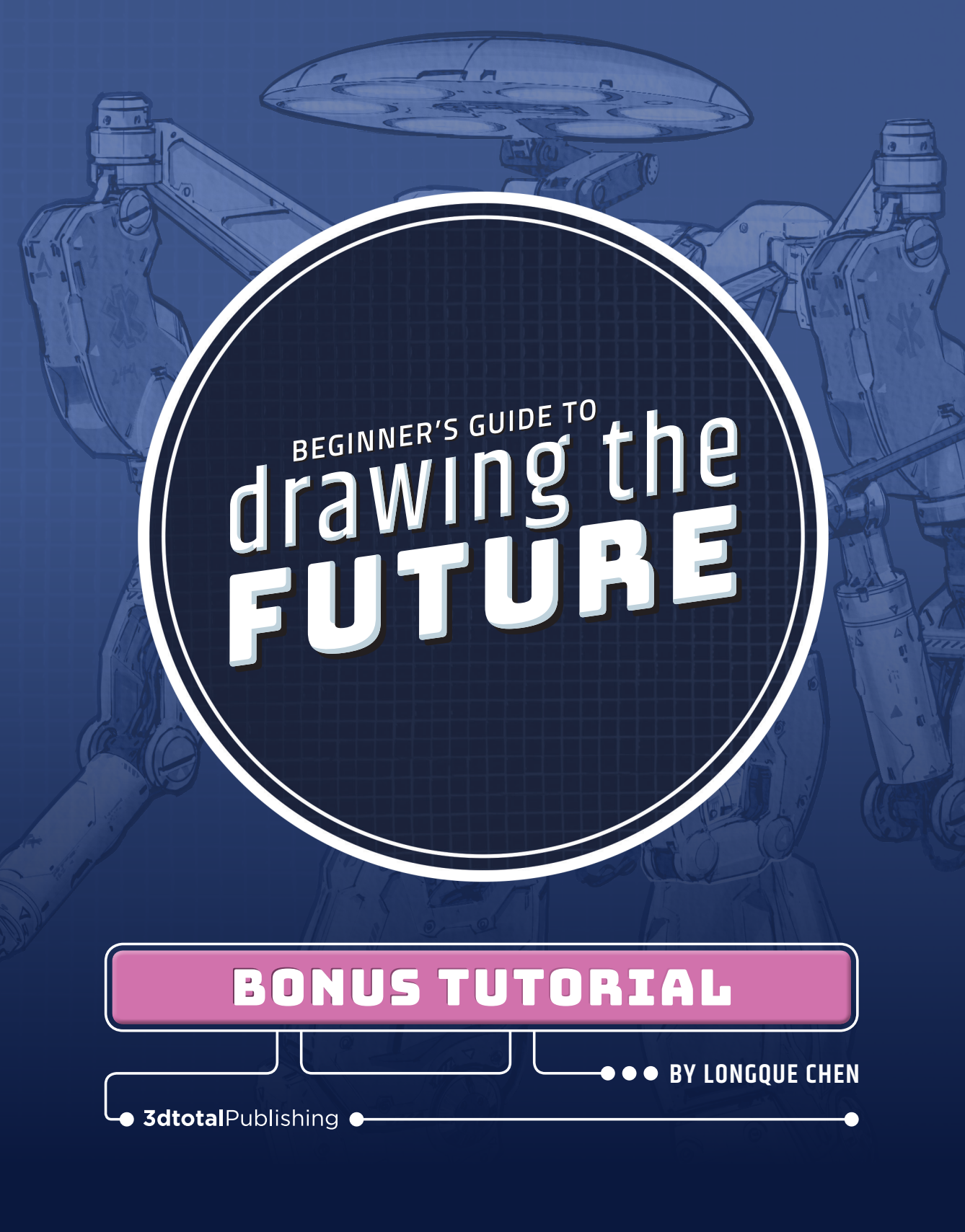


BEGINNER'S GUIDE TO

# drawing the FUTURE

## BONUS TUTORIAL

BY LONGQUE CHEN

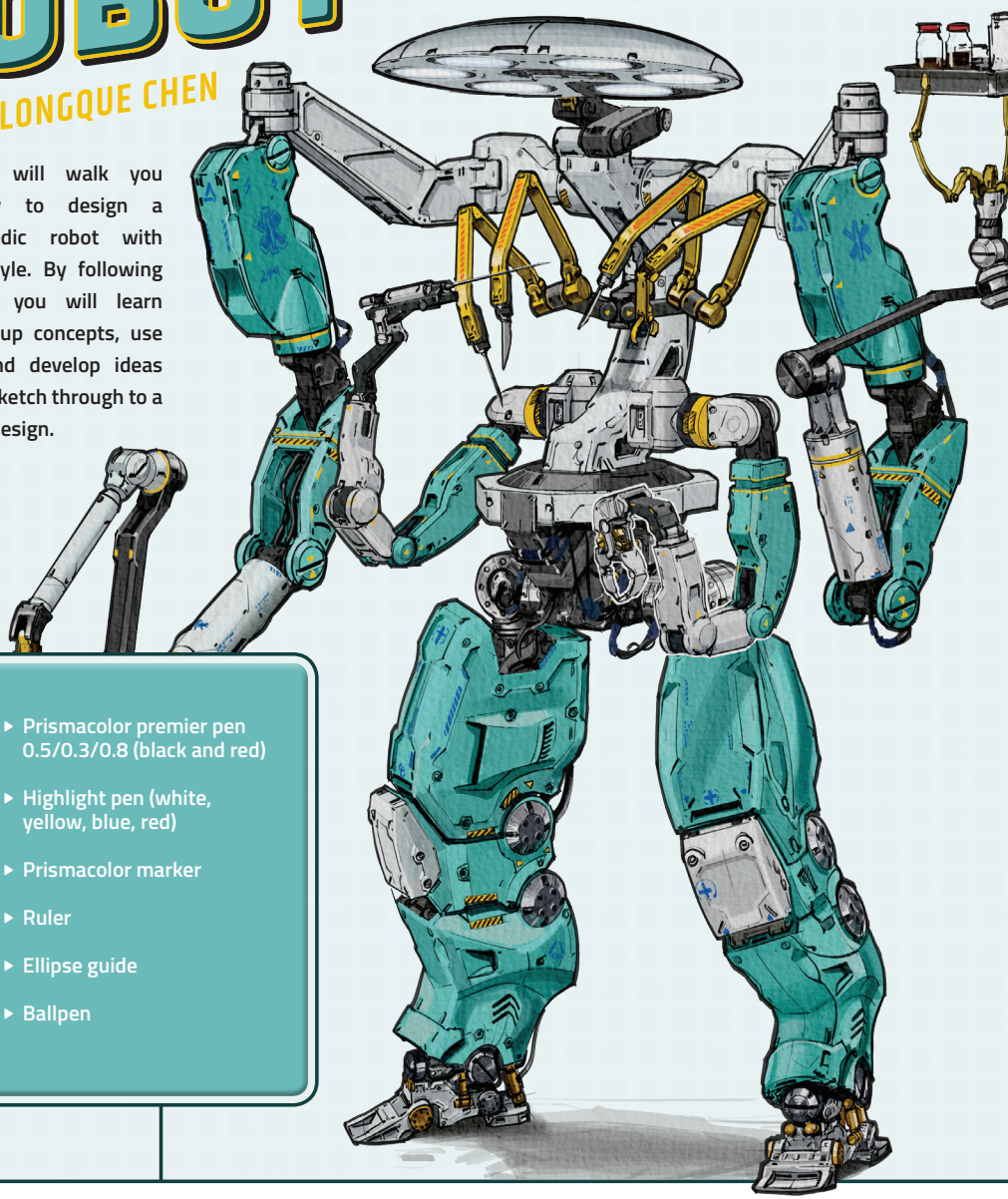
3dtotalPublishing

# MEDIC ROBOT

BY LONGQUE CHEN

**Concept artist**
**artstation.com/chenlongque**
Longque graduated from Art Center College of Design, USA. With over five years experience working as a concept artist in the game industry, he currently works for Striking Distance Studio.

This tutorial will walk you through how to design a futuristic medic robot with a realistic style. By following this process, you will learn how to build up concepts, use references, and develop ideas from a rough sketch through to a detailed final design.



## TOOLKIT

- Prismacolor premier pen 0.5/0.3/0.8 (black and red)
- Highlight pen (white, yellow, blue, red)
- Prismacolor marker
- Ruler
- Ellipse guide
- Ballpen

▲ Final image © Longque Chen

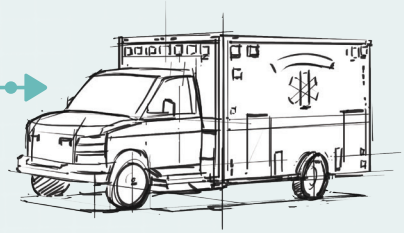
# RESEARCH

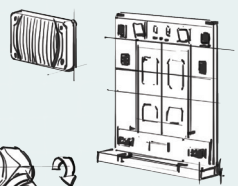
Start by listing the elements a futuristic medical robot needs to have. "Futuristic" denotes advanced functionality, maybe even controlled by an AI! "Medic" can suggest many different things and will be the main function of the robot. Will they perform surgery? Transport patients? Perhaps the robot could be a nurse? "Robot" suggests machinery, hard surfaces, an industrial look, and maybe a human form.

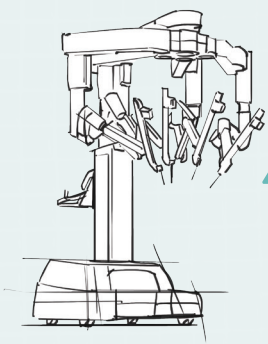
Next, decide on the setting for the character. Will they be a military robot working on the battlefield, or a civilian robot, working in a hospital or other public space? With these ideas in mind, research industrial robots, medical vehicles, and remote surgery operating arms.

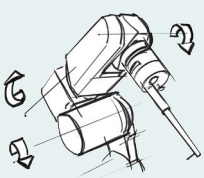
## AMBULANCE

An ambulance has many details that could be carried over into a medic robot's design, such as flashing lights and warning colors.









## MECHANICAL ARM

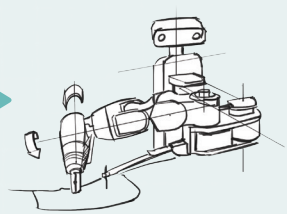
An industrial mechanical arm would be ideal for capturing the futuristic look, due to its hard, smooth surfaces, and a high-tech appearance.

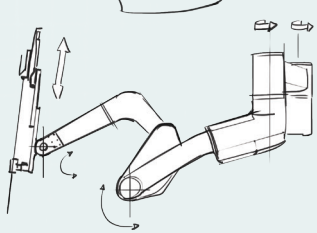
## SPIDERS

Consider introducing insect elements into the design. For example, a spider's many eyes could enable the robot to use powerful scanning and diagnosis functions.

## OPERATING ARM

Look at real-life surgical robot arms to understand how their structure allows them to move precisely enough to operate on patients.



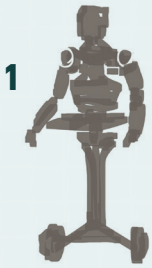


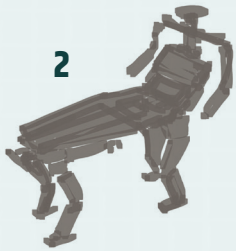
## ROBOT

Study existing robot designs. This friendly, less-industrial look would be a great fit for a medic droid.

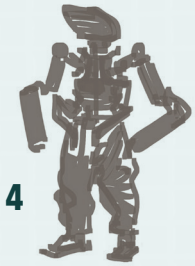
# THUMBNAILS

This medic robot will mainly operate on patients. Sketch thumbnails to explore different shapes and proportions, as well as considering some military-grade medical robot designs. At this stage, each sketch should be focused around big shapes.

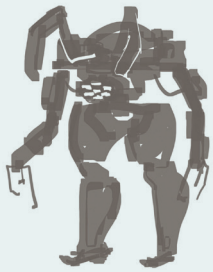








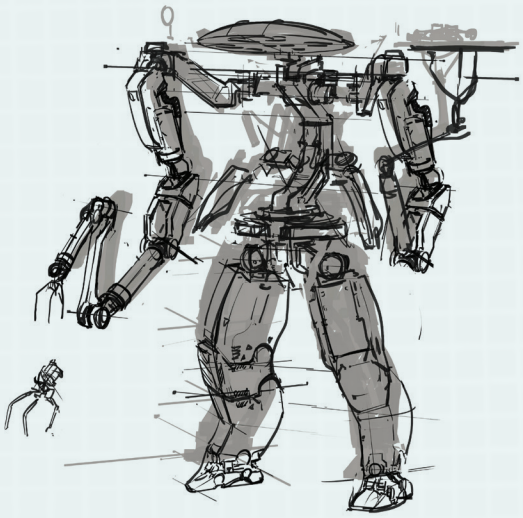



▸ The chosen thumbnail has an anthropomorphic form, with simple shapes and multiple arms. If you believe the maxim that "form follows function," then this design has everything needed to create a robot that can complete complicated surgical work.

# FOUNDATIONS

**The next stage can be completed using marker and ink pen. Marker is a good first step as you develop shapes, deciding how many, and how big or small they should be. As the robot will perform surgery, their multiple arms will play a key part of the design, so take some time to develop these.**

**After the marker work is finished, use an ink pen to lay out a rough structure over the marker image. There's no need to be too detailed at this stage, but make sure that everything you want to take forward is present in the design.**



## BASE

▸ The robot's head is designed to mimic the overhead light above an operating table: one big, round lamp. Audiences need to be able to read this simple shape clearly.

▸ The two bigger arms are for holding surgical tools and medical supplies. Each arm will have multiple sections, a clawlike hand, and large shoulders to allow the arms to move freely over a large area. They are made up of long cylinders.

▸ The robot's smaller arms are designed for performing operations. The size contrast is important here. Ensure the robot's legs look simpler and stronger.

## LINES

▸ The robot's lamp head will feature multiple smaller lights within the main circle shape; maybe six groups or more. Add the "spider eye" system in the center area. This will act as a microscope for performing intricate operations.

▸ The design challenge for the two big arms is the joint structure. Consider how you can show that the arms can extend and move as freely as they need to. Use cylinder shapes for each arm section so that the audience can clearly read how each part can move independently.

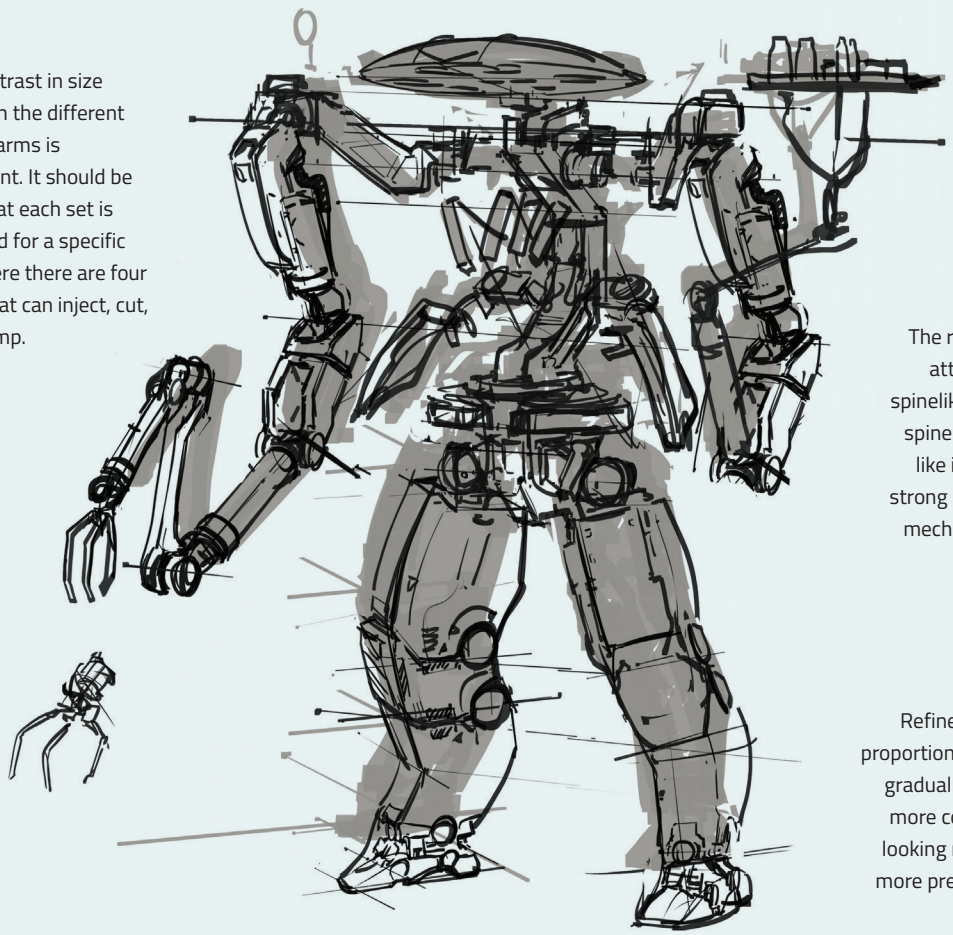
▸ The legs are a simpler design, but still need to show the knee and ankle joints. Unlike human legs, add two axes to the knee structure so the whole leg can fold in on itself.

# BUILDING UP

**It's important to figure out concepts before you start to draw. The clearer your concept, the faster you can ideate and find a strong final design. It's okay to have new ideas during the building-up stage, but try not to go overboard. Once you have a rough sketch, don't add any final details before completing a rough line layout. This step is for understanding the character's structure and to make sense of each part of the design.**

## ARMS

The contrast in size between the different sets of arms is important. It should be clear that each set is intended for a specific task. Here there are four arms that can inject, cut, and clamp.



## SPINE

The robot's arms attach onto its spinelike body. The spine should look like it provides a strong base for the mechanical arms.

## REFINE

Refine the robot's proportions as you go, gradually creating a more comfortable-looking robot with a more precise design.

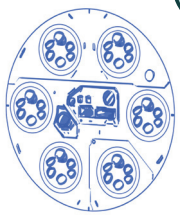
# DESIGN FOCUS

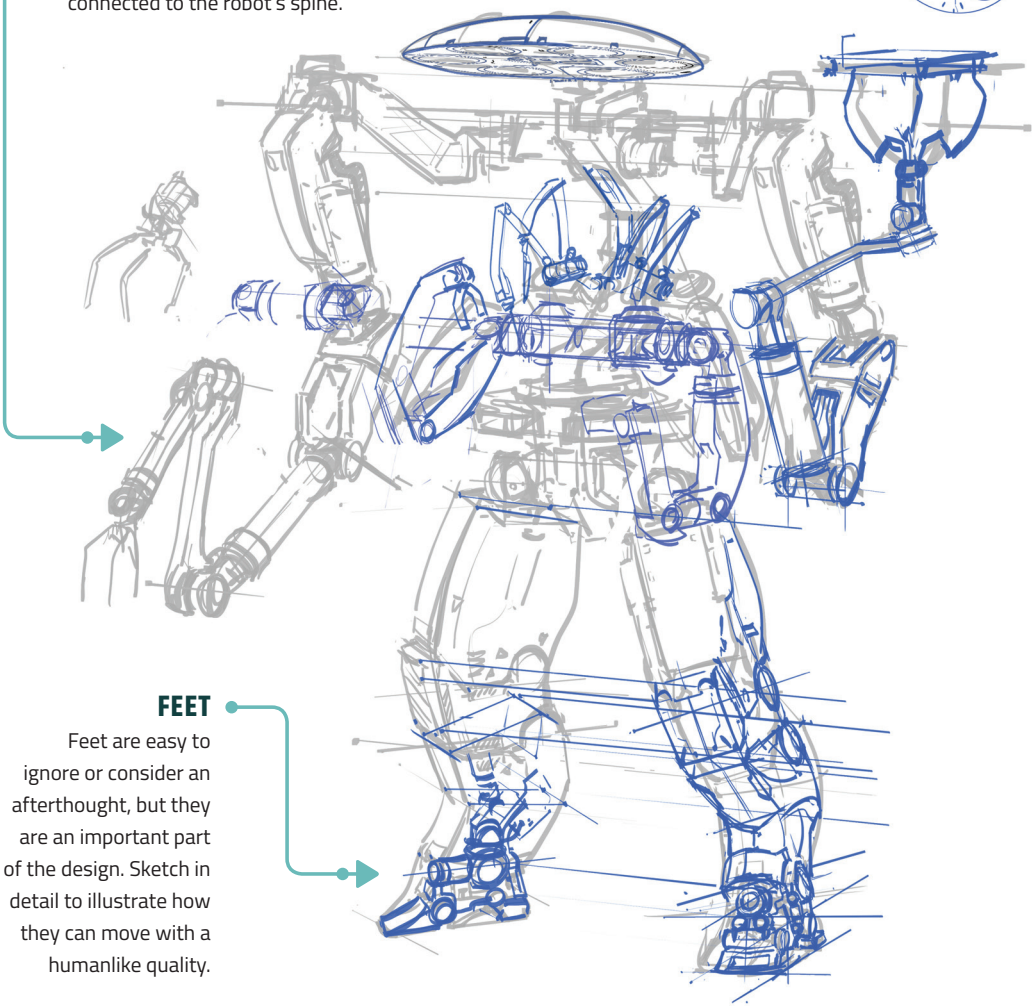
### ARMS

The small arms are an important part of the design. Each has a unique function that sells the medical aspect of the robot. Every set of arms should be independently connected to the robot's spine.

### LIGHT

Drawing the lamp head from a front-facing angle will allow the audience to read it more clearly. While the perspective hides the underside of the head, the detail still needs to be present.





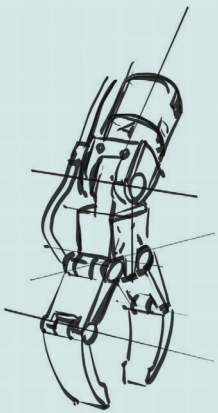
### FEET

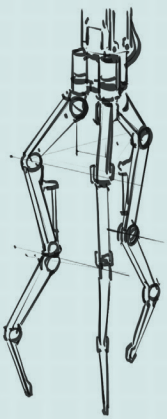
Feet are easy to ignore or consider an afterthought, but they are an important part of the design. Sketch in detail to illustrate how they can move with a humanlike quality.

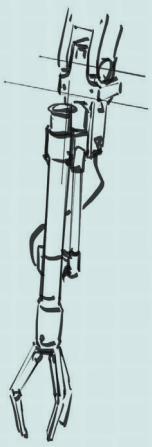
# IDEA INVENTORY

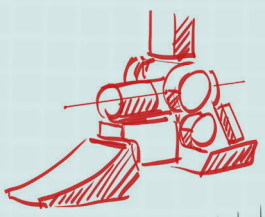
## HANDS

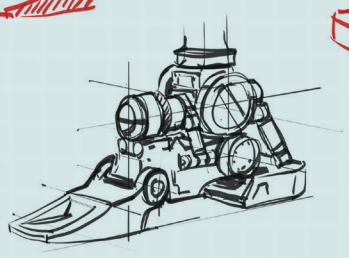
These three variations of the larger arm design focus on similar function, but with different shapes and structures. The second option has the best shape contrast and suitability for medical work; the three long fingers possess more agility than either of the other designs.

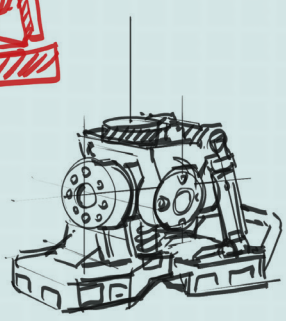


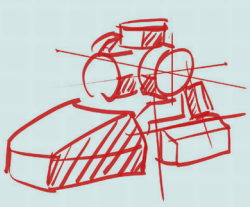


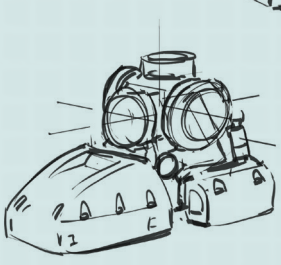












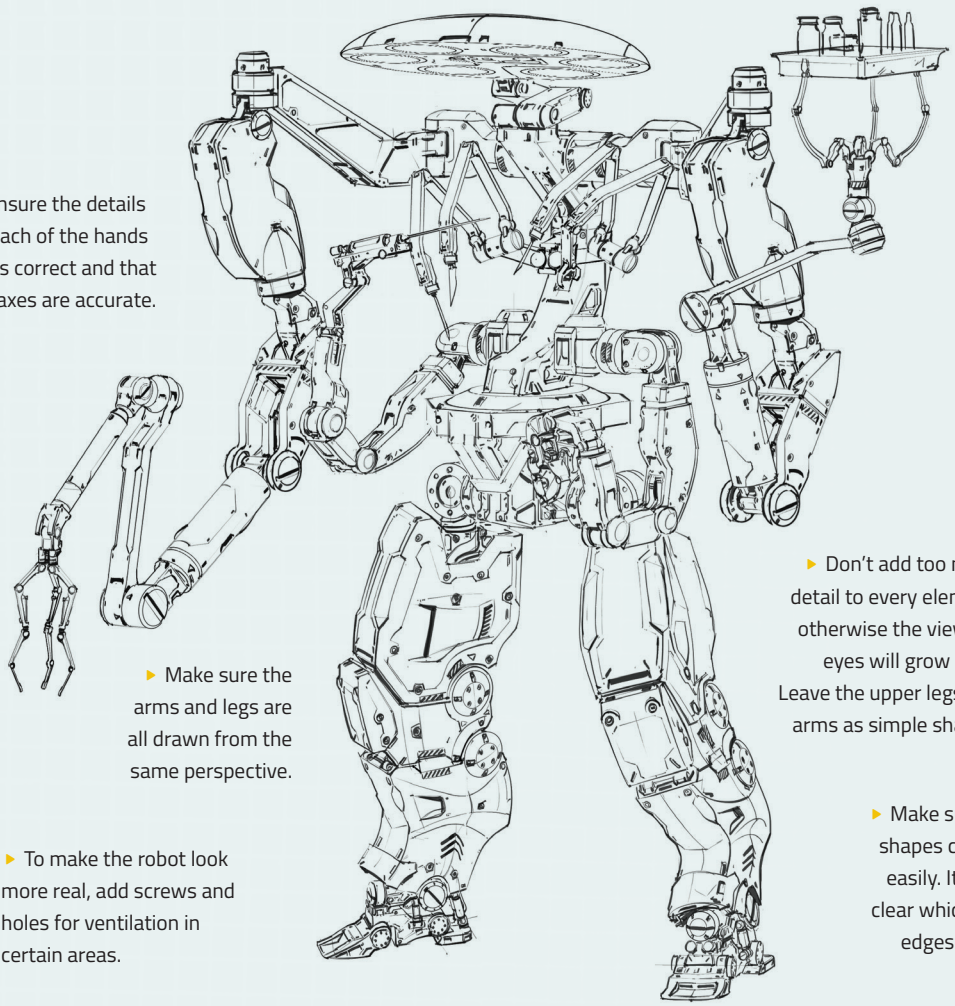
## FEET

Each of these foot designs shares the same structure, but a different shape. The first design has the strongest shape contrast. The second foot appears too chunky, while the third looks too industrial and not enough like a foot.

# FINAL SKETCH

**Use a 0.3 Prismacolor Premier pen, or similar, to create the final detailed drawing. You may wish to scan and print out copies of the rough drawing from the previous steps to draw the final clean line sketch on top. This will give you the chance to redraw any part you want to change or fix.**

**Refine all of the details you can, including screws on the arms, legs, and body. Use a ruler and ellipse guide for the straight lines and axes. Darken any gaps in the body, such as air intakes and cooling vents on the legs. Take care when drawing the overlapping arms, remembering which one is on top of the others.**



▸ Ensure the details on each of the hands looks correct and that the axes are accurate.

▸ Make sure the arms and legs are all drawn from the same perspective.

▸ To make the robot look more real, add screws and holes for ventilation in certain areas.

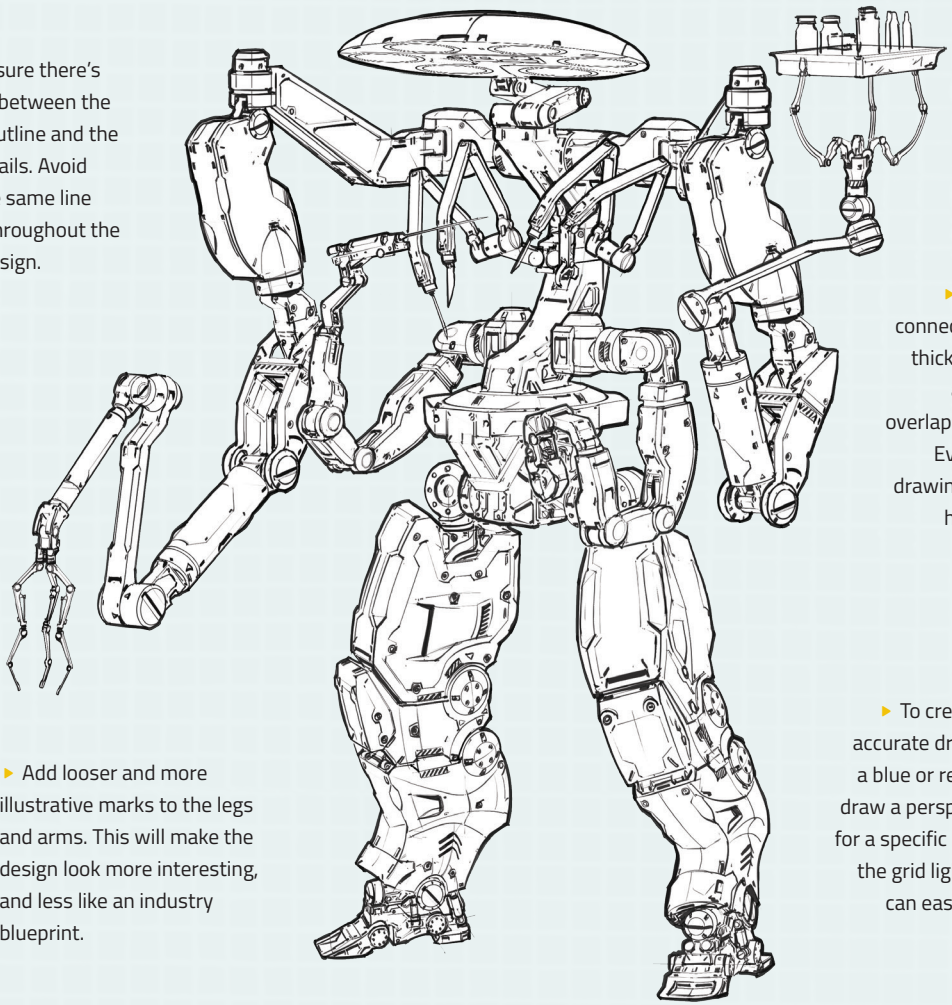
▸ Don't add too much detail to every element, otherwise the viewer's eyes will grow tired. Leave the upper legs and arms as simple shapes.

▸ Make sure that all shapes can be read easily. It should be clear which are hard edges and which are soft.

# INKING

**Once you have your final sketch, the inking stage isn't too hard. The aim is to reinforce the line work clearly. Use 0.5 and 0.8 Prismacolor Premier pens, or similar, for redrawing the outline of the legs, arms, and body. Don't be afraid to redraw these outlines repeatedly – you need to be able to see these clearly from a distance. Separate overlapping parts with thicker ink and emphasize the overall bigger shapes of the design.**

▸ Make sure there's contrast between the thicker outline and the inner details. Avoid using the same line weight throughout the whole design.



▸ Try not to connect all of the thicker outlines around the overlapping areas. Even the line drawing needs to have depth.

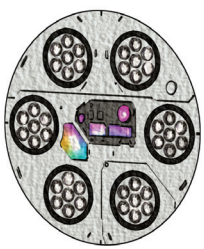
▸ Add looser and more illustrative marks to the legs and arms. This will make the design look more interesting, and less like an industry blueprint.

▸ To create a more accurate drawing, use a blue or red pencil to draw a perspective grid for a specific area. Draw the grid lightly so you can easily erase it.

# FINAL

## COLORING

**Research surgical outfits and current medical machines for inspiration as to what colors to use for each part of the robot's design. Using Prismacolor markers and highlight pens, add blue and green for the larger arms and leg area, followed by white for the smaller arms, head lamp, and main body parts. Select yellow colors, like those found on engineering machines, for the hands and operating arms.**



▸ The head lamp needs to be rendered differently; a highlight pen and markers are not enough. Use a white-colored pencil to add a glowing effect.



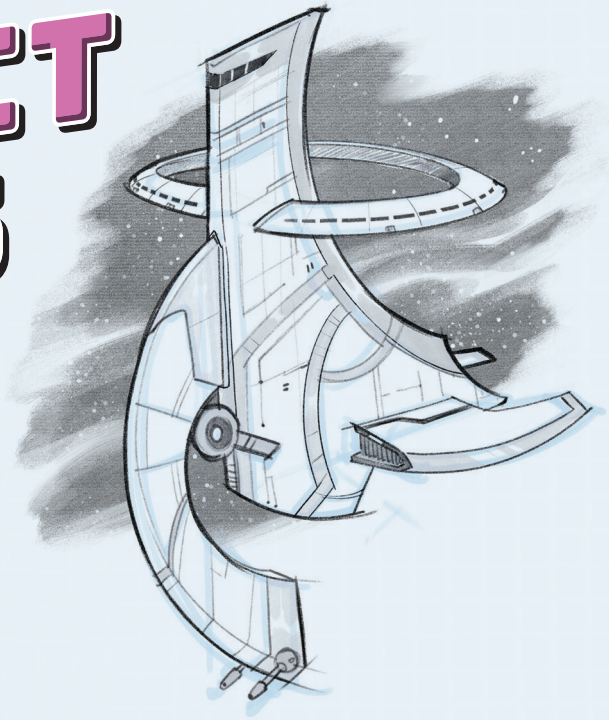
▸ Introducing small illustrative elements to the robot will make it feel more realistic. Add yellow warning signs around the joints and rotating parts – you wouldn't want to trap your finger!

▸ There are many polished metal textures around the robot's feet. As the base color of metal is gray, use a white highlight pen to reinforce contrast and make the feet look polished and shiny.

▸ To color the plate of medical supplies, use an ink pen to draw the bottles, then add a dark color to the bottom of each. Draw white highlights on the bottles' surfaces to illustrate the transparent glass material.

▸ Final image © Longque Chen

# PROJECT BRIEFS



**Now you're ready to create your own sci-fi artwork! This page contains a few ideas for characters, spacecrafts, and buildings, providing a few pointers on backstory or appearance for each. Armed with the array of skills you've learned in this book, use these briefs as the spark to ignite your imagination, exploring the unique interpretations you can create.**

## PILOT

This adventurous space pilot has spent her life exploring the far corners of the galaxy. Whether driving a speedy courier craft or colossal prison ship, she's never more at home than when journeying through the stars.

## BAKER BOT

Crafting the finest patisserie this side of Jupiter, this highly skilled baker droid whips up galactic gâteaux and cosmic cakes for their loyal customers. Their four arms allow them to stir, roll, pipe, and sprinkle their creations with stardust.

## GALATIC CRUISE SHIP

The splendor of the solar system, this star-cruiser offers a luxurious voyage around the most scenic planets in the galaxy. It boasts a lavish banqueting hall and state-of-the-art cabins that offer the best views of the Milky Way.

## CYBERPUNK ROGUE

With his leather jacket and neon blue mohawk, this wayward youth can often be found lurking in the downtown dive bars of a dystopian sci-fi city. Sneaky and stealthy, he has a penchant for joyriding unattended hovercrafts.

## ALIEN EMPRESS

Regal and majestic, this ethereal humanoid extraterrestrial is revered by all on her planet. She wears long celestial robes that shimmer in the moonlight and contrast against the emerald green of her scaly skin.

## GARDENER

The survivors of a nuclear apocalypse journey through the solar system in search of a new planet to call home. The ship's agricultural specialist keeps the earth's remaining plant life alive in her botanical laboratory, while also growing food to feed the hungry passengers.

## CYBORG

This space marine was badly injured in a fierce intergalactic battle. His missing limbs and tissues were replaced with high-tech robotic elements, giving him superhuman strength on the battlefield.

## ALIEN PALACE

Grand and imposing, this frosty fortress is home to the ruling family of the ice planet Gelida. Its glacial turrets tower high over the kingdom, each equipped with razor-sharp icicles with which to impale those foolish enough to trespass.

## ESCAPE POD

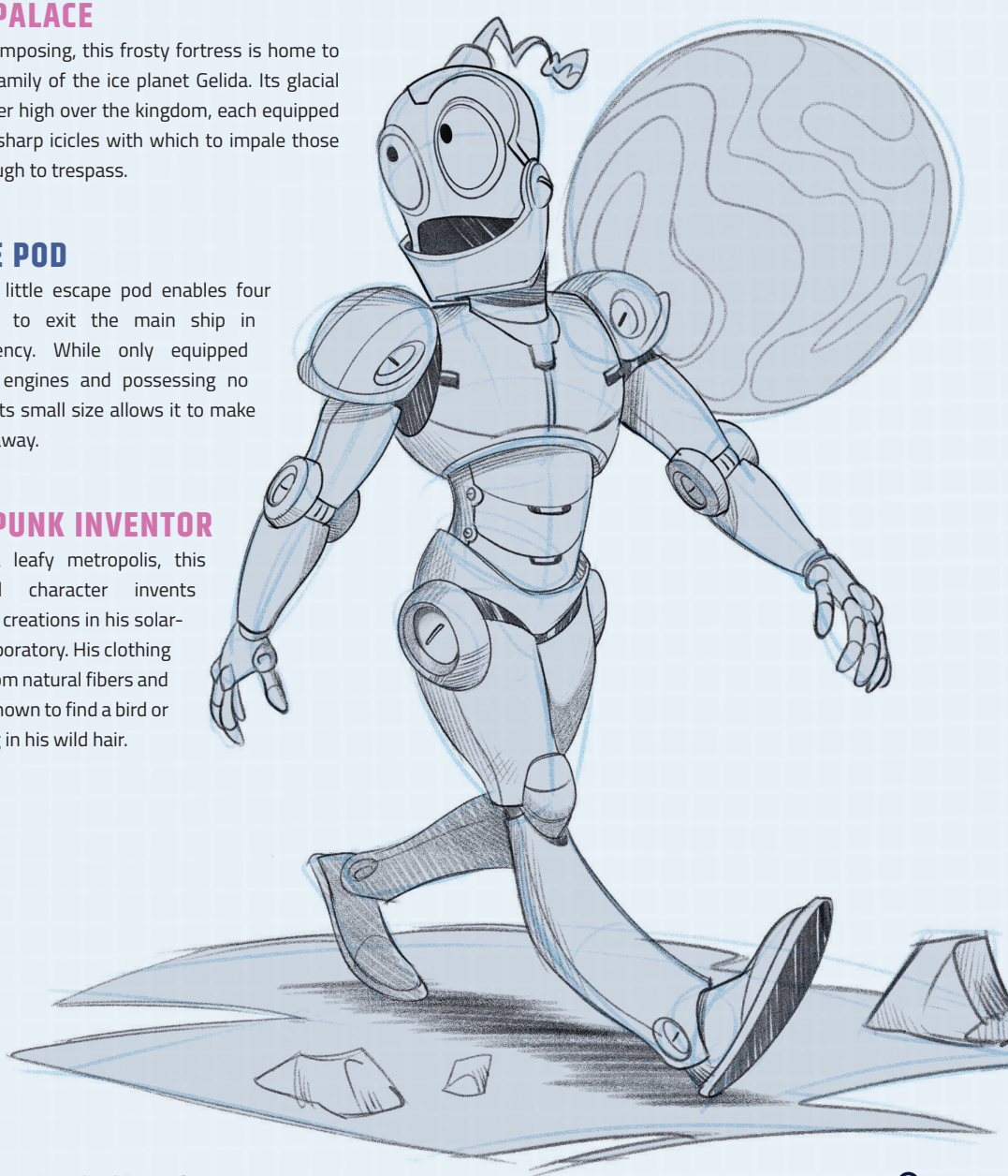
This trusty little escape pod enables four passengers to exit the main ship in an emergency. While only equipped with basic engines and possessing no weaponry, its small size allows it to make a quick getaway.

## SOLARPUNK INVENTOR

Living in a leafy metropolis, this eco-minded character invents sustainable creations in his solar-powered laboratory. His clothing is woven from natural fibers and he's been known to find a bird or two nesting in his wild hair.

## ABANDONED SPACE STATION

Floating far above the earth, this derelict space station is eerily silent. Its metallic ring-shaped structure is now weathered and worn, its inhabitants having long ago returned home. Or have they?



▸ Images by Valerio "Dreelrayk" Buonfantino


**Delve into the enchanting world of dragons, wizards, and warriors with *Beginner's Guide to Fantasy Drawing* – an accessible, entertaining introduction to creating fantasy concepts, with only a few simple traditional tools and no prior drawing knowledge needed.**

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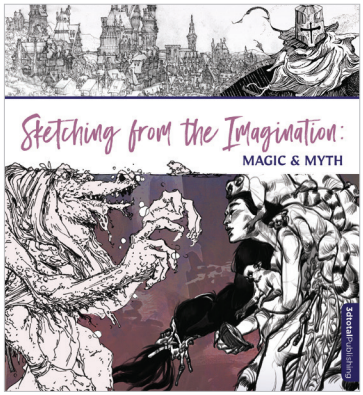
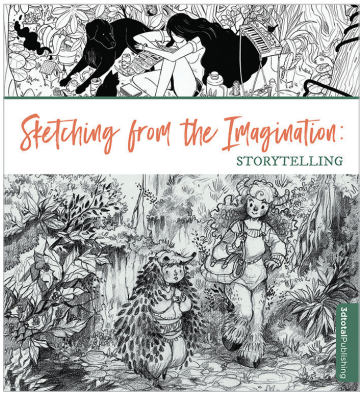
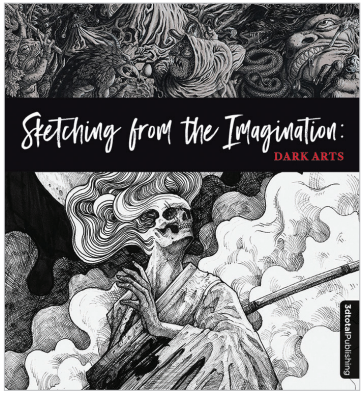
In each book of the *Sketching from the Imagination* series, 50 talented traditional and digital artists have been chosen to share their sketchbooks and explain the reasons behind their design decisions. Visually stunning collections packed full of useful tips, these books offer inspiration for everyone.

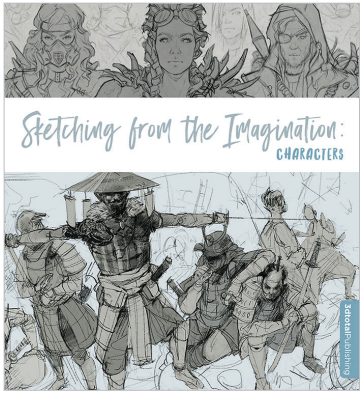








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