

Adobe Creative 3D Workflows

A Designer's Guide to Adobe Substance 3D
and Adobe Creative Cloud Integration



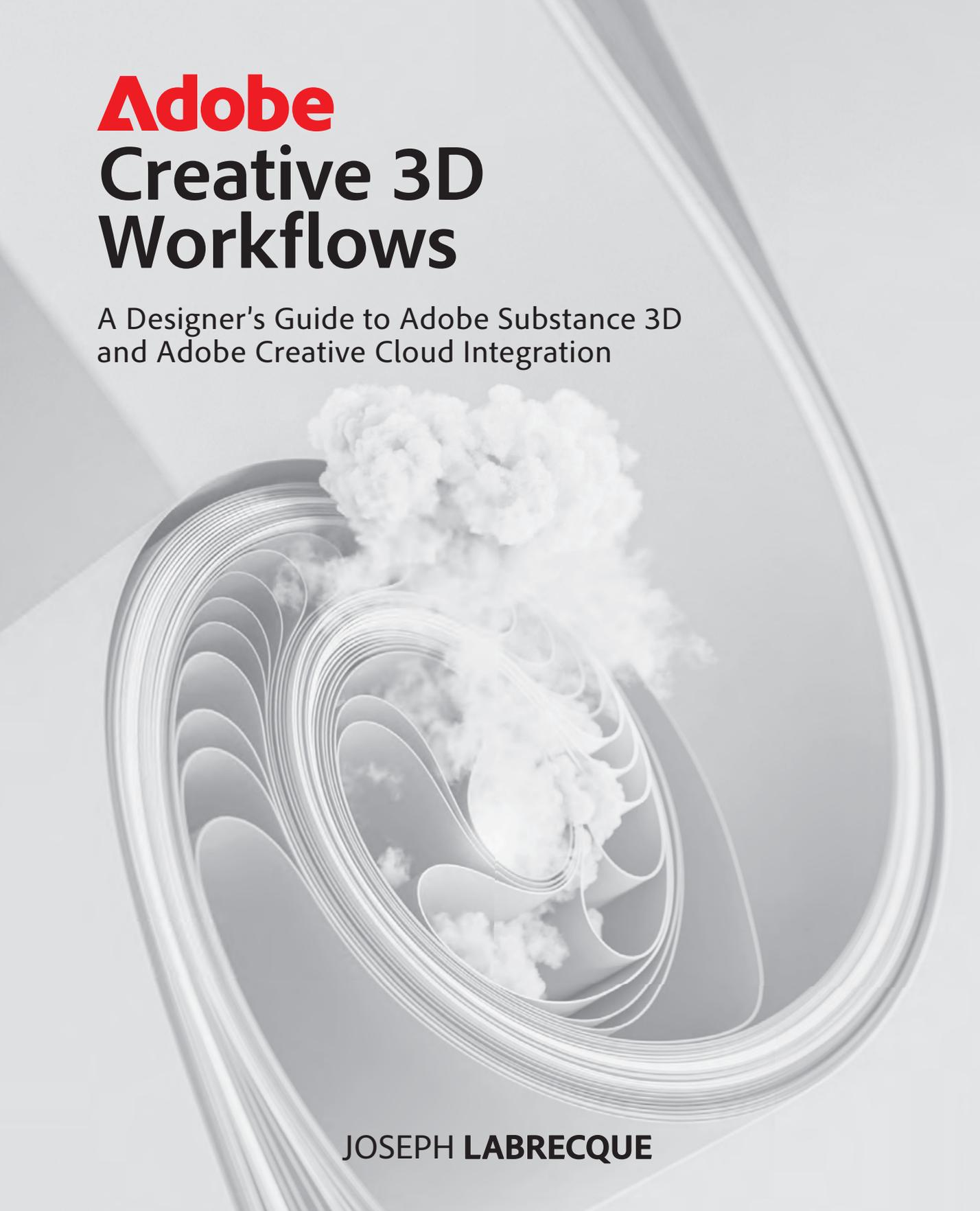
JOSEPH LABRECQUE

FREE SAMPLE CHAPTER |



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About the Author

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Labrecque has authored several books and video course publications on design and development technologies, tools, and concepts through publishers such as Adobe Press, Peachpit, LinkedIn Learning, Apress, and Packt. He has spoken at large design and technology conferences, such as Adobe MAX, and for a variety of smaller creative communities. He is also the founder of Fractured Vision Media, LLC—a digital media production studio and distribution vehicle for a variety of creative works.

Joseph is an Adobe Education Leader, Adobe Community Expert, and member of Adobe Partners by Design. He holds a bachelor's degree in communication from Worcester State University and a master's degree in digital media studies from the University of Denver.

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Thanks to Laura Norman for her initial inquiries around the subject matter presented in this work and the subsequent support for what I've eventually brought into existence through this process. I also thank Robyn Thomas and Rob de Winter for their assistance and feedback during the writing and editing process. Their insights and recommendations have been invaluable in shaping the content and flow of the chapters within to be approachable and meaningful for you, the reader.

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Of course...as always...abundant love and appreciation to Leslie, Paige, and Lily.

—Joseph Labrecque

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Introduction

Adobe Creative 3D Workflows: A Designer's Guide to Substance 3D and Creative Cloud Integration has a strange origin that actually has little to do with what it has become nearly a full year later.

In early 2023, Adobe released the first beta of its integrated set of generative AI technologies, named Firefly. This new artificial intelligence service was exciting, as it clearly stood out from existing text-to-image AI services. How so? Adobe expressed interest in integrating Firefly into a wide array of existing software applications. Moving beyond familiar text-to-image workflows could greatly augment the design capabilities of creative individuals through the use of AI across a variety of media.

Initially, a few additional integrations and expansions existed in preview—labeled as *In Exploration*—that were unlike anything I'd seen before when exploring generative AI software. In particular was a Firefly module given the name 3D to Image. The idea being that you could arrange a set of 3D models within the software, provide a descriptive prompt, and have Firefly generate a visual design based on the prompt and strongly influenced by the 3D models assembled across the canvas to form the resultant image.



Although an exciting prospect for sure, that is not exactly what this book is about! However, my interest in this 3D to Image module has, in a roundabout way, led to the book you are now reading. Discussions were begun around whether a book on Firefly generative AI—focused upon these 3D-focused aspects—would be a viable

work. These discussions evolved into a different but related approach, as Adobe was also working steadily on integrating more traditional design software like Adobe Photoshop, Adobe Illustrator, and Adobe After Effects with capabilities and features derived from various Substance 3D collection applications and file formats—a melding of the worlds of 2D and 3D design software.

The result of all these discussions and initiatives is *Adobe Creative 3D Workflows*.

Who This Book Is For

The focus of this work is the integration that now exists across these different software applications and collections. Adobe Creative Cloud users who want to expand their design skills in the area of 3D will find this book useful. In a similar fashion, Substance 3D users who want an approach to using Creative Cloud software can find similar inroads, albeit from the opposite direction. In a general way, anyone interested in the intersections of 2D design software and 3D design software will benefit from exploring this work.

Considering the genesis of this work, I have been sure to integrate Firefly generative AI into the mix, as this service holds great promise in the creative space between 2D and 3D design. Adobe is taking wildly variant approaches to generative AI through its Sensei and Firefly models, and I am very excited to see how these explorations will impact 2D and 3D workflows in the coming years. Combine that with the expansion of the design techniques covered in this book and we have amazing opportunities to expand creativity ahead of us.

Whether your interest is in expanding traditional 2D-design workflows to include 3D components or you are coming from a 3D-tooling background to explore how these capabilities are being infused into 2D design software, I hope you find this book useful in combining these varied application workflows to create some truly fantastic results!

The Design of This Book

This book dives into the capabilities and workflows across the Adobe Creative Cloud and Adobe Substance 3D collections of design software. The focus is on the intersections between 2D and 3D workflows and how best to approach them when designing content with various techniques. This is an increasingly popular focus for Adobe and the wider design industry in general, and Adobe in particular has been bleeding these technologies together in meaningful and practical ways with increasing frequency and capability over the past few years.

Prerequisites

Before following the exercises in *Adobe Creative 3D Workflows*, make sure your system is set up correctly and that you've installed the required software and hardware. The system requirements for Adobe Creative Cloud and Adobe Substance 3D are here:

<https://helpx.adobe.com/creative-cloud/system-requirements.html>

You should have a working knowledge of your computer and operating system. For example, you should know how to use standard menus and commands and also how to open, save, and close files. If you need to review these techniques, see the documentation included with your macOS or Windows system.

It's not necessary to have a working knowledge of 3D design software concepts and terminology. Much of this will be explained in the first chapter. If you do come across a term that you're not familiar with, consult the glossary at the end of the book.

This is not an introductory book, however, and it is assumed you have some experience with Creative Cloud or similar software. For a comprehensive introduction to Adobe Creative Cloud design software, you should acquire a copy of *Adobe Creative Cloud Classroom in a Book* from Adobe Press, at peachpit.com/creativecloudCIB.

Installing the Software

You must purchase an Adobe Creative Cloud subscription, or obtain a trial version, separately from this book. You can find help and resources at the following links for the software you will use in this book:

System requirements and complete instructions on installing the software:

helpx.adobe.com/support.

Adobe Creative Cloud subscription: (required) This gives you access to Adobe's primary collection of software and includes applications like Photoshop, Illustrator, After Effects, and Animate—in addition to many other applications and services: www.adobe.com/creativecloud.

Adobe Substance 3D: (required) Adobe's collection of 3D-specific software is provided as a separate subscription and includes applications like Substance 3D Sampler, Substance 3D Stager, and additional applications meant for professional 3D work: www.adobe.com/creativecloud/3d-ar.html.

Complimentary Adobe Substance 3D subscription for higher education:

- If you are involved in higher education, you can acquire a complimentary subscription to Adobe Substance 3D by visiting <https://substance3d.adobe.com/education/> and verifying your status.

- If you have a higher education enterprise account for Adobe Creative Cloud, the Substance 3D applications are often included with that subscription.

The first chapter in this book goes into everything you need to know when getting started with the software.

How to Approach the Chapters

The chapters in this book include step-by-step instructions. Some chapters are stand-alone, but most of them build on concepts and workflows from previous chapters. For this reason, the best way to learn from this book is to sequentially proceed through the chapters.

The chapters generally begin with an overview of a particular piece of design software and how to use it in the design of 3D content. They proceed by introducing concepts and workflows that are common to the individual workflows and applications involved until the project is complete. Often, content you design in a chapter will be used in a later chapter's projects to demonstrate the rich workflow you can achieve between these applications.

Many pages contain additional “sidebar” information boxes that explain a particular technology or offer alternative workflows. It's not necessary to read these additional boxes, or follow the workflows, but you may find them interesting and helpful, as they will deepen your understanding and often provide additional context. Tips and notes appear throughout the chapters and contain more situational, immediate items for you to apply during the current steps of a project.

By the end of the book, you'll have a good understanding of what each Adobe Creative Cloud or Substance 3D collection software application does, how to start a new project, and how to design useful content with the particular 3D workflows being explored.

Lesson Files

The projects in this book use supplied source files, including images, design assets, 3D models, materials, project files, and more. To complete the lessons in this book, copy all the files to your computer's storage drive.

The media files are practice files, provided for your personal, educational use in these lessons only. You are not authorized to use these files commercially or to publish, share, or distribute them in any form without written permission from Adobe Systems, Inc., and the individual copyright holders of the various items. Do not share projects created with these lesson files publicly. This includes, but is not limited to, distribution via social media or online video services including YouTube and Vimeo. A complete copyright statement is on the copyright page at the beginning of this book.

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How to Access Online Material

You must register your purchase on *peachpit.com* to access the lesson files:

1. Go to *peachpit.com/3dworkflows*.
2. Sign in or create a new account.
3. Click **Submit**.
4. Click the **Access Bonus Content** link to download the bonus content from the Registered Products tab on your Account page.

If you purchased a digital product directly from *peachpit.com*, your product will already be registered.

Additional Resources

Adobe Creative 3D Workflows is not meant to replace documentation that comes with the software or to be a comprehensive reference for every feature. Only the commands and options used in the exercises are explained in this book. For comprehensive information about program features and tutorials, refer to the following resources.

Adobe Creative Cloud Learn and Support: <https://helpx.adobe.com/creative-cloud> is where you can find and browse Help and Support content on Adobe.com. On the Learn & Support page, click User Guide for documentation on individual features or visit <https://helpx.adobe.com/creative-cloud/user-guide.html>.

For inspiration, key techniques, cross-application workflows, and updates on new features, go to the Creative Cloud tutorials page at helpx.adobe.com/creative-cloud/tutorials.html.

Adobe Community: Tap into peer-to-peer discussions, questions, and answers on Adobe products at the Adobe Support Community page at community.adobe.com.

Adobe Creative Cloud Discover: This online resource offers thoughtful articles on design and design issues, a gallery showcasing the work of top-notch designers and artists, tutorials, and more. Check it out at creativecloud.adobe.com/discover.

Behance: Adobe’s social network for creatives! Browse the work of others and get inspired through the sharing of creative design projects across traditional 2D design, 3D asset generation, and much more at *behance.net*.

Resources for educators: *adobe.com/education* and *edex.adobe.com* offer a treasure trove of information for instructors who teach classes on Adobe software. Find solutions for education at all levels, including free curricula that use an integrated approach to teaching Adobe software and that can be used to prepare for the Adobe Certified Professional exams.

CHAPTER 9

Manipulating 3D Models for Motion Graphic Designs

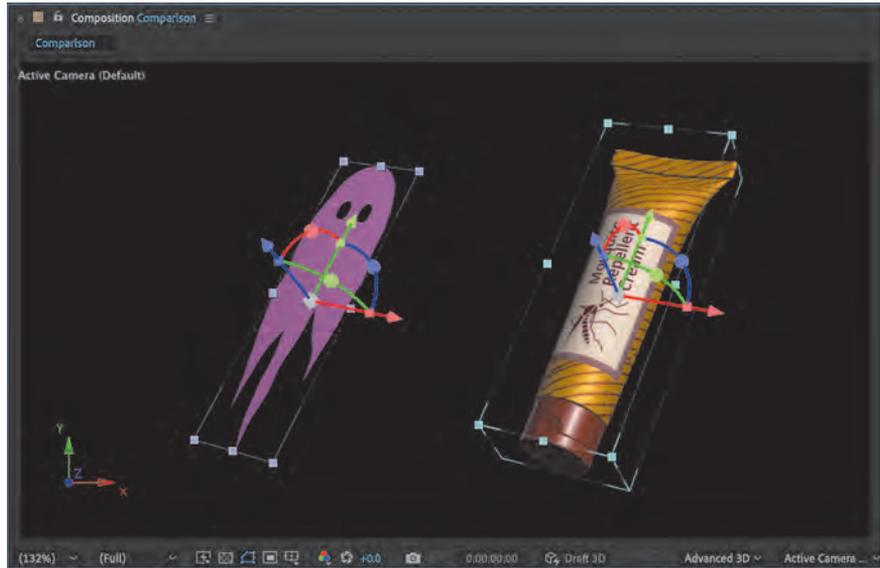
In this chapter, we return to Substance 3D Stager and Adobe After Effects for a different approach. We'll be designing the 3D model of a product in Substance 3D Stager with assets created in Adobe Illustrator and Adobe Express. We'll use this 3D model in an After Effects composition alongside additional 3D and 2D content using the new Advanced 3D rendering engine.



We'll also explore the creation of background elements for the composition through generative AI and Adobe Firefly, see how to work with 3D text elements, and use advanced lighting techniques through HDRI imagery. A lot of workflows, techniques, and software converge in this chapter!

Designing Motion Content with 3D Models

In Chapter 5's introduction to 3D in After Effects, we looked at two ways of working in 3D space. The first was through the manipulation of flat graphics in perspective to give the appearance of 3D, and the second was to use actual 3D models. After Effects is capable of dealing with both methods within the same composition.



In this figure, you can see that After Effects shows both the 2D object and the 3D object as 3D layers in a single composition. Their appearance and the related controls inform you of their nature. The 2D object, when selected, exhibits a flat transformation rectangle around it, whereas the 3D object appears as though contained in a three-dimensional transformation cube. This difference is the projected volume of the object in 3D space.

This chapter focuses on native support for true 3D models and other aspects of the Advanced 3D render engine.

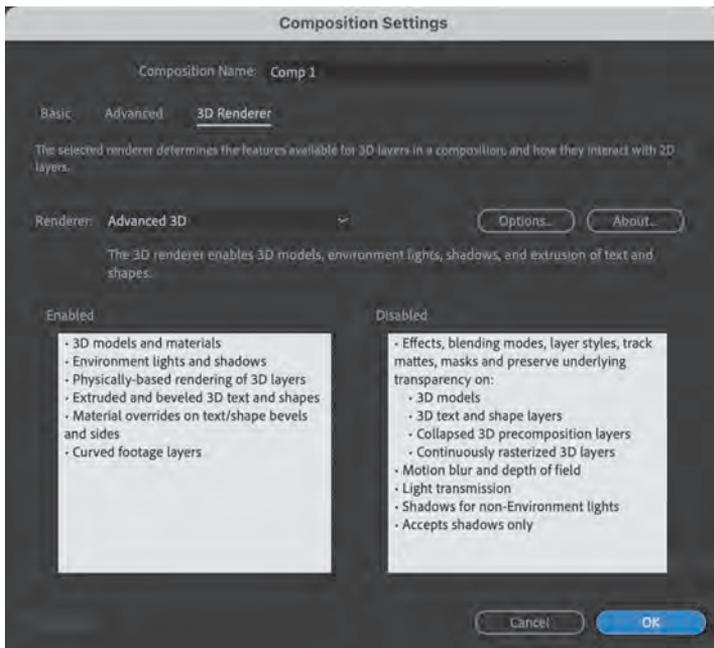
Exploring the Advanced 3D Render Engine

When you create a new composition, After Effects provides three choices of 3D rendering engine in the 3D Renderer tab of the Composition Settings dialog box.

1. Choose **Composition > New Composition** from the application menu to access this dialog box as part of the composition creation workflow, or choose **Composition > Composition Settings** with an existing composition selected.

Three tabs are available to you in this dialog box: **Basic**, **Advanced**, and **3D Renderer**.

2. Choose **3D Renderer** to select the rendering engine you'd like to use and to see the features that are supported by each engine.

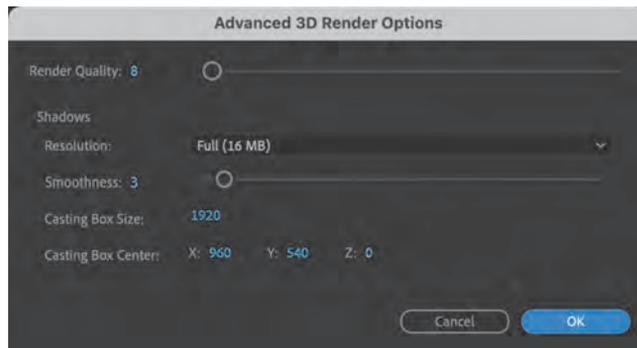


Beginning with the release of Adobe After Effects 2024 (version 24.2), the following engines are available:

- **Classic 3D:** The default rendering engine before the Advanced 3D engine became available. This renderer enables your 2D layers to be positioned in 3D space.
- **Advanced 3D:** This rendering engine, which is the focus of this chapter, is new to After Effects after a long gestation in the public beta. When Advanced 3D is selected, you can use true 3D models and materials, environmental lighting and shadows, extruded shape and text content, and more advanced 3D workflows.
- **Cinema 4D:** This rendering engine functions alongside the Cinema 4D Lite software application, which you can optionally install. This rendering engine enables the extrusion of shape and text elements.

In this chapter, you will use **Advanced 3D** as the 3D renderer. This is the default rendering engine, and it is automatically activated when creating a 3D layer or importing a 3D model.

3. Click the **Options** button on the **3D Renderer** tab of the Composition Settings dialog box. The **Advanced 3D Render Options** dialog box displays.



From here, you can fine-tune the render performance for your hardware and project. The following properties are available:

- **Render Quality:** A lower setting for this property makes editing your composition easier, while a higher value represents a greater degree of quality as you work.

You can set it from 1 to 300 with the associated slider control.

- **Shadows Resolution:** The higher the MB value this is set to, the more realistic the shadows cast upon your 3D content will appear.

You can choose values of Half (2 MB), Full (16 MB), or Double (128 MB) from the drop-down.

- **Shadows Smoothness:** The Smoothness property works alongside Render Quality and indicates how smooth the shadows appear as they are generated. A high setting can negatively affect performance while you work in the composition but will give smoother results.

Set this from 1 to 32 with the slider.

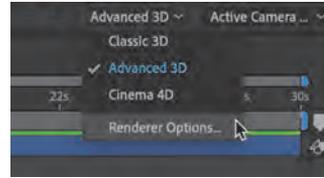
- **Shadows Casting Box Size:** The casting box determines the area within which shadows are produced in your composition. Keeping this size only as large as needed will keep things from being too laggy, as it would be pointless to cast shadows in areas that are not visible, for example.

- **Shadows Casting Box Center:** The casting box size is measured from this center point. Since you are working in 3D space, you must set the center across all three dimensions: X, Y, and Z.

- **Fit to Scene:** This button will automatically set the Casting Box Size and Casting Box Center properties to match your composition content.

Only content capable of casting shadows is considered.

You can alternatively access the **Advanced 3D Renderer Options** dialog box from below the composition panel. Click the **3D Renderer** drop-down and choose the **Renderer Options** list item.



This provides quicker access to make adjustments as you work, since it displays the dialog box immediately.

TIP You can also switch between 3D rendering engines from this same drop-down, but this is a choice that should be made early on. You usually would not switch the 3D renderer in the middle of working on a composition.

Exploring the Major Features of the Advanced 3D Renderer

Now that you are familiar with how to activate the Advanced 3D renderer and tweak the options to your liking, let's look at the major features enabled by this rendering engine in After Effects.

3D Model Support

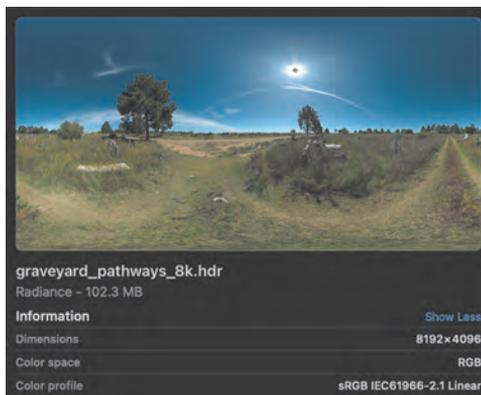
One of the most important features of the new rendering engine is the ability to work with true 3D models in a composition. After Effects supports the GLB and GLTF formats for import and use in any composition using the Advanced 3D render engine.



GLB and GLTF are highly popular file formats and include not only the 3D meshes that form a model but also any materials and images placed on them.

HDRi Image-Based Lighting

High dynamic range imaging (HDRi) files are generally shot as equirectangular images and include extra information regarding lighting due to how HDR images are created. Using HDRi imagery in a composition enables you to use this lighting information as the source for environmental lights that have a direct effect on 3D layers and how they are lit in a scene.¹

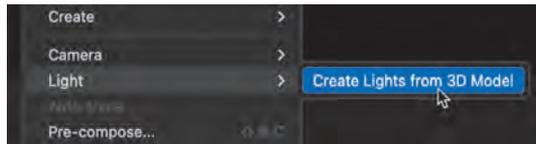


1. Image sourced from <https://hdri-haven.com/hdri/abandoned-cemetery>

You can gather HDRi images from several sources, including the Substance 3D Assets Collection or Adobe Stock (see Chapter 1). The image file in this figure was gathered from HDRI-HAVEN, which is a resource dedicated to making free, high-quality HDRi images available to 3D artists.

Camera and Light Extraction

Not only can GLB and GLTF files contain 3D models and related materials, but they can also hold information regarding cameras and lights. These cameras and lights can be extracted from imported 3D files of this kind and used as cameras and lights in a composition.



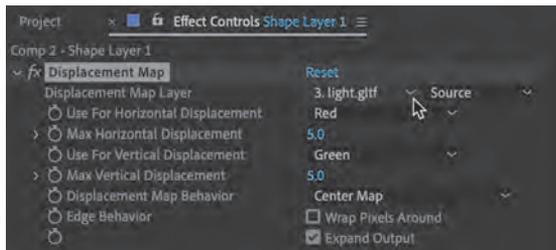
To extract any lights that are present in a 3D model in your composition, select the layer with the 3D model and choose **Layer > Light > Create Lights from 3D Model** from the application menu.

To extract any cameras that are present in a 3D model in your composition, select the layer with the 3D model and choose **Layer > Camera > Create Cameras from 3D Model** from the application menu.

If the extracted lights and cameras include animation, keyframes will be placed on the timeline.

2D/3D Effect Workflows

It's important to remember that you can combine 2D and 3D layers in the same composition. The Advanced 3D rendering engine enables effects that reference other layers to mingle across 2D and 3D space. This allows effects such as Displacement Map, Vector Blur, or Calculations to use a 3D model layer as a source to create highly stylized renders.



We'll explore much of this new Advanced 3D rendering feature set in the remainder of this chapter, but first let's design a 3D model in Substance 3D Stager for the composition.

Designing a 3D Product for Motion Design

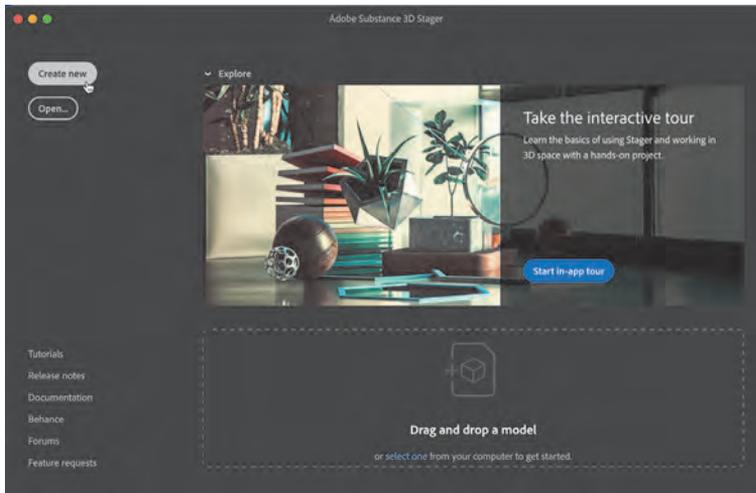
Before you venture back into After Effects to explore the new Advanced 3D render engine, you'll need access to a suitable 3D model to work with. As you saw in Chapter 6, you can use Substance 3D Stager to design models and export them in many different file formats, some of which can be used in an After Effects composition.

Creating a New Project

Launch Substance 3D Stager and create a new file to design a simple 3D model for export. You'll use starter assets and a few custom decorative elements to form and brand the mesh.

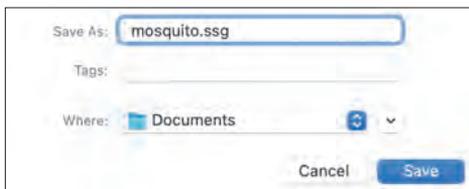
Let's create a new project to work with.

1. Click **Create New** on the home screen or choose **File > New** from the application menu.

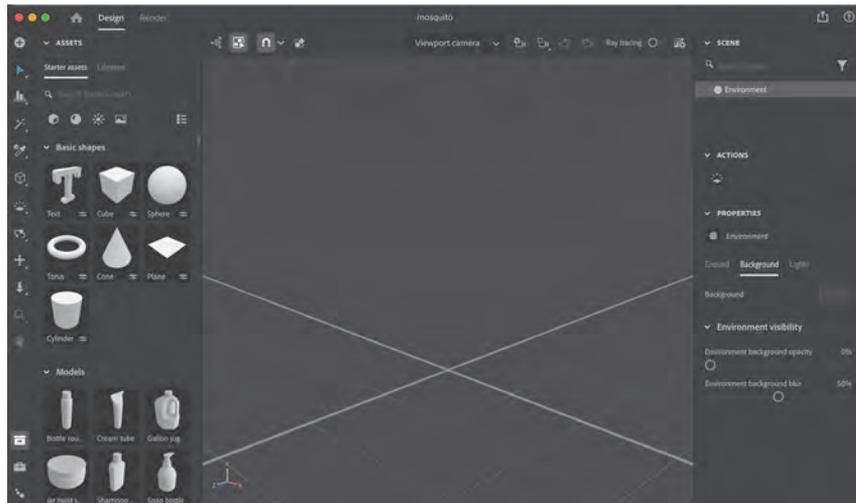


This creates a fresh Substance 3D Stager project.

2. From the application menu, choose **File > Save** to display the **Save As** dialog box.
3. Browse to a location on your local file system that you will remember and name the file *mosquito.ssg*.



4. Click **Save** to save the project and return to your empty scene in Substance 3D Stager.



You now have an empty Substance 3D Stager project ready to work with. This environment exists only for your 3D model design and export, so don't be concerned about the environment or camera properties, since you will be exporting the model along with any applied design elements and not rendering the content.

Designing a Branded Product

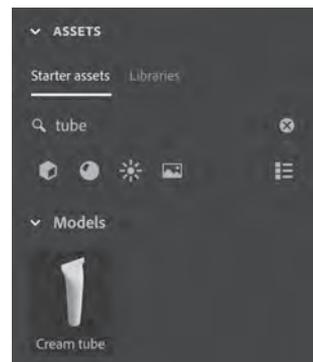
Now that you have a clean project to work in, you need to identify a 3D model and then apply a set of chosen materials to it for greater realism.

1. Ensure that the **Assets** panel is activated and visible along the left side of the Substance 3D Stager interface. If it is not, click the **Assets** button  in the lower left of the interface to activate it.

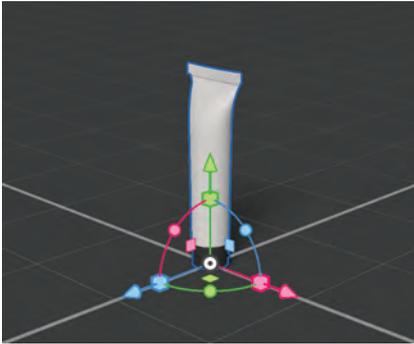
Next, you will choose a 3D model and select appropriate materials to place on the various mesh parts that form the model.

2. In the **Starter Assets** tab of the **Assets** panel, type **tube** in the search field at the top to display any assets that contain “tube” in their name.

If you do not see any models appear, be sure none of the filters below the search field are active.



3. Click the **Cream tube** model from the set of assets that appear.



The tube is added to the very center of your environment and appears as an entry in the **Scene** panel.

4. In the **Scene** panel, open the **cream_tube** mesh group to reveal the individual mesh parts that compose the model.

One mesh represents the tube body, and the other represents the tube cap. Each mesh can have its properties adjusted independently of the other.

NOTE Each part of the **cream_tube** group is brought into the project with a set of simple default materials applied. The meshes must have these plain materials at this stage so that you can visualize the actual model—much like how paths in Illustrator must have some sort of appearance properties to visualize them when they're not selected.

5. In the **cream_tube** group, select the **body_mesh** object.

The **body_mesh** object is highlighted in the **Scene** panel, indicating that it is now selected.

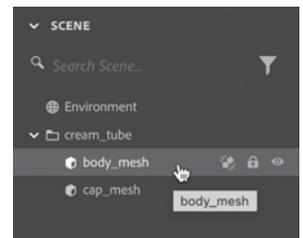
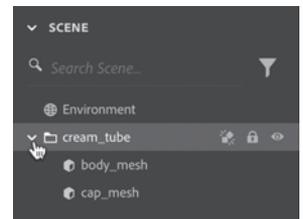
Additionally, the visual model part in the environment exhibits a blue outline, and the **Properties** panel changes to display properties specific to the selected object.

The tube body includes a boring gray default material that you will change to something more realistic and interesting.

6. In the **Starter Assets** tab, search for the term **plastic** to display several materials.

Many starter assets are meant to exhibit the look of plastic in some way. Quite a lot of choices!

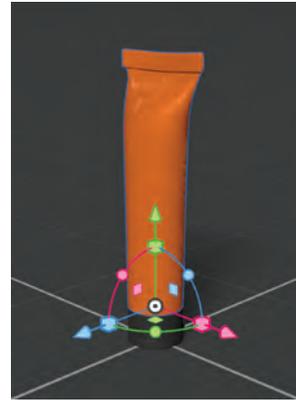
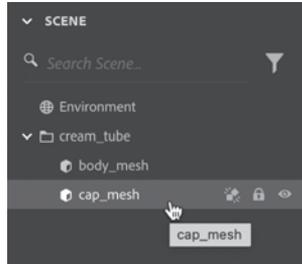
7. Scroll through the materials and locate the **Shiny Plastic** material. It appears as a reflective, deep orange material with subtle creases.



8. Click the material preview to apply it to the selected **body_mesh** object.

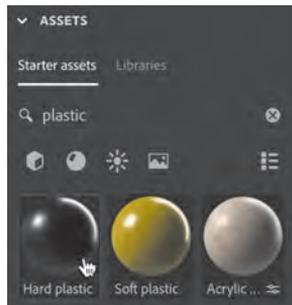
Notice that since only the **body_mesh** object was selected, the Shiny Plastic material is applied to that individual part of the overall model group. If the entire group were selected, the **cap_mesh** object would take on this appearance as well.

9. Select the **cap_mesh** object in the **Scene** panel.



10. In the Starter Assets tab, click the **Hard Plastic** material to apply it to the cap of the tube.

Since you did not change or clear out the previous search for “plastic,” you did not need to perform a fresh search.



The Hard Plastic material is applied to the **cap_mesh** object.

Adjusting Material Properties

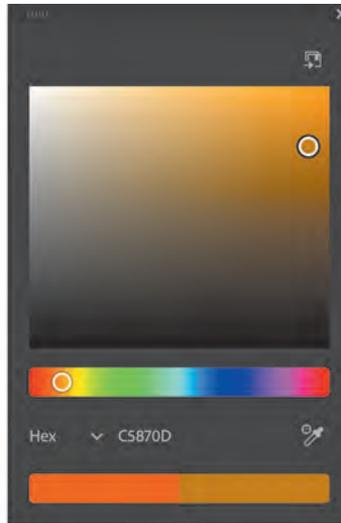
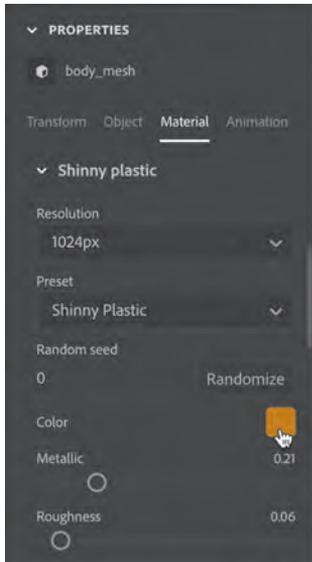
You could leave these materials at their default appearance, of course, but the tube is a bit too orange for the overall design. To finish working with these materials, you will adjust the color of the Shiny Plastic material.

1. In the **Scene** panel, select the **body_mesh** object again and look at the **Properties** panel.

2. Click the **Material** tab in the **Properties** panel and ensure the **Shiny Plastic** material is selected to view the properties that you can adjust.

Many, many properties can be adjusted, and they differ greatly from material to material.

3. Scroll down in the **Shiny Plastic** section of the **Substance** properties until you locate the **Color** property, and then click it to display the color picker overlay. Adjust the color to more yellow and less orange.



I am using the value **#C5870D**, which can be entered into the **Hex** input box in the color picker overlay.



With individual materials chosen, applied, and adjusted, the basic design for the cream tube model is complete.

It already looks very realistic with the softer, creased look of the tube body and the harder, duller appearance of the plastic cap. Applying a set of visually distinctive materials to a model in this way is a great method of achieving a realistic look for your design.

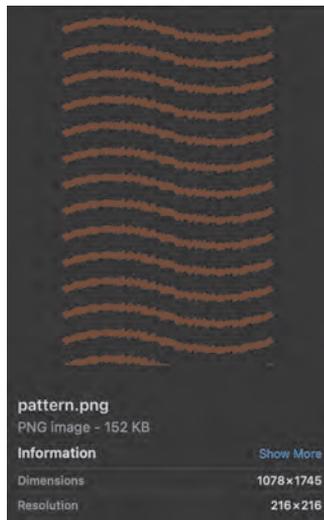
NOTE If you do not see Hex as your unit type in the color picker overlay, click the displayed unit type to select it from the drop-down. Available types are RGB, HSL, HSV, HWB, CMYK, and Hex.

Applying Branding Assets to the Design

To complete the cream tube design, you will include specific branding assets in the After Effects composition. These branding assets include a pattern and a label.

The exercise files for this chapter include a file named *pattern.png*. You will apply this striped pattern, which was designed in Illustrator, across the body of the tube. It will give your 3D model more character and help visually align it with other products that are part of this campaign.

The exercise files for this chapter also include a file named *label.png*. This file is a label designed in Adobe Express specifically for the product itself, which is a skin cream that wards off bothersome mosquitoes in the warmer months.



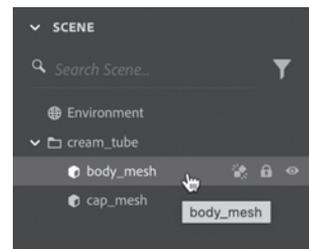
With both branding images in mind (and on-hand), you'll now apply them to the cream tube 3D model.

Working with the Background Pattern

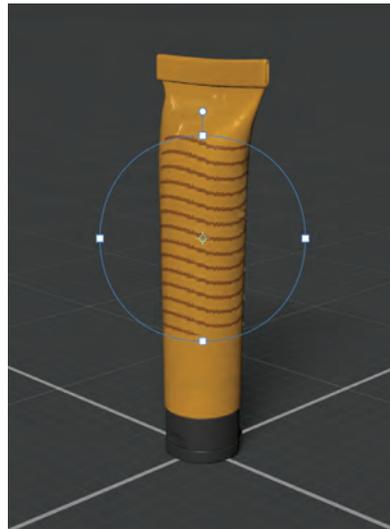
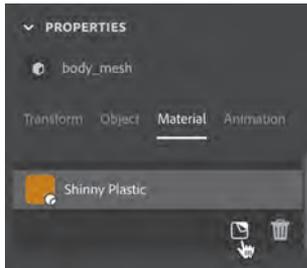
You will place the background pattern on the tube first and then place the label. Of course, you can always adjust the stacking order of these images afterward, but it is better to start in the proper placement order.

1. Return to the Substance 3D Stager *mosquito.ssg* project and select the **body_mesh** object in the **cream_tube** group from the **Scene** panel.

You will be applying image assets only to this mesh.



- In the **Properties** panel, select the **Material** tab. The **Shiny Plastic** material should be selected, as it is the only material available.
- Click the **Place Image On Model** button  below the Shiny Plastic material. A file browser dialog box appears.
- Select the file *pattern.png* and click **Open**.

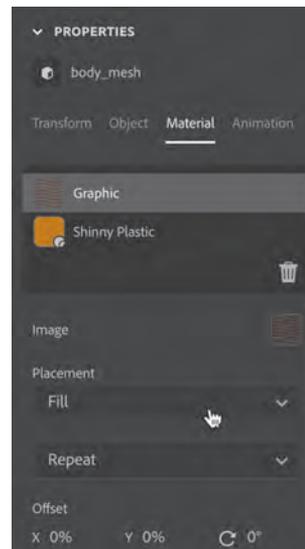


The image is mapped roughly onto the surface of the tube.

- In the **Properties** panel, ensure the **Graphic** material is selected and change the **Placement** setting from Decal to **Fill**.

Decal placement treats the image asset like a sticker or label, while Fill placement stretches the image out across the entire mesh to fill every last bit.

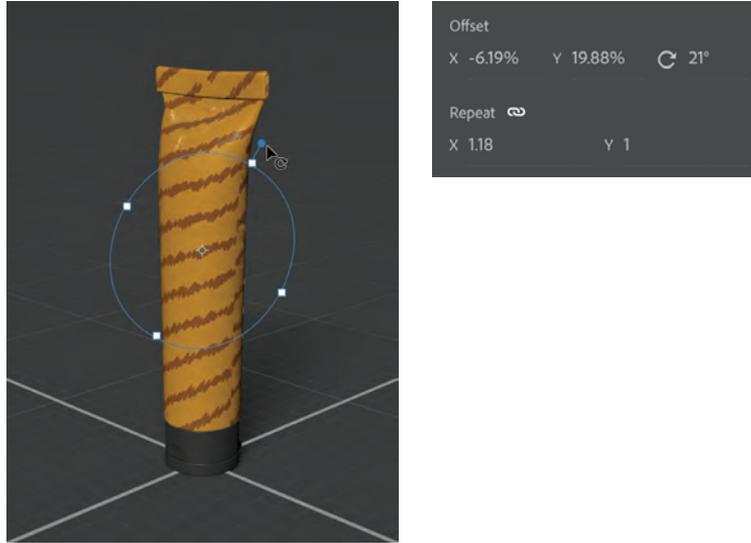
- Ensure you have the **Select** tool  chosen. A transform overlay will appear across the image applied to the object.



7. Adjust the following values of the image until you get an interesting result:

- **Position:** Drag the image in the transform overlay.
- **Rotation:** Drag the little circle that protrudes from the overlay.
- **Repeat:** Drag the four squares around the overlay.

These properties can also be adjusted through the **Offset** and **Repeat** properties in the **Properties** panel when an image is selected in the Material tab.



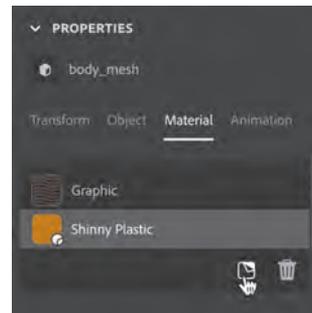
I used the settings shown in the image for my example.

Working with the Label

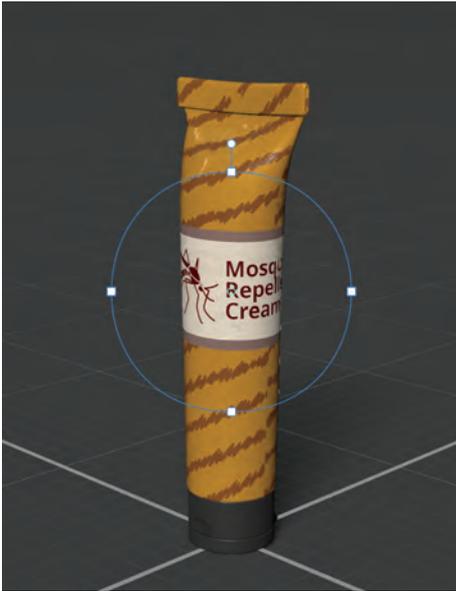
To complete the tube design, you will place the label image on the tube, overlaying both the material and the pattern image.

1. Select the **Shiny Plastic** material in the **Material** section of the **Properties** panel.
2. Click the **Place Image On Model** button  beneath the material.

If a graphic is selected instead of the underlying material, the Place Image On Model button  will not appear.



3. In the file browser dialog box that appears, select the image file *label.png* and click **Open**.



The label image is placed on the tube as a decal, and a transform overlay appears around it.

4. Use the transform overlay to adjust the **Position**, **Rotation**, and **Scale** properties of the label so that it sits squarely on the front surface of the tube.



NOTE You might have worried that because you selected the material, which is visually placed beneath the pattern image in the Properties panel, the new image would appear beneath the pattern image. This would be the case in other software, like Adobe Photoshop, but in Substance 3D Stager, these image layers are always added to the top of the stack no matter what.

NOTE You can adjust the stacking order of images placed on a model. To do so, simply drag each image to a new position in the Material tab of the Properties panel. You cannot move a material up and down the stack—only images. To layer materials, you can use other tools, like Substance 3D Painter, as you did in Chapter 6.

5. Adjust the camera view if necessary to change your view and achieve the ideal placement for the label. Chapter 6 covered how this can be done with the Orbit , Pan , and Dolly  tools.

The 3D model design is now complete!

6. Switch the **Ray Tracing** toggle  to the active position to view the cream tube in a more realistic way.

This renders a more realistic preview of the product, with all materials and images applied.



Notice that the label and pattern images conform to the creases and deviations across the tube because they were placed on the Shiny Plastic material. And Ray Tracing renders reflections and shadows in a much more complex and realistic manner.

7. Once you are finished admiring your work, switch the **Ray Tracing** toggle  to the inactive position.

Ray Tracing takes much more computing power to render your content than the real-time preview render, so it should be used sparingly.

Exporting 3D Models for After Effects

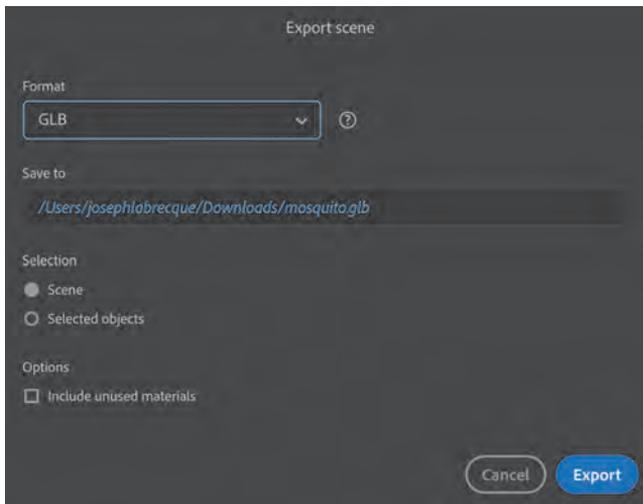
You are nearly finished with Substance 3D Stager and will soon move to After Effects to design motion content using your newly designed 3D model. The only thing left to do is export the design in a format that is compatible with the Advanced 3D render engine.

1. Choose **File > Export > Scene** from the application menu.

The **Export Scene** dialog box appears with the default settings.

After Effects supports only the 3D model formats GLB and GLTF in the Advanced 3D render engine. I suggest exporting as GLB, as this produces a single file instead of a collection of files (as GLTF would).

2. Select **GLB** from the **Format** drop-down.



The other settings in the dialog box work fine for our purposes, but if you need to, you can change the **Save To** location to something more accessible to you.

3. Click **Export** to complete the export process.

The export is saved as a GLB file in the location you specified.

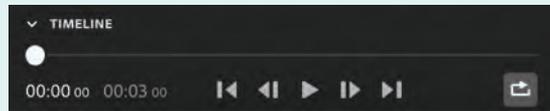
If you ever choose to create a GLTF file, you will have a set of files to deal with instead of just one.



Creating Simple 3D Motion in Substance 3D Stager

Before jumping back into After Effects, note that Substance 3D Stager also features a set of motion design tools, however simplistic.

To access a timeline that appears along the bottom of the interface, click the **Timeline** button  in the lower left of the interface. Once animation is added to an object in your project, you can control the playback through the timeline controls.



To add animation to an object, access the **Properties** panel with that object selected and then click the **Animation** tab to reveal the set of animation choices.

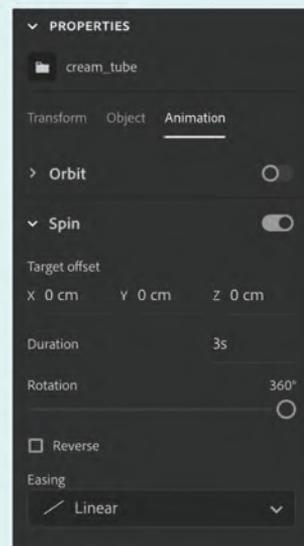
Substance 3D Stager includes two animation choices that are activated with a toggle switch: Orbit and Spin.

- **Orbit:** Activates animation that enables one object to orbit another. This is very useful when applied to a camera or a light. You must also specify the target object it will orbit around.
- **Spin:** A bit simpler than Orbit, this choice activates animation that spins the selected object around. This is best to use when you want to showcase all sides of an object.

The animation choices share several properties:

- **Target Offset:** This offsets your motion by a distance measured in centimeters along each of the three axes. The default is no offset at all, with each being a value of 0 cm.
- **Duration:** This determines how long or short your animation is. The default is 3 seconds.
- **Rotation:** Measured in degrees, this determines how much of a full 360° rotation is achieved across the given duration. The default is, of course, the full 360°.
- **Reverse:** This checkbox reverses the direction of your motion when activated.
- **Easing:** This set of common easing algorithms adds a bit of weight and dynamic physicality to the motion.

Of course, you want to have full control over any motion given to your 3D model, and that is where After Effects steps in.



3D Motion Design in After Effects

Now that you have a well-designed 3D model, you can begin creating an After Effects composition that uses the Advanced 3D rendering engine. You'll start by creating a new project, importing your GLB file, and animating it across a 3D composition.

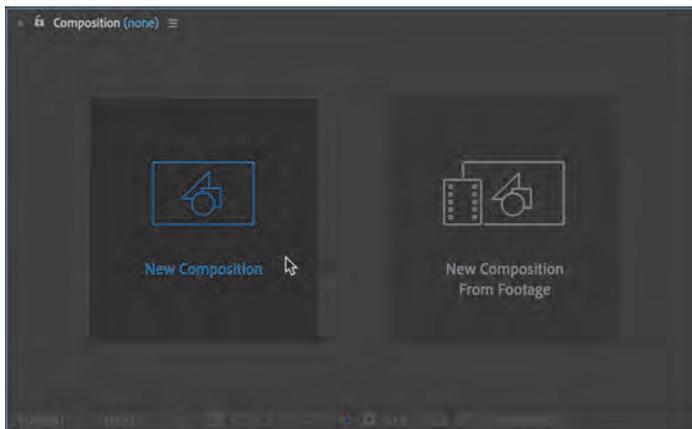
Creating a New Composition

Before you can use the 3D model you've designed in Substance 3D Stager, you'll need to create a new After Effects composition and save your project.

1. In After Effects, click the **New Project** button on the Home screen or choose **New > New Project** from the application menu.

The Home screen disappears, and you are prompted to create a new composition.

2. Click the large **New Composition** button in the center of the screen, or choose **Composition > New Composition** from the application menu, to create a new composition.

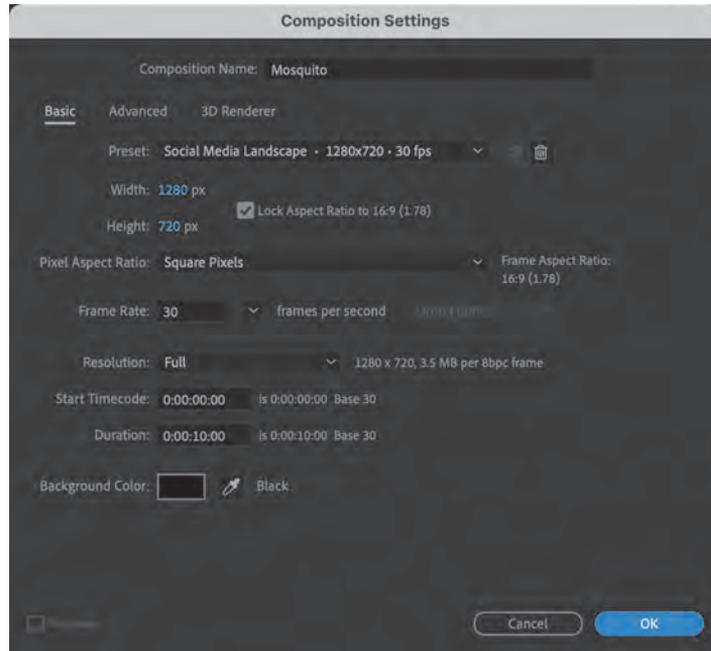


The Composition Settings dialog box appears.

3. In the **Composition Settings** dialog box, enter **Mosquito** for the **Composition Name** and choose **Social Media Landscape – 1280x720 – 30 fps** from the **Preset** menu. Set **Duration** to **0:00:10:00** (10 seconds) and choose black (**#000000**) for the **Background Color**.

TIP Remember early in this chapter when we looked at the 3D Renderer tab and the options in it? You could adjust the 3D renderer at this point, but you don't need to because the act of adding a 3D model to a composition automatically triggers the switch to Advanced 3D.

4. Click **OK**.



The **Composition Settings** dialog box closes, and a new composition is created according to your choices.

5. Save your project by choosing **File > Save** from the application menu.
A save dialog box appears.
6. Choose a location for the file on your computer and name the file *Mosquito.aep*.
7. Click **Save**.

You now have a new After Effects project file that contains a single empty composition. You will spend the remainder of this chapter working in the composition just created.

Importing a 3D Model

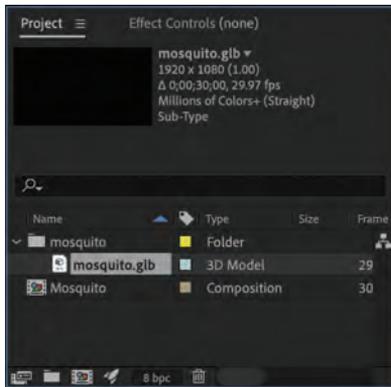
You spent a lot of time in Substance 3D Stager designing the cream tube model, layering it with branding assets, and tweaking everything so it appears just as you like. You'll now import that model into After Effects to use it in your composition.

3D model files are imported into After Effects much like any other asset.

1. Ensure your **Project** panel is open and locate the file *mosquito.glb*, which you exported from Substance 3D Stager.

The only item in your **Project** panel is your **Mosquito** composition.

2. Drag *mosquito.glb* directly onto the **Project** panel from your file system to add it to the panel. It will appear as a folder named Mosquito.
3. Open the Mosquito folder to reveal the *mosquito.glb* file inside it.



Recall that a GLB file contains all meshes, textures, and other assets in a single file. If you were to import a GLTF file, you would see many different types of assets in this folder—perhaps even subfolders.

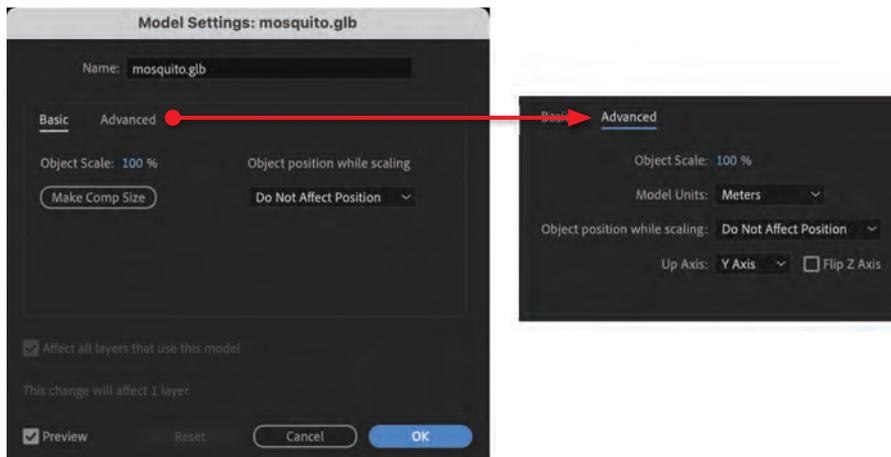
The Mosquito composition should be open in the timeline below. If it is not, double-click it in the Project panel to open it in the timeline.

You will need the composition open to add the 3D model to it.

4. Add the *mosquito.glb* file to the Mosquito composition by dragging it from the **Project** panel into the timeline.

Drop the file into the left or right area of the timeline; it makes no difference.

The **Model Settings** dialog box appears, and you can make adjustments to how your model appears in the composition.



NOTE You could also choose File > Import > File from the application menu to locate and import your 3D model. Either method provides the same result.

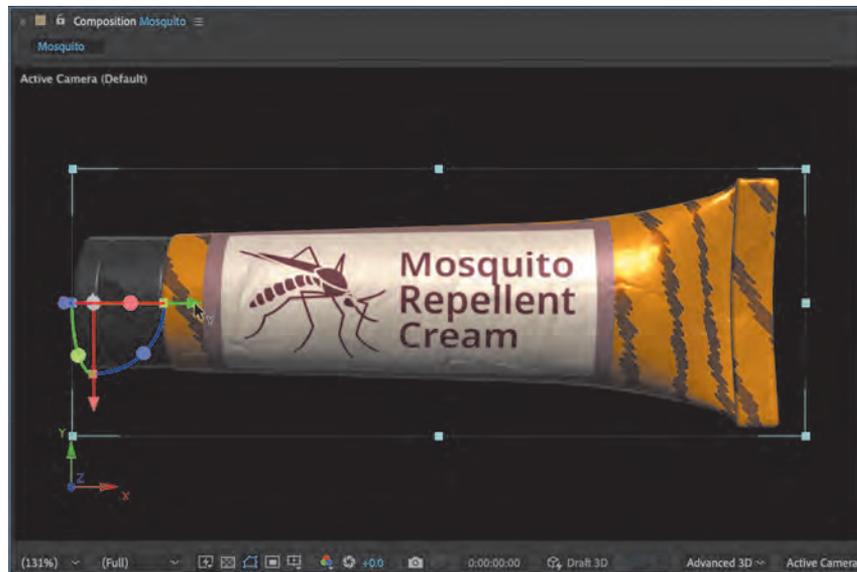
This dialog box offers choices for how your 3D model will scale in the composition and how its position is affected when scaling. The **Basic** tab focuses on object scaling, and the **Advanced** tab allows you to choose the units used to measure the scale and which of the three axes determines what is considered “up” for this model, determining how the gizmo overlay appears and how each axis influences the model.

NOTE Now that a 3D model has been added to the composition, Advanced 3D appears as the selected renderer in the lower right of the Composition panel.

5. Select **Do Not Affect Position** from the **Object Position While Scaling** dropdown if it is not already selected. Leave Object Scale and the other parameters at their default values, and click **OK**.

Now that the 3D model is available in the composition, you can see it is quite small and not ideally positioned to fill the frame.

6. To adjust its appearance, choose the **Selection** tool  from the tools at the top of the interface. Ensure that the *mosquito.glb* layer is selected, and use the gizmo overlay to adjust the scale, rotation, and position of your 3D model to view the details of your work so far.



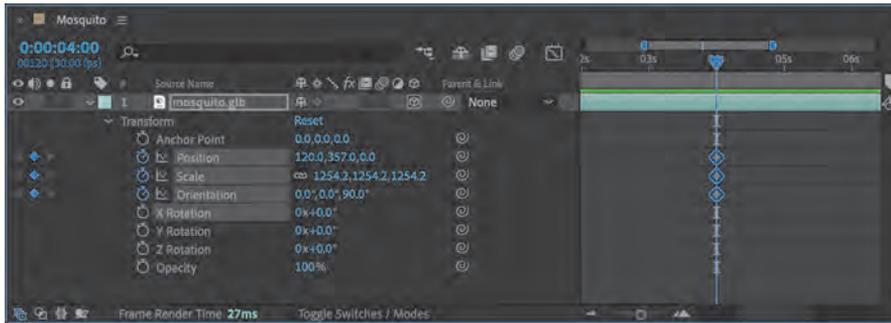
In the figure, I’ve adjusted my object so that it better fills the frame, and the details of the materials, patterned background, and label can be easily viewed and appreciated.

Don’t worry about getting the tube positioned and scaled in any meaningful way just yet; you’ll be more precise in the next section, when you begin animating the object across time.

Adding Motion to the 3D Model

Now that the 3D model is imported and included in a composition, it's time to add some motion to it! Although this is a new capability of After Effects, the process for giving motion to a 3D model is conveniently the same as with just about any other asset.

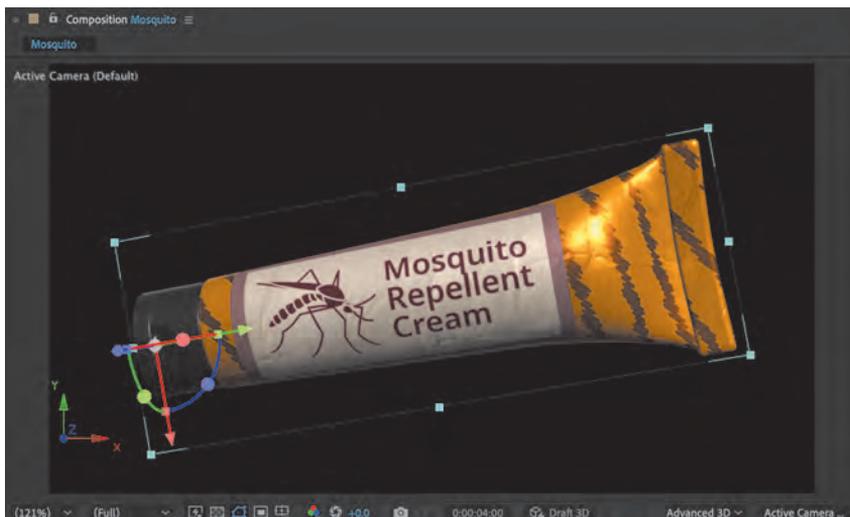
1. Open the **Transform** properties of the *mosquito.glb* layer and move the play-head to the 4-second position, **0:00:04:00**.
2. Click each **Stopwatch** toggle  to the left of the **Position**, **Scale**, and **Orientation** properties.



Keyframes are inserted at the 4 second mark along the timeline for the chosen transform properties.

The most direct way to set up your motion design is to start with the end.

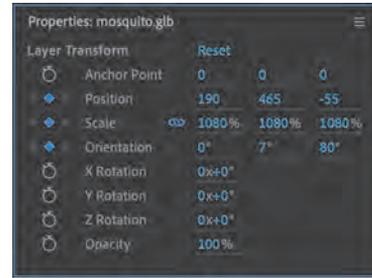
3. Use the gizmo overlay or adjust the numeric transform properties to place the tube product in a prominent position in the composition frame.



If you would prefer direct values for these properties, set them as follows:

- Position: **190, 465, -55**
- Scale: **1080%, 1080%, 1080%**
- Orientation: **0°, 7°, 80°**

This results in a tube that fills the screen while facing the viewer and being slightly tilted to keep the view interesting.



You can always deviate from these choices if desired, of course. Just remember that if you do so your results may differ from the figures in this chapter.

Now, let's set the second set of keyframes.

4. Move your playhead to the 2-second mark along the timeline, **0:00:02:00**, and click the **Insert Keyframe** icon  to the left of the property name to duplicate keyframes for the **Position**, **Scale**, and **Orientation** properties.

This sets these property values to be identical across time between the two sets of keyframes you created.

You should have identical keyframes for **Position**, **Scale**, and **Orientation** properties at both 0:00:02:00 and 0:00:04:00 along the timeline.

The tube of cream should emerge from the bottom of the screen to the previously set **Position**, **Scale**, and **Orientation** property settings.

You should be at the first keyframe, at 0:00:02:00, which is your starting point.

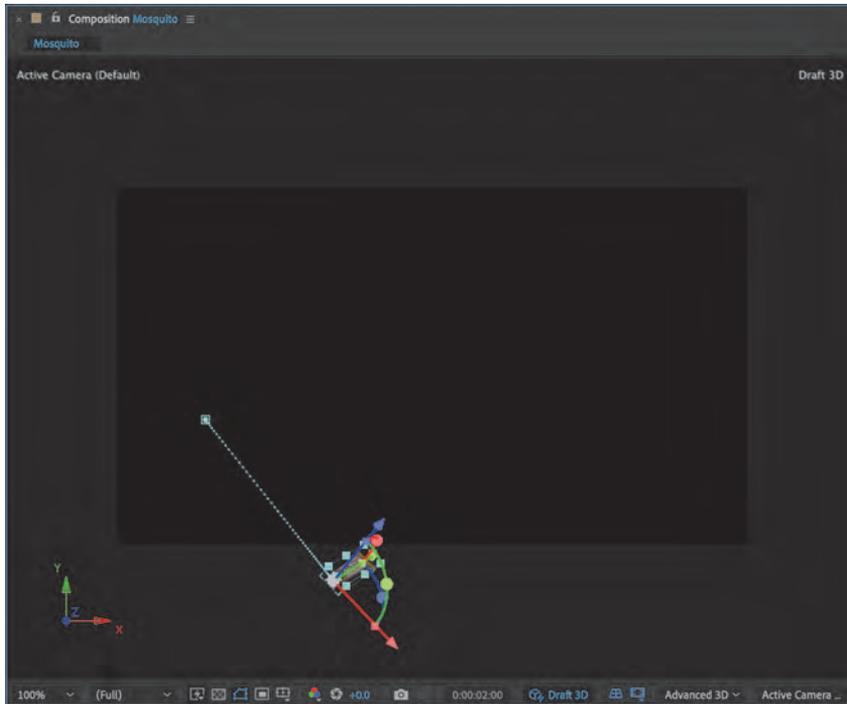
Next, you will set the 3D model so that it is much smaller in scale, rotated differently from its final value, and positioned out of frame beyond the bottom of the composition.

5. Using either the gizmo overlay or the numeric property values to adjust the following transform properties:

- Position: **250, 1200, 1640**
- Scale: **345%, 345%, 345%**
- Orientation: **295°, 325°, 30°**



Again, you may deviate from these values, but the result will differ from what you see here.



The tube should be rather small and appear lost in blackness at this point. You will, of course, embellish the composition with additional artifacts to keep things interesting for the viewer, but the motion of the centerpiece tube asset is of primary importance.

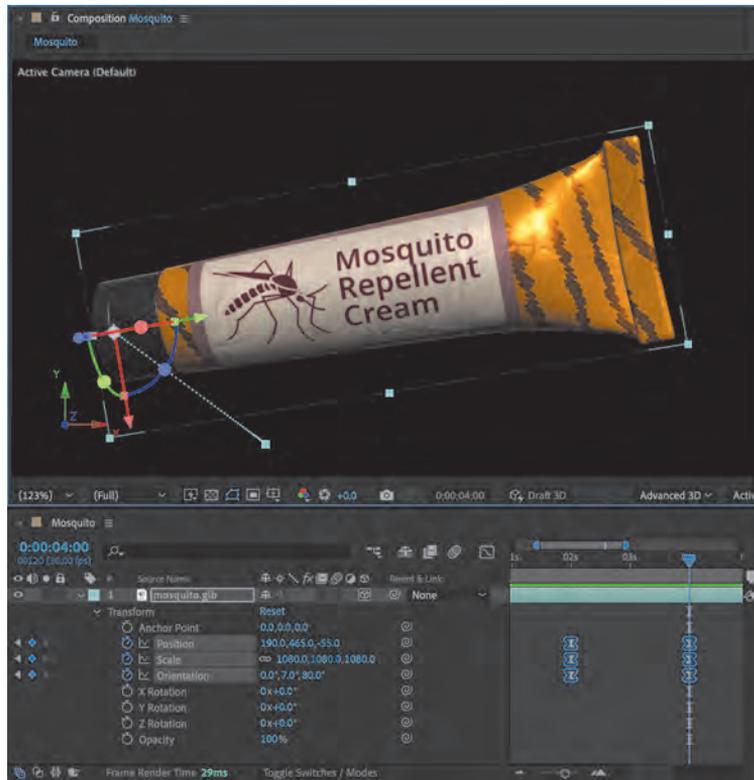
TIP Chapter 5 explained that you can enable Draft 3D mode to view content outside the frame in your composition. This is useful when you want an object to emerge from outside the frame and into full view.

If you play back the motion you've created, it will be very linear and not so interesting. You can fix this by applying easing to the keyframes.

6. Using the **Selection** tool , drag a selection rectangle across all the keyframes in the timeline.

The selected keyframes are highlighted in blue.

7. Choose **Animation > Keyframe Assistant > Easy Ease** from the application menu to create simple easing across the selected keyframes.



The selected keyframes change from a diamond shape to an hourglass, indicating that an ease has been applied.

This action produces a much more dynamic and physical motion across the keyframes' property transitions. Play back your composition to see how much smoother the animation is now.

The tube emerges from the bottom of the screen, rotates slightly, scales up, and settles into position in the center of the frame. The primary motion for this composition is now complete.

Compositing with Additional Elements

At this point in the project, you've imported and granted dynamic motion to the 3D model of the mosquito repellent cream product. Yet, it exists in a black void and could be more engaging for the viewer. You will now add some additional design elements, including an AI-generated background, some 3D text, and environmental lighting derived from HDRi panoramic imagery.

Generating Background Content with Adobe Firefly

Although you could use stock photography or commission artwork or a photograph as a background for your motion design, you have options for creating all sorts of assets through generative AI platforms.

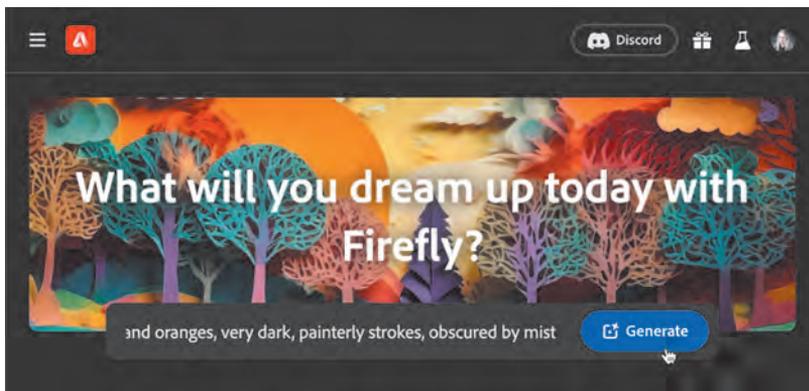
Adobe Firefly is a new set of generative AI tools that you can access via <https://firefly.adobe.com/>. It is increasingly being integrated into traditional products like Photoshop, Illustrator, and Express.

Firefly has many advantages over its competitors. It has been ethically trained on a dataset of Adobe Stock materials along with openly licensed work and public domain content with expired copyright. Other generative AI services have been trained on content simply scraped from the open web, which is problematic because copyrighted materials are included in such a dataset. When using Firefly, this is not a concern.

Additionally, Adobe has declared that content generated through Firefly is commercially viable. You do not have to worry about whether someone is going to come after you and declare that you've stolen their work.

Let's use Firefly to create a suitable background for your motion content.

1. In your web browser, visit <https://firefly.adobe.com/> and locate one of the **Text To Image** modules that are prominently displayed on the page.
2. In the text prompt field, enter **soft texture consisting of greens and oranges, very dark, painterly strokes, obscured by mist** and click the **Generate** button  to have Firefly interpret your text prompt into a visual asset.



Being as descriptive as possible with your text prompt is likely to achieve results that more closely match what you envision.

The results appear, along with several additional options in the right column that you can tweak to improve or modify the visuals generated through the initial prompt. Since your After Effects composition is framed at a 16:9 resolution, you should tweak the Aspect Ratio value.

3. Select **Widescreen (16:9)** in the **Aspect Ratio** drop-down.

I also selected **Photo** for the **Content Type** and used **Firefly Image 2** for the generative AI model.

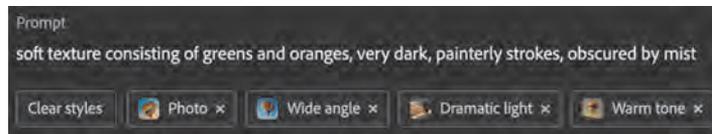
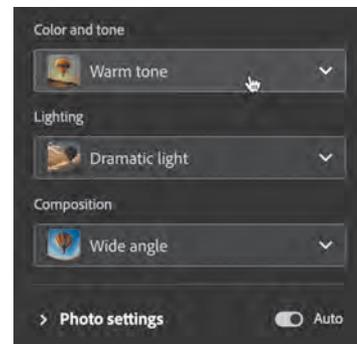
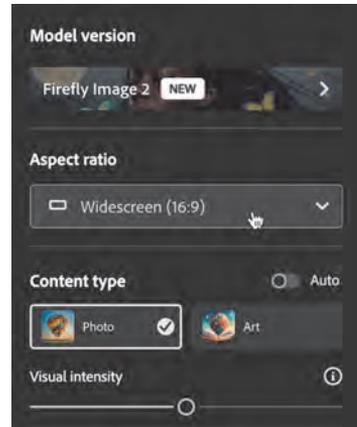
Below these choices are even more ways of tweaking the resulting imagery.

4. Select the following values to tweak the result:
 - Color and Tone: **Warm Tone**
 - Lighting: **Dramatic Light**
 - Composition: **Wide Angle**

These options generate a visual of a hot, muggy environment that's prone to be inhabited by many mosquitoes.

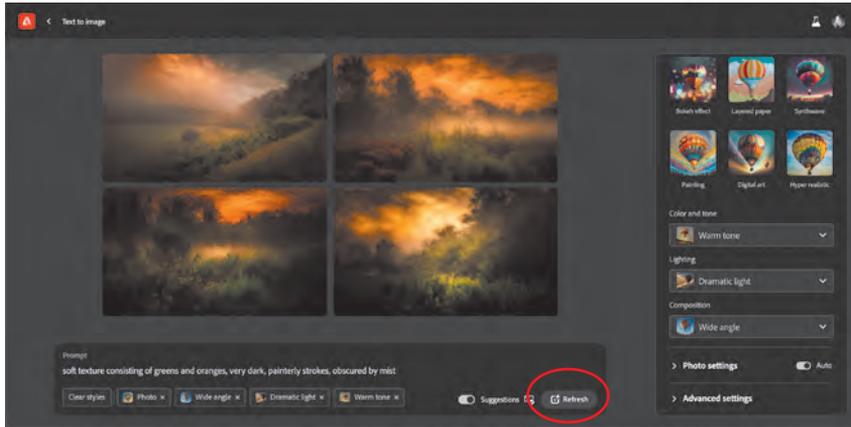
The **Prompt** area below the images reflects the choices made by adding tags alongside the original text prompt.

You can remove these tags, if desired, by clicking the small x icon to the right of each tag.



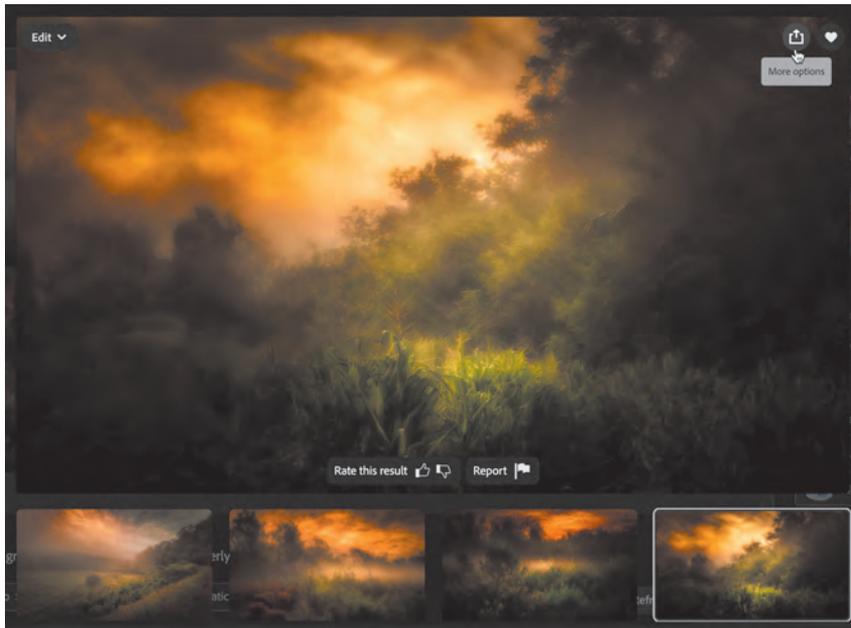
You can also adjust the initial text prompt from here to further refine the results being generated.

5. Click **Refresh**  to the right of the text prompt to refresh the generated visuals based on your refinements.



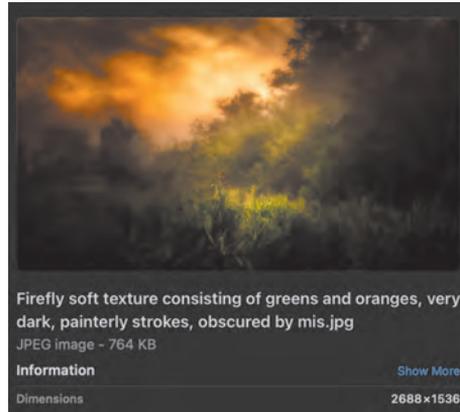
A new set of four images is generated.

6. Click the image that most closely matches your vision to view it in greater detail.
7. Select the **More Options** icon  in the upper right of the image to download the image to your computer for use in After Effects and other applications.



TIP When using After Effects, it is always best to keep all your source assets in the same folder so as not to mistakenly delete or lose anything that is necessary to the project.

The image asset downloads to your computer as a high-resolution JPEG.



The image I produced measures 2688 pixels wide and 1536 pixels high. This is much larger than the After Effects composition that it was created for and should work well as a background element for the motion design.

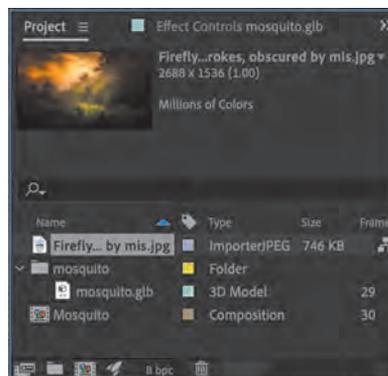
Now that you have a suitable background image—thanks to Firefly—you can complete the After Effects composition.

Adding the Generated Background Image

Now that you have a suitable background asset, it is time to compose it in the motion design.

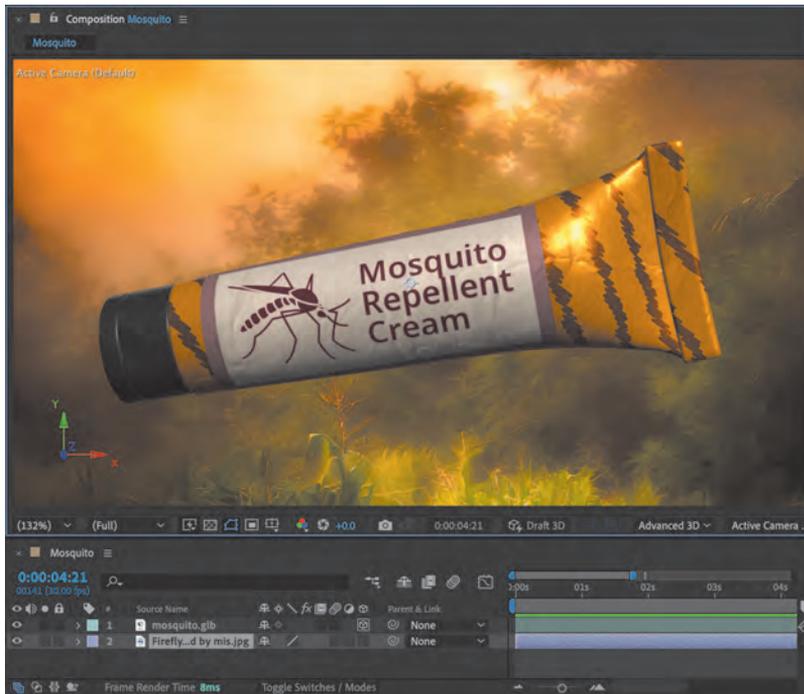
It will not be animated, but subtle panning or scaling might be appropriate, if desired.

1. Drag the Firefly-generated JPEG from your system file browser into the **Project** panel, or choose **File > Import > File** from the application menu, to import it.



The imported image appears in the **Project** panel.

2. Drag the imported image into the **Timeline** panel to add it as a layer. Be sure to drag it to the lowest point in the layer stack so that it appears behind the tube.



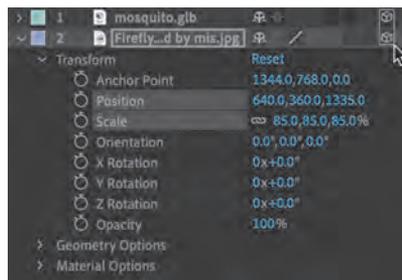
Since the resolution of the image from Firefly is greater than that of your composition, you'll need to make it a 3D-enabled layer and make some other adjustments.

3. Click the **3D Layer** toggle  to the right of the layer name, and set the following property values in the **Properties** panel or via the layer transform properties group in the timeline:

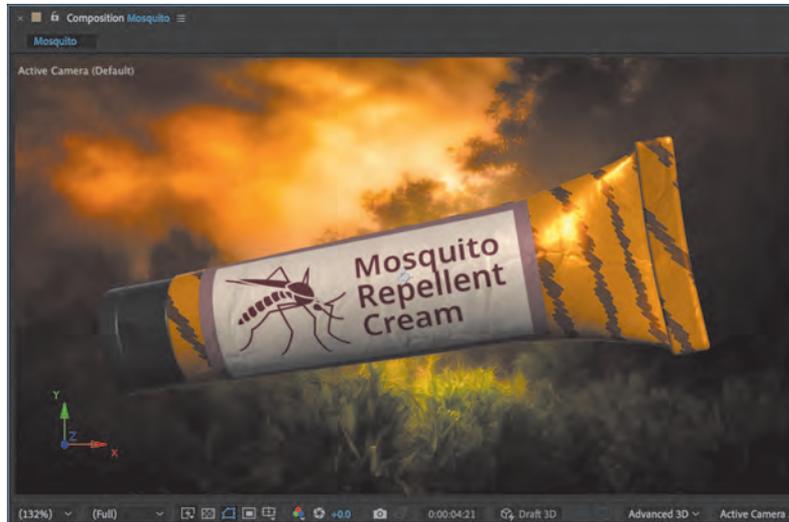
- Scale: **85%**
- Position: **640, 360, 1335 in.**

This ensures the background image is placed behind the tube in 3D space and that it is scaled appropriately.

The background image generated with Firefly integrates perfectly with the tube model from Substance 3D Stager. You really do get the feel of an oppressive, humid, mosquito-filled environment with this combination of assets!



NOTE You need to activate the stopwatch only when working with a change in property values over time through keyframes. Simply adjusting properties without the stopwatch active, as you've done here, adjusts the object's properties across the entire span of the timeline without motion.



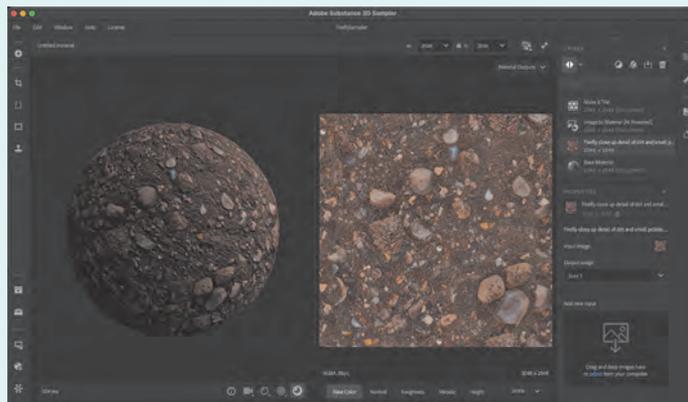
You aren't finished with this composition yet, though; you still need to add text content and adjust the lighting.

Firefly and 3D Workflows

Although you used Firefly in this project to generate background imagery, there are many more possible workflows with generative AI and 3D-capable software applications as part of Adobe Creative Cloud and Substance 3D.

A great example of this is material generation in Substance 3D Sampler. You saw how to generate your own materials using this software in Chapter 2. Of course, you can also generate very realistic materials using content generated with Firefly and then transformed in Substance 3D Sampler.

The prompt used to create these textures, for example, was "closeup detail of dirt and small pebbles from above." As with all things generative AI, the more specific your prompt is, the more likely the resulting image will conform to your request.



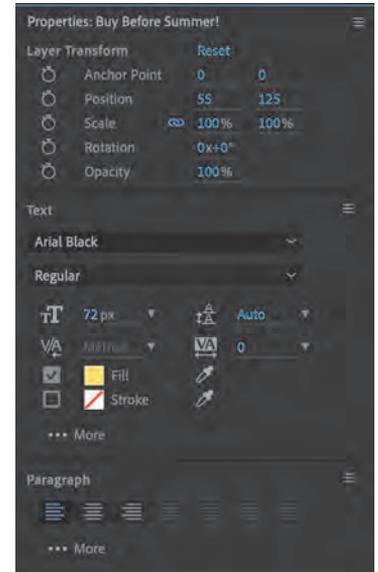
Also of note are more direct 3D integrations through Firefly, as showcased through beta experiments such as Project Gingerbread, a service that leverages Firefly capabilities to generate visuals through a combination of 3D primitives and generative text prompts. These elements work together to influence the composition and structure of the resulting visual that is generated. This is a great example of what to expect from generative AI in the months and years ahead.

Creating 3D Text

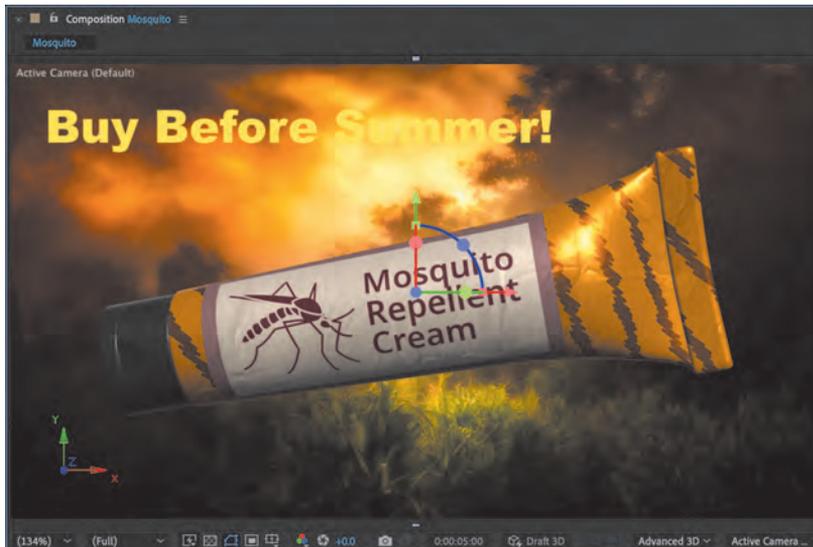
You are approaching the completion of this project. The addition of a suitable background image has certainly helped create a fully formed composition in After Effects, but there is more to be done.

You will now add text that implores the viewer to purchase the product before summer strikes and the mosquitoes are out in full force.

1. Choose the **Text** tool **T** from the tools at the top of the interface, and click in the top left of the **Composition** panel to create a new text object.
2. Type **Buy Before Summer!** for the text content.
3. In the **Properties** panel, set the following values:
 - Position: **55** for x and **125** for y
 - Typeface: **Arial Black**
 - Text size: **72px**
 - Text fill color: **#FFE972** (light yellow)
 - Use the alignment options in the paragraph properties to **left-align** the text.



The text appears across the background image. Since similar colors are present in the image and the text, some of the text is difficult to read.



NOTE If you do not have Arial Black available, substitute a typeface that is similar in weight and appearance, although you may need to adjust other properties if you do so.

You can remedy this in several ways, but here you will use the Advanced 3D renderer to transform your text to native 3D.

4. In the timeline, click the **Enable 3D Layer** toggle  for the newly created text layer.

The text object now includes additional 3D properties, thanks to the Advanced 3D renderer.

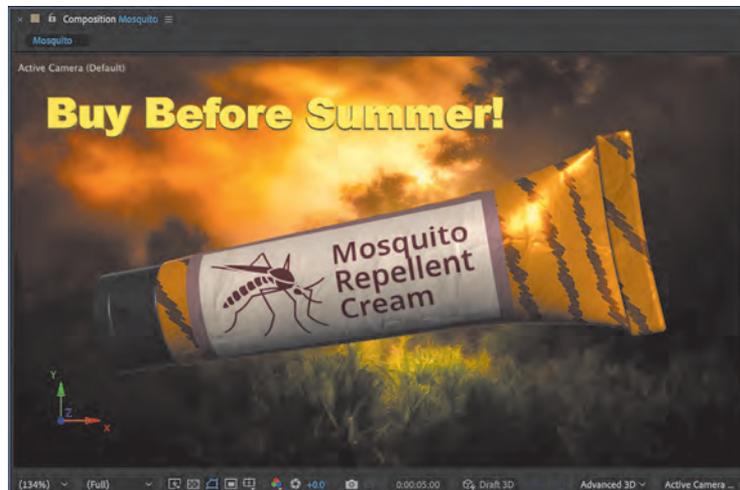
5. To provide a more 3D appearance to the text, open the layer properties and then the **Geometry Options** and **Material Options** property groups.

These property groups are available because the text is a 3D layer. Additional properties are available in the **Transform** property group, similar to what you saw in Chapter 5.

6. Change **Bevel Style** to **Angular** and adjust the **Extrusion Depth** value to **10**.



With these changes made to the text properties, a visible bevel surrounds the edges of each character, greatly improving readability.



With the text element created and transformed to a 3D object, the only thing left to do with this object is transition it into view through a small bit of animation.

Animating 3D Text

The text message should appear only after the animation of the 3D tube has completed. Right now, the text is always present across the entire composition. You will now prepare the text for animation and use standard keyframing techniques to perform a small transition.

1. Using the **Selection** tool , right-click the text in the **Composition** panel, and align the anchor point to the visual center of the text by choosing **Transform > Center Anchor Point in Layer Content** from the context menu.

This causes properties such as **Scale** and **Rotate** to align to the center of the text instead of to the left edge, which was the original placement of the anchor point.



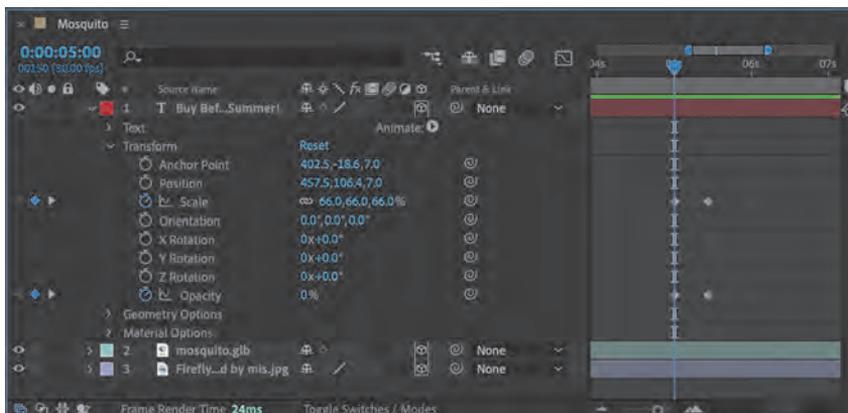
2. Move the playhead to the 5-second mark, at **0:00:05:00**, and open the **Transform** properties group.
3. Enable the **Stopwatch** toggle  for the **Scale** and **Opacity** properties.

You will use these properties to design a short fade-in transition where the text scales up a small amount.

4. Move the playhead a bit to the right, to **0:00:05:13**, and click the **Insert Keyframe** button  to the left of the Scale and Opacity properties.

This duplicates the previous keyframes for both properties, which ensures these properties retain their current values at the end of the transition.

5. Leave the keyframe values at 0:00:05:13 at 100% and click the **Go to Previous Keyframe** button  to the left of either property to return to the keyframes at 0:00:05:00.
6. Adjust **Scale** to **66%** and **Opacity** to **0%**.



These changes make the text initially transparent and 66% smaller.

Now let's finish the motion off with a bit of easing.

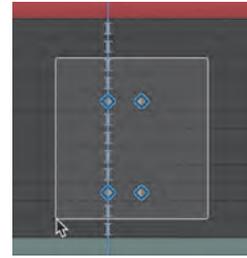
7. Select all four keyframes by dragging a selection rectangle around them in the timeline.

The keyframes are highlighted with a blue outline.

8. Choose **Animation > Keyframe Assistant > Easy Ease** from the application menu.

The diamond-shaped keyframes transform into small hourglass shapes, indicating that an ease has been applied.

9. Play back the full composition to view the results of your work.



All the animation is now complete, but there are still a few items left to examine before you close out this project.

Applying an HDRi Image as an Environmental Light

The Advanced 3D rendering engine allows for a new type of lighting, based on HDRi photography.

Included in the files for this chapter is an image named *rainforest_trail_8k.hdr*.



Image sourced from <https://hdri-haven.com/hdri/tropical-forest>

This is an HDRi file that has been downloaded from HDRI-HAVEN, although you can use any HDRi photo that you like, of course. The image file is a high-resolution, equirectangular 360° photo taken in a rainforest environment. This is perfect for your mosquito composition.

You will now create a new environment light and use the HDRi image for its source. You will first get the HDRi file into the existing composition so that you can use it.

1. Choose **File > Import > File** from the application menu and select the *.hdr* file. Alternatively, drag the file into the Project panel from your system file browser.
2. Click **Open**.
3. Drag the *.hdr* file from the **Project** panel to the bottom of the layer stack in the timeline.



Since the image is going to be used as a source for the light you will create, it doesn't need to be visible to the viewer in any way. Placing it at the very bottom of the layer stack completely obscures it from view.

4. Select the top layer in the composition layer stack—this should be the text layer—and then choose **Layer > New > Light** from the application menu.

The **Light Settings** dialog box appears, allowing you to make choices about what sort of light to create and its specific properties.

5. In the **Light Settings** dialog box, choose **Environment** from the **Light Type** menu and click **OK**.

A new light named Environment Light 1 is created and added as a new layer at the top of the layer stack.

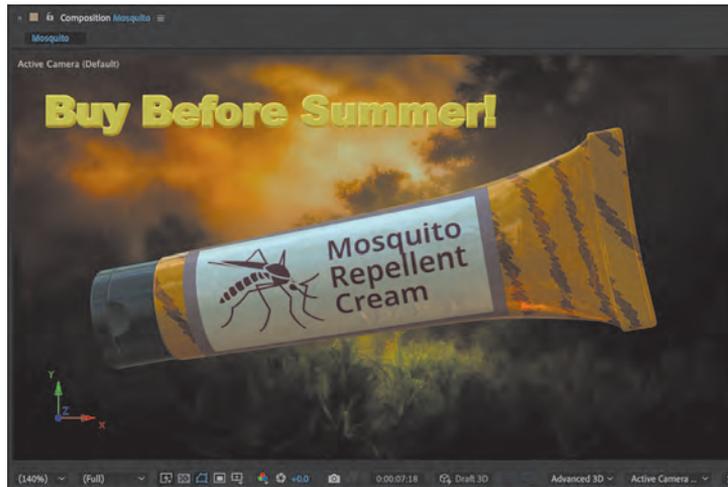
6. Open the layer properties and then the **Light Options** group.
7. Click the **Source** dropdown and select the HDRi image layer.



Because After Effects is aware that this layer contains HDRi data, it is presented as a source option for use in this light. Non-HDRi images will not appear in this drop-down.



The composition takes on a look that is much more overcast—as though beneath a vast jungle environment and potentially filled with mosquitoes.



Although the environment light has the intended effect on the look of the composition, you can add additional light to bring focus directly onto the centerpiece.

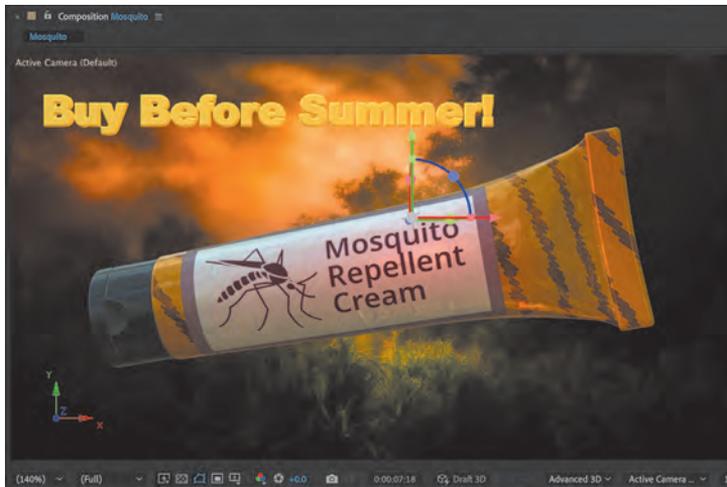
8. Select the topmost layer in the layer stack and choose **Layer > New > Light** from the application menu.

The **Light Settings** dialog box appears.

9. In the **Light Settings** dialog box, choose **Point** for the **Light Type** and enter **#F45922** (bright orange) for the **Color**.
10. Click **OK**.

A new point light is added to the composition, making the lighting more intense across the cream tube.





If desired, you can adjust the position of the point light and other properties to achieve the exact look you want.

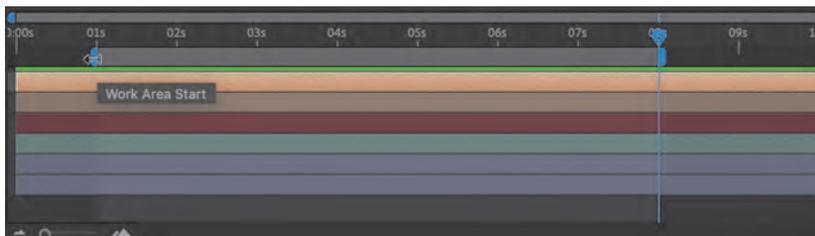
With the lighting taken care of, your 3D-motion design is complete.

Rendering the 3D Motion Design

Now that you've completed the composition, it's time to render it for distribution. When you created the composition, the duration was set to 10 seconds. Although this provides a good amount of wiggle room for designing motion, 10 seconds is a bit too lengthy for the final output. That's okay because After Effects includes mechanisms that allow you to render a specific segment of the composition.

You'll now set the work area to render and produce a distributable MP4 video file. By default, the work area is set to the entire duration of the composition. To set it to include a segment of the composition, you'll adjust the work area start and only end markers at the top of the timeline—located above the layers but below the time marks.

1. Locate the **Work Area Start** marker, at 0:00:00:00, and drag it to the **01s** mark. Similarly, locate the **Work Area End** marker, at 0:00:10:00, and drag it to the **08s** mark.



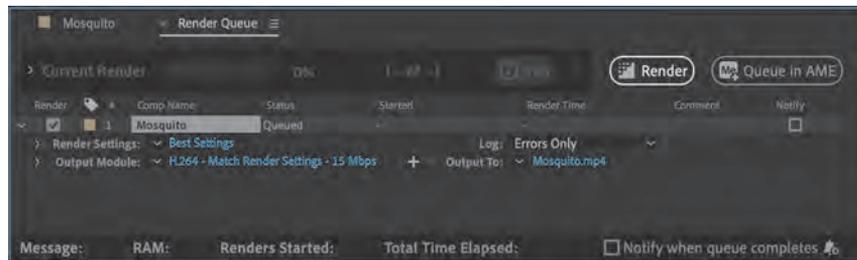
TIP You can also use keyboard shortcuts to set the marker definitions. Move the playhead to 01s and press B to set the Work Area Start marker; then move the playhead to 08s and press N to set the Work Area End marker. This is especially useful if you are not sure which markers to adjust, since there are a few along the timeline.

This effectively trims the resulting content. When rendering this composition, only the work area you've defined will be rendered into the final MP4 video.

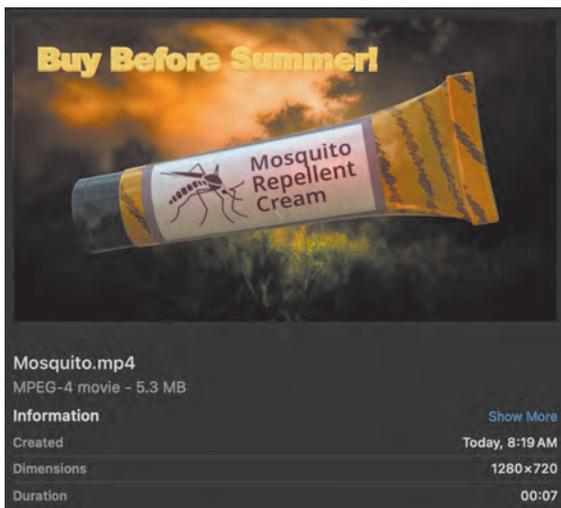
2. Be sure that the composition is selected in either the **Project** panel or the timeline, and choose **Composition > Add to Render Queue** from the application menu.

The render queue opens alongside the composition timeline, and a new job displays.

3. Ensure that **Output Module** is set to **H.264 – Match Render Settings – 15 Mbps** and set the **Output To** name and location.
4. Click the **Render** button.



The composition work area is rendered as an MP4 video file to the location and name you specified.



5. Locate the file on your computer.

The duration should be 7 seconds, since that is how you defined the work area in the composition timeline.

That's it! You've completed the project. You've used many skills and workflows to produce this 3D motion design across Adobe Express, Illustrator, Substance 3D Stager, Firefly, and After Effects. It is truly amazing what can be achieved through the combination of 2D and 3D software.

In the next chapter, we'll consider several additional workflows and related techniques.

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