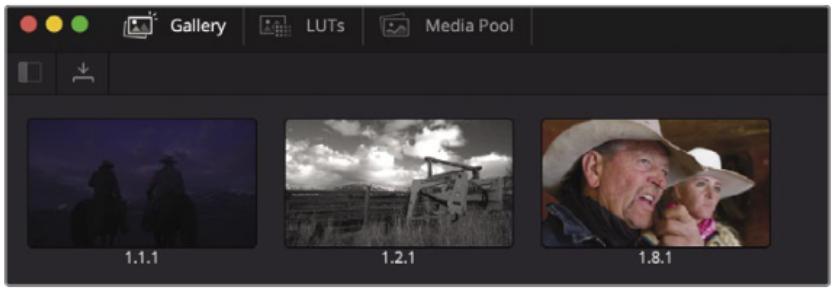
10 Right-click in the viewer and choose Grab Still to save it to the Gallery.



As you can see, there is no such thing as a single, definitive black-and-white version of your image. Even when the colors are completely desaturated, you can still control the prominence of individual RGB channels. This technique can result in some carefully-crafted, highly dynamic monochrome images.

Creating a Bleach Bypass

In this exercise, you'll create a bleach bypass look for the third clip in the timeline.

The bleach bypass process, sometimes called a *silver retention* or *ENR process*, is a low-saturation, high-contrast look. It stems from a film development process in which the bleaching stage was, well, bypassed. It can be seen in many television shows and films including *Reds*, *Saving Private Ryan*, and *Seven*.

1 While still on the second clip, select the node 01 BALANCE node and choose Edit > Copy or press Command-C (macOS) or Ctrl-C (Windows).

   You'll copy the BALANCED node from this second clip and paste it onto the third clip for a quick method of balancing our next shot.

2 Select the third clip in the timeline and choose Edit > Paste or press Command-V (macOS) or Ctrl-V (Windows).

3 Right-click node 01 and choose Add Node > Add Serial node or press Option-S (macOS) or Alt-S (Windows).

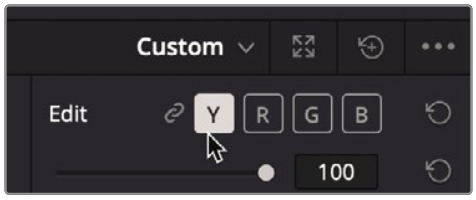
4 Label the new node BLEACH CONTRAST.

The bleach bypass look uses high contrast and low color saturation. So, you will start by increasing the contrast in the custom curve.

5 In the toolbar, click the Custom Curves button and choose Custom from the drop-down menu if the Custom Curve palette is still set to an HSL curve.

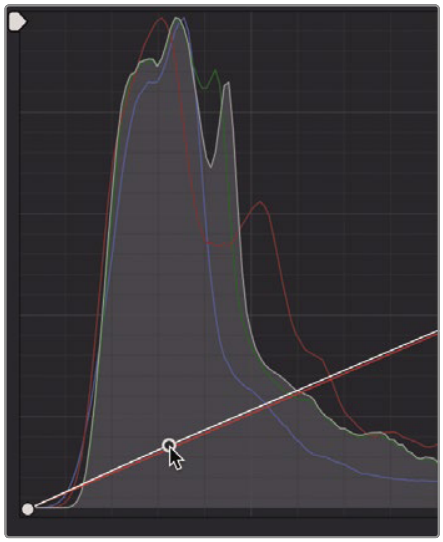
You can increase contrast using the Custom Curve palette by adding two control points to the curve: one point in the lower shadows area and one in the upper highlights.

6 Click the Y button to control only the luminance in this clip.



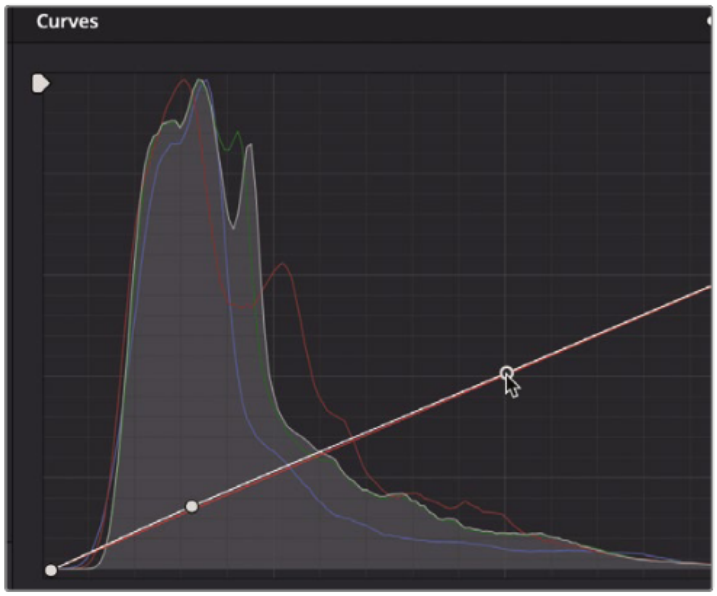
You can use the histogram in the Custom Curve editor to guide where you want to place the control points. Since this clip is fairly dark, most of the pixels are on the graph's shadow side.

7 Click the curve line over the large spike in the histogram to target the bulk of the shadows.



The highlights in this clip are not very bright, so they are still located on the graph's left side.

8 Click the curve line on the second large divider line from the left to target the highlights.



9 Drag down the lower control point until the shadows are darker and rich without being flat or crushed.

10 Drag up the upper control point to brighten the rancher's face and the light from the window, but be careful not to overexpose his face and lose detail.

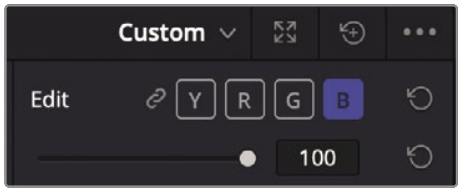
Now you can focus on the color of the bleach bypass look.

11 Right-click node 02 and choose Add Node > Add Serial node or press Option-S (macOS) or Alt-S (Windows).

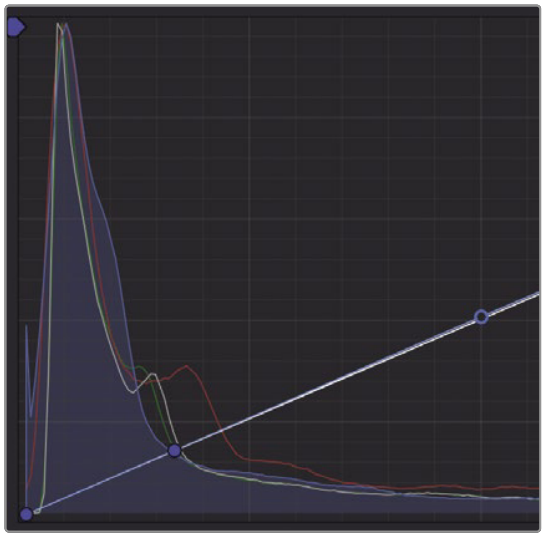
12 Label the new node BLEACH COLOR.

To make the shadows richer, you'll add some teal by introducing a bit of blue and green to a very narrow area of the shadows.

13 In the Custom Curves, click the B button to control only the blue curve.



14 Add two control points along the blue curve: the first where the line and the edge of the histogram meet, and the second on the second large vertical divider line.



The first control point will be used to increase the blue in the shadows, and the second control point is used to limit blue from increasing in the highlights.

15 Drag up the first control point you added to add some blue into the shadows.

16 In the Custom Curves, click the G button to control only the green curve and add two control points exactly as you did for the blue channel.

17 Increase the green until it falls slightly under the blue curve, and the shadows appear more teal than blue.

Lastly, we will lower the saturation just a bit since that is a signature part of a bleach bypass look.

18 In the adjustments under the primary controls, lower the saturation control to around 40.

This is another look we will save to our gallery.

19 Right-click in the viewer and choose Grab Still.

Moving both points into this S-shaped curve adds more contrast to your shot and produces a very somber bleached bypass look when combined with the low-saturated, teal shadows.

Understanding additive color

What color do you get when you mix all the colors of the rainbow?

Some people will think of how light refracts from a prism and say that every color combined produces white. Others pause and think about what happens when you mix all the colors in your paint palette, resulting in a colorless gray sludge.

However, the true answer depends on whether you are treating colors in an additive or subtractive sense. Subtractive colors are used in painting and print mediums. Additive color is used in light-based mediums such as sunlight, stage lights, or computer screens.

Because grading is performed using a computer screen, it uses an additive color system; however, when grading, you think about color design in a subtractive system.

For instance, in a subtractive color space, complementary colors produce aesthetically pleasing combinations, so you tend to create looks using these complementary colors. But when it comes to grading, complementary colors combined on an additive color wheel will neutralize one another. Adding blue to yellow will produce white (or some variety of gray). This is a vital principle to understand for color correction workflows.

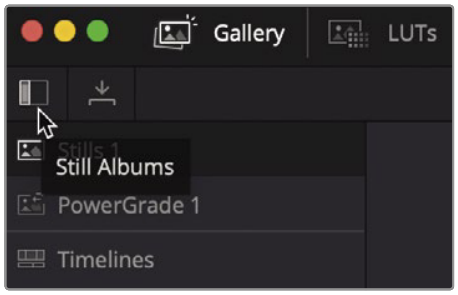
Saving Grades Across Projects

You will often want to access your previous grades when working on new projects.

A common reason could be that your work is episodic and requires a similar stylistic look from one episode to the next. Or, you might just like a specific grade you've created and want to use it again and again.

Previously, you used the stills gallery to save grades. You will now return to the gallery to understand how you can share grades across projects.

1 In the upper-left corner of the gallery, click the Still Albums icon.



> **TIP** If the resulting stills sidebar list is too narrow to read, drag the divider to expand the sidebar to the right.

In the list panel, you'll find a folder called PowerGrade 1. This folder can store stills like a regular gallery album, but the PowerGrade 1 folder is shared across all projects in your system.

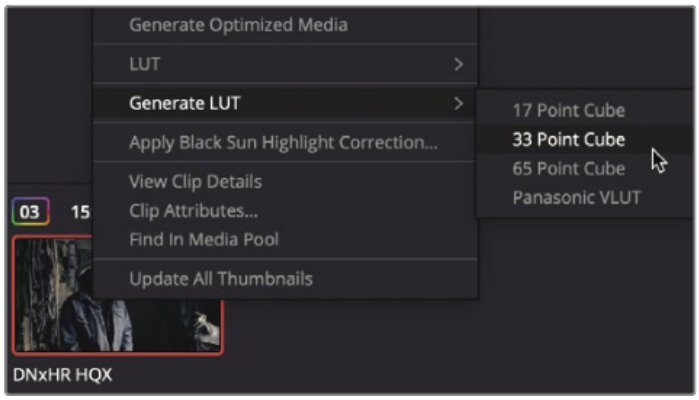
2 Drag a still from your stills album into the PowerGrade 1 album.

When you open your next project, the color page will already have this grade present in the PowerGrade1 album.

Saving LUTs

Although you can share stills with other DaVinci Resolve systems if you want to share a look with the crew on set or another application, you are limited to LUTs. So, as our last exercise in this chapter, you'll learn to save LUTS from DaVinci Resolve.

1 Right-click thumbnail 03 and choose Generate LUT > 33 Point Cube.



LUTs can be saved using 17, 33, and 65 points. The more points, the more accurate the LUT and the less prone it is to interpolation errors when converting from one color space to another. 33-point LUTs have been the standard for a while and are widely supported in cameras, displays, and applications. 65-point LUTs contain more precision but are also less compatible with other devices.

2 In the Save LUT As dialog, type the name BLEACH BYPASS LUT and save it to a location on your hard drive.

3 Click Save.

You have now generated a LUT based on the bleach bypass look you created.

With an understanding of the color page, you can now quickly assemble a variety of looks using your color-grading skills. You could also employ the use of LUTs or export your own to share with fellow collaborators. By saving stills of your grades as you progress, you will be able to quickly balance similar shots and create looks that you can reuse in different projects.

Lesson Review

1 How does applying the monochrome adjustment on the RGB Mixer differ from desaturating an image?

2 True or false? The Merge node combines color corrections in the color page.

3 Within DaVinci Resolve, how do you locate the directory where LUTs are stored on your hard drive?

4 In the color page, how do you add a node to the Node Editor?

5 True or false? In the color page, you can use the Custom Curves only to adjust contrast. You cannot adjust the white point or black point using these curves.

Answers

1. Desaturating an image equally lowers the saturation levels of red, green, and blue. When the RGB Mixer is set to Monochrome, the resulting black-and-white image is created by independently adjusting the luminance of the red, green, or blue channel, thereby yielding a more controllable black-and-white result.
2. False. The Merge node is available only in the Fusion page, and it is used to combine images.
3. To locate the directory where LUTs are stored, use the Open LUT folder in the Color Management section of the Project Settings.
4. To add a node in the color page, you can choose Color > Nodes > Add Serial node; right-click an existing node in the Node Editor, and choose Add Node > Add Serial node; or press the Option-S (macOS) or Alt-S (Windows) key.
5. False. You can adjust contrast as well as the white point and black point using the Custom Curves in the color page.

An Introduction to Audio Post and Sound Design

Chances are you've heard the adages "Seeing is believing" and "A picture is worth a thousand words." However, when it comes to motion pictures, both the visuals and soundtrack are equally important. In fact, a great soundtrack sells the onscreen illusion, manipulates emotions, transports the audience into the scene, and captivates their imagination. A lousy soundtrack, on the other hand, keeps the audience at a distance, distracts from the story, and draws attention to production flaws, performance issues, and plot holes.

Audio postproduction is much more than simply adjusting volume levels and mixing tracks. Transforming production sound into a powerful soundtrack requires time, technical skill, creative vision, and execution, as well as a full set of professional audio tools. The good news is that DaVinci Resolve includes the tools to create a professional soundtrack from start to finish. Before you dive into the following audio chapters, it's a good idea to understand the audio post-production process and workflow.

Keep in mind that many elements affect the workflow you'll use: the type of project, budget, format, length, deliverables, and distribution methods often dictate the size of the post audio team, amount of time, and tools available to get the job done. This introduction focuses on the fundamental postproduction audio processes necessary for both narrative and documentary style projects. Although the following pages explain the different jobs and stages in audio postproduction, having the Fairlight page built into DaVinci Resolve means you can perform the same steps on your projects with no additional crew or budget.

What Is Audio Postproduction?

Let's start with a few basic terms. *Audio postproduction* refers to the process of making a soundtrack for moving images. Notice the use of "moving images," which encompasses all

projects great and small from movie theaters to streaming videos and everything in between. A *soundtrack* is simply the audio that accompanies a finished project.

How your audience experiences the finished project is greatly influenced by the soundtrack. In fact, a well-executed soundtrack may go unnoticed for hours by the audience while they are immersed in the show. On the other hand, it takes only a few seconds of an amateurish or sloppy soundtrack to lose the audience not only from the story but possibly from the theater or to a different channel.

If you've ever recorded or watched a home movie, especially one shot at an exciting public place such as a beach or an amusement park, then you have firsthand experience with some of the inherent challenges in both recording and listening to natural production sound. All those excess environmental sounds and distractions create a need for audio postproduction to transform raw sound into successful soundtracks with clear dialogue, realistic effects, and lush acoustic soundscapes wrapped in an emotionally powerful score.

What Is the Audio Postproduction Workflow?

Since the advent of synced sound in motion pictures, the first rule of audio post has been, "Never start working on audio until the picture is locked." Locked suggests that there will be no more changes to the picture edit from this point forward.

In reality, changes always happen. Why does this matter? Because soundtracks must maintain a frame-accurate relationship with the picture to stay in sync. If they are off by as little as one or two frames, the sight and sound will be noticeably out of sync—a situation that is distracting, unprofessional, and likely to lose your audience.

In a traditional postproduction workflow, changes to the locked picture have a cascading snowball effect on audio post. But when you're working with DaVinci Resolve, which is the only professional editing software that includes a full digital audio workstation (DAW), no matter what editing changes are made, you can update your project immediately and efficiently. This gives you tremendous creative flexibility if you are working on your own, because you can go back and forth between editing picture, audio work, and color correction as often as needed.

For larger productions, DaVinci Resolve solves the issue of updating, transferring files to other systems, and conforming projects between editorial and audio post because editing and audio postproduction are done in the same project without ever leaving the application. Best of all, audio postproduction can start on the exact same timeline that the editor used so you have zero chance of losing frames or getting out of sync. Once audio post begins, the editor can use a duplicate timeline to make any new changes. Then the audio editor can easily merge the changes between timelines with DaVinci Resolve's powerful timeline comparison tool.

DaVinci Resolve has the audio tools needed for the highest quality audio postproduction and is ideal for small projects yet powerful enough for big Hollywood studios and broadcast productions to use as well. Whether you are working on your own or with a large postproduction team, you can easily migrate projects to a large facility for experienced audio sound designers and engineers to mix and master the soundtrack.

Now, let's break down the different phases and jobs in a traditional audio postproduction workflow. With DaVinci Resolve, you can perform all these steps as needed by yourself or with a team of audio professionals on your own projects.

Spotting the Soundtrack

A *spotting session* is when the supervising sound editor and the sound designer (often the same person) sit down with the director, editor, and composer to look for soundtrack elements that need to be added, fixed, or re-recorded. Notes from a spotting session are combined into a spotting list that details music cues, important sound effects, dialogue fixes, and additional audio notes.

DaVinci Resolve has simplified these spotting sessions with the timeline markers that you can use in either the edit page or Fairlight page. The index in the Edit and Fairlight pages serves as an interactive spotting list that not only includes information for each marker, but also moves the playhead to the selected marker's position in the timeline.

Production Dialogue Editing

Dialogue editing is the tedious, behind-the-scenes task of splitting dialogue into separate tracks, removing unwanted sounds, replacing individual words or phrases for clarity, and balancing separate clip audio levels for consistency. Why go to all that trouble? Because spoken words are as important to a soundtrack as the lead vocals in a hit song. Keep in mind that dialogue editors are responsible for all spoken words, including dialogue, narration, and voice-over.

Production dialogue editing starts with creating separate tracks for each character, and then moving all those dialogue clips into a specific track. This crucial step is necessary because each voice in a production is different and therefore must be processed individually with volume normalization, equalization, and effects specific to that voice.

Next, the dialogue editor cleans up the tracks and removes any unwanted human sounds (like tongue clicks and lip smacks). If a distracting sound can be physically cut out, this is the time to do it. Plug-ins and effects can help eliminate unwanted clicks, pops, and noise automatically, but be aware that any processing you add to a clip can affect a voice as well.

After the dialogue is cleaned up, the volume levels are balanced to be consistent on each dialogue track. If dialogue can't be used because it is damaged, noisy, or unclear, it must

be re-recorded or replaced with audio from other takes. The process of re-recording production dialogue is called *automatic dialogue replacement* (ADR), or *looping*.

Dialogue editing can be time consuming and laborious. Once again, DaVinci Resolve includes easy navigation, precision editing tools, and shortcuts that can simplify and speed up the process.

Sound Design and Sound Effects Editing

Once the dialogue editing is finished, the creative process begins! The sound designer's creative input to the soundtrack is similar to that of the director of photography (DP) for the picture. Sound designers are responsible for the overall acoustic experience for the audience. They also oversee the many individual tracks of sound and music that comprise the soundtrack. These audio tracks include dialogue, ambience, hard sound effects, and foley sounds (as defined below).

Not only do sound designers determine the aural illusion and mood of the soundtrack, they also create, record, and enhance sound elements that only exist in their imaginations. After all, many projects need sound effects that don't exist in the real world. Where do you go to record dragons, aliens, or zombies? Those sounds must be created or designed from scratch using a combination of real sounds, simulated sounds, and a lot of processing and effects.

While the sound designer determines the depth and detail of the sound effects tracks, the sound effects editor places each sound effect in corresponding tracks. Sound effects fall into four main categories:

- **Natural sound**, also known as *Nat sound* or *production sound*, is anything other than dialogue recorded by a microphone on location during the shoot.
- **Ambience**, or ambient sound, is the realistic conglomerate of sounds that establish a location, such as waves crashing rhythmically and seabirds chattering for remote seaside ambience.
- **Hard sound effects** are so named because they need to be physically synced to picture and are necessary for the story or scene. Hard sound effects are typically elements like door slams, car horns, and face slaps
- **Foley sound** consists of any character-driven sound effects caused by characters interacting with their onscreen environments. Foley sounds are named after Jack Foley, a legendary sound editor at Universal Studios, who originally developed the technique of recording reenactments on a stage. Foley sound replaces the original production audio for everything from fistfights to footsteps and clothing movement.

Audio editing tools in DaVinci Resolve's Fairlight page are designed specifically for the precision editing and placement required when editing sound effects. And DaVinci Resolve's clip speed changes are perfect for advanced sound design and pitch effects.

Music Editing

Music editing involves placing different music elements into the soundtrack to enhance the mood or story. All soundtrack music falls into one of two categories: music occurring within the scene that the characters can hear, so-called source or *diegetic music*; and *non-diegetic music* that is added in post for the benefit of the audience—e.g., the *background score*.

Diegetic music needs special attention to make sure that the volume levels, placement, effects, and presence fit the context of the scene.

Non-diegetic music added in postproduction for emotional effect or impact includes the score, stingers, and stabs. *Stingers* are singular notes or chords that build tension and suspense. *Stabs* are quick bursts of music that work like an exclamation point to draw attention to something or someone in the story or narration.

Enhancing and Sweetening Tracks

Once the dialogue tracks are edited and the sound effects and music added, it's time to make subtle improvements to the sound of each track so that they work in context with the other tracks in the mix. The tools used to improve the sound in a track are similar in many ways to the tools colorists use to improve individual shots within a scene. Because you are learning to use DaVinci Resolve, and color correction is an integral part of the postproduction process, it seems fitting to show the similarities between adjusting audio and color.

For all intents and purposes, this process could be called "audio correction." You manipulate four fundamental elements to enhance or "sweeten" audio tracks, so they work together as intended in the final mix: volume level, dynamics, equalization, and pan. DaVinci Resolve controls all four of these elements on every track without the need for additional plug-ins or patching.

- **Volume controls** are used to adjust the loudness of a track on a decibel scale and are similar to luminance (brightness) because both volume and luminance have strict broadcast standards and are usually the first thing the audience notices in each scene. Volume levels can be adjusted on each clip, track, and the main output, just as luminance (black and white levels) can be adjusted on individual clips, scenes, and output. In DaVinci Resolve, you can change the volume level of a clip in the Timeline or Inspector. Track volume is controlled by faders in the mixer. You can also change the volume levels over time using automation.
- **Dynamics controls** adjust the *dynamic range*, which is the difference between the loudest peaks and quietest moments in a track. A track's dynamic range is very similar to video contrast within a shot. A track with a high dynamic range has very loud and quiet elements within the track, such as a character whispering and then screaming in the same scene. A low dynamic range would be rather flat, such as a commercial

voiceover in which the volume level of the talent is very even from start to finish. If you have ever worked with a Waveform or Parade scope in the color page, controlling a track's dynamics is very similar to adjusting the white and black levels of a clip. Just think of white as the loudest you can get (-3 dB) and black as the quietest.

- The Fairlight page mixer includes the four most common dynamics controls in one easy-to use panel. The compressor is used to narrow the dynamic range by lowering the loudest peaks and bringing them closer to the lowest peaks. The expander, in contrast, expands the dynamic range to increase the difference between the loudest and quietest peaks. The limiter and gate both work as acoustic "brick walls" to limit sound from exceeding a target level (limiter) and to prevent sounds lower than a set threshold from being heard (gate).
- **Pan controls** place the sound of a track within a panoramic stereo field. These controls are used to compose the acoustic experience just as a cinematographer composes the visuals of a shot. Tracks can be precisely located anywhere from left to right to sound as if they come from an offscreen source, or somewhere within the frame. DaVinci Resolve includes advanced pan controls in both the edit page and Fairlight page with both 2D (stereo) and 3D sound placement for surround sound systems.
- **Equalization (EQ) controls** manipulate specific frequencies to enhance the overall sound, and are just like working with color, saturation, and hue in color correction. For example, the human voice is based on a fundamental frequency shared by millions, while the additional frequencies add tonal qualities to "color" the voice and make it unique and recognizable. The primary function of equalization is to lower frequencies that detract from the voice and boost the positive frequencies to improve the overall sound. The Fairlight page mixer includes a six-band *parametric equalizer* on each track, which is the perfect tool for enhancing and "sweetening" audio tracks.

Mixing and Mastering

The last step of audio post is mixing the tracks and mastering the output. If all the other steps were completed prior to the mix, the process is straightforward. The goal of mixing and mastering is to balance the levels coming from each track, so they sound good as a whole. This is accomplished by making subtle changes to the track levels or combining similar tracks into submixes to make them easier to control with one fader. The final master needs to sound great and meet delivery standards for loudness. Fortunately, the Fairlight page includes everything you need to mix tracks and loudness meters to make sure the levels are right on target.

Now that you understand some of the technical steps and creative tools that are essential in an audio postproduction workflow, you can dive in to the upcoming lessons and start putting them to use on your own projects!