2. First Steps

This chapter guides you through setting up AfterShot and taking the first steps to see how it works. We strongly recommend that you follow the "Setup Workflow" (p 5) section below to streamline the setup and learning process, and to avoid making choices now that will take time and effort to fix later.

2.1. Setup Workflow

Here are our recommendations for setting up AfterShot and adjusting it to your needs:

Install the software
: During the initial installation, just accept the defaults. We recommend that you not worry about setup options; at this stage you just need to get comfortable using AfterShot. You might want to change some installation choices later, after you've learned to work with the program effectively and have read the performance tuning sections in "Performance Tuning" (p 201).

Explore the interface
: Next, you need to find your way around the interface to learn how to access files and specify output options. See "Screen Setup" (p 8) for an introduction to the elements in the AfterShot interface and how to choose screen layout options.

Set up initial preferences
: See "Preferences" (p 12) for details about preferences that should be set up right away; others will need to be revisited after you feel more comfortable with the program.

Explore the tools
: Once you have learned where things are and have set your initial preferences, you can start to play with the image adjustment tools to see what they can do for you. The tools are described in "*AfterShot Tools*" (p 43).

Explore the output options
: After you've made some adjustments in one or two images, you will be ready to create your first output. Stick to outputting image files initially. Because of the quirks of color printing, printing opens up a whole new level of complexity. "Batch Queues" (p 105) and "*Showing Off* " (p 119) explain this in detail.

Adjust the image defaults
After you've experimented for awhile, you will know which defaults suit you best. Now is the time to make sure that your preferred defaults are applied automatically each time you load a new image. See "Default Image Adjustments" (p 99) for details.

Define your presets
The defaults set in the previous step will not cover everything. You will find that some image classes require different tweaks to the defaults every time, so it becomes more efficient to save these image class-specific tweaks as presets, as discussed in "Presets" (p 96).

Check out the plug-ins
A number of plug-ins are available for AfterShot. Some come pre-installed with AfterShot, while many more can be found using the links in the plug-in developer section of the support form. After exploring the available plug-ins, you might want to re-adjust your image defaults or presets to include one or more plug-ins. The plug-ins are discussed in "*Plug-ins*" (p 151).

Set up catalogs
After you feel comfortable working with AfterShot and have set your defaults, you should start to explore catalogs. You might want to experiment with some test catalogs before setting up your production catalogs. See "Working with Catalogs" (p 143).

In "Complete Workflow" (p 113) we show an example of a complete workflow from download to generated image.

2.2. Installation

Depending on the operating system, you might be asked where to install AfterShot. In general, you can accept the defaults. The first time you launch AfterShot, the program will ask where you want to keep the user folder and the catalogs. Do not worry about catalogs right now. It is more efficient to learn about AfterShot first before digging into the catalog details. The user folder is where AfterShot keeps the image cache, user-installed plug-ins, and many other user-specific items.

The default location for both the user folder and catalogs is in your home folder, but you are not obliged to keep them there. You can choose to put the catalogs on a separate hard disk or even on a networked drive. The location of the cache and database influence performance, which is discussed in "Performance Tuning" (p 201).

If you start an unregistered version of AfterShot, you will be prompted to provide a license key or you will see an offer to run in trial mode for 14 days. To ensure that your license information is entered correctly, you might want to copy & paste the license number from your registration email.

2.2.1. Mac OS

For Mac OS, AfterShot is distributed in a disk image file (DMG). After you have opened this disk image, the application AfterShot only needs to be copied to the */Applications* folder on your system. The default user folder is in *~/Library/Application Support/AfterShot*.

2.2.2. Windows

The Windows version of AfterShot comes as an executable installer file. Run this file to install the application. By default, the application will install itself into *%ProgramFiles% \Corel\Corel AfterShot Pro*. During installation, you can choose where you would like the application to reside. By default, the user folder that holds your personal setup will be located in *%USERPROFILE%\AppData\Local\AfterShotPro* and the catalogs will be stored in *%USERPROFILE%\My Documents\My Pictures\AfterShot Pro*. All of the default locations can be changed during installation or later.

Note: *By default, Windows will not show you the contents of the AppData Directory tree, as it is a "hidden" directory.*

2.2.3. Linux

On Linux, you either have an RPM or DEB file that can be installed using the standard package management tools of your distribution. It will be installed under */opt/AfterShotPro*.

Note: *The 64 bit DEB package is used to facilitate installation on 64 bit systems. It contains a 32 bit executable and you will need to install the 32 bit compatibility libraries to be able to run AfterShot.*

The installer should automatically install the appropriate desktop menu entries for the standard windowing environments (Gnome, XFE, KDE). You also can run AfterShot from the command line by executing */usr/bin/AfterShotPro*. After you start the program, it will offer to create the user folder under *~/.AfterShotPro*. The location of the user folder can be changed in the Preferences after installation. You can also use a symbolic link if you want to store the actual data elsewhere. The default catalog is set up under *~/Pictures/AfterShotPro*.

2.3. Screen Setup

The initial screen layout (see figure 2.1 "The screen elements") displays three major segments below the top menu bar. On the left is the browse panel, which holds the library browser, file browser, and output queue definitions for files and printers; in the center are the thumbnail panel on the top and the preview panel on the bottom; and on the right is the tools panel.

Figure 2.1. The screen elements

The browser on the left side shows three tabs: Library, File System and Output.

Library

The library view is the browser interface to the AfterShot catalogs and also contains the search field. All catalogs that are open are displayed in the top half. The search function not only searches the selected catalog, it also searches all other catalogs that are currently open. Below the catalogs view, the metadata browser enables you to make selections based on metadata inside the images. For instance, you can browse all photos shot with a Nikon D700 and 135mm lens at aperture F5.6 using flash. This is discussed in "Searching" (p 146).

Using the library browser requires some planning, which should be done after you've learned the basics of the program.

File System

In file system view, you see all your available folders, including local folders, external hard disks, and network folders — anything that is visible as a file folder on your system.

Note: *While changes in the file system that you perform using AfterShot automatically update in the file system view, this is not true of changes in the file system that are performed outside AfterShot while AfterShot is running. You must refresh the file system view using the context (right-click) menu in order to see these changes.*

Note: *AfterShot does not display files and folders that are considered hidden by the conventions of the operating system.*

Output

The output view contains your batch queue definitions, both for file and printing output. The output batch queues are a key feature for using AfterShot in an efficient manner, as they can process your images in the background while you continue to work on other images. See "Batch Queues" (p 105) for more details. As the queues can also be used for copying, image download is also performed through the queues.

The center top area of the screen contains your "filmroll" and shows the thumbnails of every image. The selected thumbnail image is displayed in the preview panel at the center of the screen.

The image editing tools reside in the right panel. The tools are arranged into logical tabs, but you can pin each tool to the top, enabling you to keep your favorite tools within reach all the time. You will also find the plug-ins in the same area. If you have many plug-ins, they will automatically overflow to a new tab. The tool tabs can be rearranged to fit your needs, see "Tool tab customization" (p 210).

afx: I typically pin the Presets title bar and the Curves tool.

Marco: I hardly ever pin any tools unless I need to do a lot of work using tools spread across several tabs and I can't just simply copy-paste settings. Then I'll pin tools (e.g., Curves, Noise Ninja, and the Nostalgia plug-in). For me, pinning tools usually is a temporary measure.

The bar at the top of the screen is always visible. The left area of the bar contains the controls for sorting, filtering and tagging your images. Filtering can be done on a number of items, all of them are easily ac-

cessible from the top bar. The right side of the bar contains a number of unrelated tools, 

starting with the Layer panel. This provides quick and easy access to layers and regions for regional editing of images. Next to the Layer panel is the Slideshow shortcut, which opens the Slideshow settings dialog. The next buttons are all screen or view related items to control the panel layout, toggle the Magnifier tool and toggle Full Screen mode.

Apart from using the view control buttons, keyboard shortcuts allow you to adjust the screen display as follows:

Shortcut	**Action**
<ALT+Return>	Toggle full screen mode ***Note:** If you switch to full screen mode, the frame that your operating system or window manager normally draws around the AfterShot window vanishes. You must use AfterShot controls to switch back (just hit <ALT+Return> again).*
<CTRL+L>	Toggle orientation of the thumbnail strip
<F6>	Switch off thumbnail strip and view the image only
<F7>	Switch on combined thumbnail strip and image view
<F8>	Switch off image preview and show thumbnails only

The shortcuts listed above are the default shortcuts; they can be changed on the Keyboard Preferences page.

Screen layout is a matter of personal preference. Use the setup that best suits your needs.

For very small screens, AfterShot includes an option on the Display Preferences page to enable small fonts, so that the program will be usable on a very small screen, for example, on a Netbook.

To optimize use of your screen, the left and right panels can be collapsed, either explicitly or automatically; the relevant options are explained below.

If hiding the left and right panels still doesn't free up enough screen space, you can hide the thumbnail panel too, leaving just one big image area for your editing enjoyment.

The file browser works in the same way as most file browsers. If you navigate to a directory that contains images, the thumbnail panel will fill with the images in that directory.

Figure 2.2. The information toolbar

At the bottom of the screen is the information bar. The left area shows how many images are selected followed by the active folder and the filename of the active (selected) image. The right area shows detailed information on the area that is underneath the mouse pointer. This information consists of the color RGB and Luminance values and the corresponding X,Y coordinates within that image.

When the colorpatch between the X,Y co-ordinates and RGB values is clicked, the user can quickly change the sample size of the area under the pointer as well as the display of the RGB values (8-bit, 16-bit or as percentage). Additionally, the Gamma can be selected (values are Linear 1.0 and sRGB 2.2).

The soft proof setting is accessible from the information bar as well. This gives quick access to the profiles configured in the preferences. At the far right are the toggles for multi-image view, zoom lock and highlight warnings.

Figure 2.3. The image tools

The image tools are inside the image preview area. In order these are the Pan tool, Click White balance tool, Crop tool and Straightening tool. These four tools are always active and accessible from the image preview area. The Region Cursor tool that comes next is only available when a Layer is active.

On the right are the 1:1 zoom and zoom to fit toggles followed by the zoom slider.

In *File* → *Preferences* → *General*, you can set an option to automatically collapse the browse and tools panels when not in use. They will come back when you hover over the margin for a specified duration. Depending on your personal habits, this can be very useful or very annoying.

The tool tab layout can also be modified. This is discussed in "Tool tab customization" (p 210).

need a 16-bit TIFF file, press the <*T*> key. Pressing the <*8*> key creates an 8-bit TIFF. Pressing the <*J*> key gives you a down-scaled JPEG.

If the generated images do not look like the image preview in AfterShot, make sure you are viewing the images in a color-managed environment (see "*Color Management*" (p 27)) with a viewer that does not produce lots of artifacts while downsampling (a few recommendations are given in "Image Viewers" (p 223)). These two factors can easily lead to perceived problems if a relatively crude viewer, such as the Windows Image Viewer, is used to view the generated image.

2.6. First Image Adjustments

Now that you have developed your first image from RAW to JPEG with the shipped defaults, let's play with the most important AfterShot tools, so that you can start to get comfortable with them.

Note: *Be careful with the sliders; it is easy to "overcook" images when starting out.*

Most of the tools that you will typically need are found in the Basic Adjustments tool.

AutoLevel

When you enable the AutoLevel tool, the histogram of the image is spread to the maximum extent, so blacks become darker and light parts become lighter. For many images that are a bit dull due to imperfect exposure, AutoLevel is a quick way to beef them up. However, enabling Autolevel can easily result in too many clipped highlights, and image adjustments that change the statistics (like crop) will change the effect of AutoLevel, making it a bit unpredictable. The two text fields next to the Autolevel label define the clipping points for black and white as a percentage of the total image.

Note: *Using the Auto Contrast button on the Curves tool is a good alternative to enabling the AutoLevel tool that does not continuously auto-adjust the image.*

Perfectly Clear

Perfectly Clear provides a quick automatic way to adjust images according to some "secret sauce". Sometimes the results look quite nice, but other times it overcooks the image way too much.

We suggest not using Perfectly Clear if you want to be in control of your images. Everything it does can be achieved by other means

and you'll know what happened and why, making the result predictable and repeatable.

White Balance

The dropdown list allows you to toggle pre-defined color temperatures. Next to the dropdown list is a color picker to read off a (supposedly) neutral value from the image. Clicking on a white shirt, napkin, or even teeth can sometimes be useful to get a better starting point for the correct white balance after the fact.

Temp

The Temp slider allows quick adjustments of the color temperature of the image. After you move the Temp slider, you will notice that the dropdown list above changes to "Custom". If you want to modify the tint, as well as the base color temperature, you must use the "White Balance" (p 44) tool on the Color tab.

Straighten

The Straighten slider can be used to straighten the image (for all of us who can't hold a cameras straight ;-)). The value next to the slider shows the image tilt in degrees. Instead of using this slider, it is usually easier to use the Straightening cursor, which is activated by the button with the tilted image on the bottom button bar or by pressing the <*S*> key. Tilting or straightening the image will result in grey wedges on the sides of the image that must be cropped away. This can be accomplished by first clicking on the Crop cursor (or using the <*C*> hotkey), and then clicking in the image.

Exposure

You can use the Exposure tool to adjust the exposure of the image by ± 3 stops.

Highlights

The Highlights slider controls highlight recovery. The nemesis of digital imaging is blown exposures with no details. Depending on how badly blown the highlight parts are, highlight recovery can be used to recover some details from RAW files, but not from processed files. However, the Highlights slider can't perform magic. In the Exposure tool on the Tone tab, you can further adjust the highlight recovery algorithm which sometimes helps for tricky images.

Fill Light

You learned to expose for the highlights with your DSLR to ensure that they are not blown out. However, sometimes the shadows suffer for it and become too dark, losing detail. Fill light is an easy

way to counter that shortcoming. It lightens up the darker parts of the image, leaving the lighter parts alone. The threshold for this dark/light separation can be adjusted in the Exposure tool on the Detail tab using the Range slider. The shipped default is a bit high when you want to focus on the dark parts.

Blacks
This slider allows you to adjust the black point, effectively changing the contrast and luminance of the darker parts of an image. Some people prefer this over using the Curves tool and the Fill Light slider.

Contrast
Not surprisingly, the Contrast slider adjusts contrast! Using the Curves tool is more flexible, once you are used to it.

Saturation
The Saturation setting changes saturation, which is usually not pretty when increased on images that already have saturated parts. Vibrance is much more suitable for this.

Vibrance
As an alternative to using the Saturation slider, the Vibrance slider can increase the saturation of the parts of the image that are not yet quite saturated, leaving the saturated parts alone. This is much nicer than the basic Saturation slider, especially for skin tones.

Hue
You can shift the hue of the image around the color circle with this control. Most of the time this is a bit of a coarse adjustment, and other tools on the Color tab are better suited to the task.

Sharpening
RAW files need some sharpening to counter the effect of de-Bayering, so this is usually only set to 0 for already-processed files or when you need to work with unsharpened files.

Note: *You cannot judge sharpness perfectly in the preview window unless you have zoomed in to 100% or use the magnifier.*

Noise Ninja
Noise Ninja is a third-party product that is integrated into AfterShot. This slider controls basic noise reduction with the built-in Noise Ninja. The Detail tab allows more detailed noise reduction control using Noise Ninja Registered if you own a Noise Ninja license.

RAW Noise
: This noise reduction works on the raw sensor data very early in the pipeline. Its effects are usually milder than those of Noise Ninja, but in combination with Noise Ninja it is very useful for the small noisy sensors of Point & Shoot cameras.

Keywords
: This text field allows you to enter keywords for the image without having to switch to the Metadata tool. For any serious work with metadata, you will probably just switch to the Metadata tool.

All sliders can be controlled by either dragging them or hovering above them with the mouse and using the scroll wheel. Clicking on the slider or using the mouse wheel will increment or decrement the values by 0.1 or 10, depending on the range of values used for the specific control.

Double-clicking on the slider or the slider label resets the slider.

2.7. First Look at Batch Queues

AfterShot is a workflow tool, geared to process large numbers of images in an efficient fashion. Although there is a Save As function in the Edit menu, this is not the recommended way to generate output. The batch system is preferred.

Two types of output queues can be used: batch queues and print queues. Batch queues can be used to generate JPEG or TIFF files, copy/download files, generate web galleries, or import files into the library. Print queues can be used to print on a real printer or generate PDF files.

Why batch queues? First, they run in the background while you work in the foreground. On a reasonably modern multicore machine, a single batch queue running in the background will not impact your work in the foreground at all. The more standardized your output needs, the better they can be served by batch queues that use patterns to generate output file names and can run presets, as well as arbitrary commands on output generation. You can send selected images to a queue by pressing the hotkey of the queue, by dragging the images to the queue, or by right-clicking on a folder and sending the complete folder to the queue. AfterShot comes with a pre-defined set of queues that you can adjust to your needs, or you can add your own queues. Let's have a quick look at a the default JPEG Full Size queue (see figure 2.6 "The default JPEG Full Size queue").

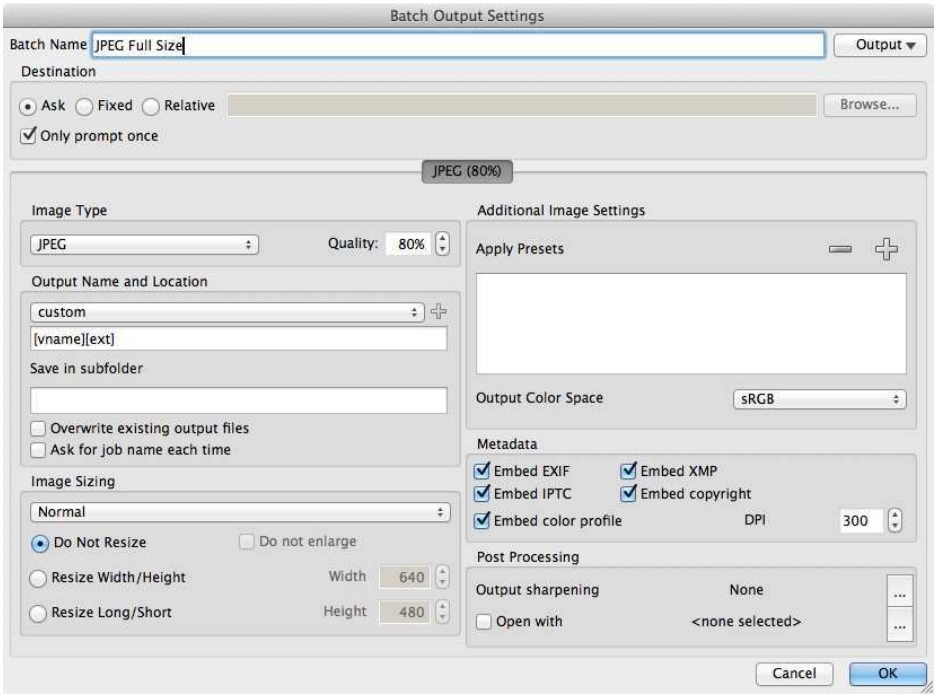


Figure 2.6. The default JPEG Full Size queue

The output destination is not specified. Instead, the queue is set up to ask for the destination at the first run of a session. If you always output to the same directory, you could specify it here and click on fixed or relative ("relative" is relative to the source image directory).

You can see that the image type is set to JPEG with a quality of 80%. Depending on how you want to use the file, you might want to increase the quality.

The output name is specified as `[vname][ext]`, which usually results in the output image having the same name as the input image plus the appropriate extension, so *Image1.nef* generates *Image1.jpg*. The output file name is specified using rename variables (see "Renaming Schemes" (p 111)). The "Save in subfolder" field becomes interesting when you want to specify a location relative to the folder specified on top. Later chapters will explore this and other more advanced uses of the queues.

Under image sizing, you can specify various resize options, but they are not used for a full-size queue. When you want to output smaller images (for example, at max 800 pixels wide to send as email), you

could activate “Resize Long/Short” and specify 800 for each dimension. The output image will then be scaled to 800 pixels on the longest side and the other side will be resized to keep the aspect ratio. On the right side, you can specify presets that are applied to the image when the queue is run. This is useful to run a watermarking plug-in, for example. You can also see a dropdown box for the output color space. For JPEGs, the obvious choice is sRGB (you can find more information on this issue in "*Color Management*" (p 27)).

Below that, you can specify what type of metadata is included. For standard JPEGs in sRGB, the color profile is not always needed (but is still recommended), as this is the default assumed by most applications. For anything else, be sure to activate this option and at least include copyright information.

Output sharpening (in Post Processing) is useful if you output images in reduced sizes, in order to counter the blurring introduced by down-sampling.

The "Open with" function can be used to run external scripts on the generated file, for example, to immediately open the file in a pixel editor for fine retouching or to run a program that copies the image to an online gallery.

Revisiting the "Save As" function, you can see that it is just a specific batch queue, not a “Save As” function as you might know it from other programs.

"Batch Queues" (p 105) explains more details about batch queues. For your first experiments, the standard queues should be sufficient. In the long run, you will want to create your own queues that are tailored to your specific needs.

The setup of download queues is explained in "How Do I Organize My Images?" (p 135).

Print queues are similar to batch queues. However, instead of generating file output (unless it is a PDF), the printer system of the machine you are working on is triggered to generate output. Printing is a rather complicated topic and is discussed in "Printing Your Own Images" (p 126).

2.8. AfterShot vs. Camera Settings

When people who previously used JPEGs straight from the camera or used the RAW converter that came from the camera's manufacturer work with a third-party converter like AfterShot for the first time, they

are sometimes disappointed with the output. They often find that the images look a bit bland compared to what they are used to seeing. This is easily understood and remedied.

First, AfterShot does not use any in-camera settings for the image apart from the white balance setting, so the image optimizations set in your camera are not applied. Only the converters from the camera manufacturer (either the in-camera JPEG engine or the supplied RAW converter) know how to interpret and apply these settings.

Second, AfterShot ships with relatively neutral default settings. You adjust them to your needs and save the default settings that fit your style. After that, your images developed by AfterShot should be superior to what you get directly from the camera.

AfterShot provides the tools you need to create the images you want, whatever that means to you. As AfterShot does not modify the RAW files themselves, the only thing lost in experimenting with settings and tools is your time. Playing with them is part of the learning process to get the most out of your new tool. Hopefully, this book will make your experimentation more efficient.

If you are used to in-camera JPEGs, when you start using AfterShot, you might want to set your camera to record RAW+JPEG. This will provide a reference point, so that you can compare the result of your experimental efforts to the standard in-camera result. However, instead of comparing them one to one and trying to match the JPEG with the RAW, try to adjust the RAW files without looking at the JPEGs, and then compare later on.

Note: *AfterShot will usually give you more pixels than the converter from the camera manufacturer.*

3. Color Management

Independent of AfterShot, anyone working with digital images must understand color management, so we'll briefly review color management, working space color profile choice, and monitor calibration before showing how all of this is applied in AfterShot.

3.1. Understanding Color Management

Color management is about color accuracy and color fidelity. It is the process of managing color transformation between devices.

The bits in your digital image have no meaning unless the organization of the bits and their interpretation is properly specified. Each device used to record (cameras, scanners) or display (monitors, printers) an image has its own color characteristics, which can be described with color profiles. When generating an image either using a camera or scanner, the software in the device (for a camera that shoots JPEG) or later in the conversion software (in our case, AfterShot) must know the color characteristics of the device and convert the device-specific color interpretation (with the help of a device color profile) to a standard one (a working color space). After you have a digital image with known color properties, color management-aware applications can translate it to any output device and render it accurately. Proper color management using profiles makes it a lot easier to achieve consistent results than manually tweaking images for each device involved.

The simplified drawing in figure 3.1 "AfterShot color management overview" shows various points at which AfterShot performs a color transformation or applies a color profile:

1. The RAW image from the camera is read and decoded, and a profile is used to interpret the color (it is actually more than a profile, but for the sake of simplicity, let's just call it a profile).
2. The image is converted from the native camera color profile to the working space color profile, which is used to define the colors AfterShot can work on with the image. AfterShot uses a linear (instead of Gamma 1.8) variant of ProPhoto RGB.
3. The image is converted from the working space color profile to the color profile of the monitor for display.
4. This might include conversion to the proofing profile for simulating output devices when soft proofing is active.

5. The image is converted to the output color space when saved as a file; otherwise, it is kept in the working color space.

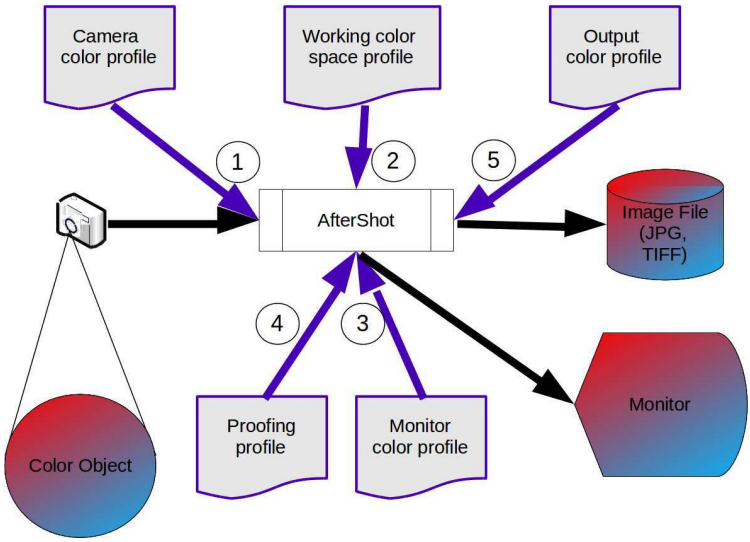


Figure 3.1. AfterShot color management overview

In addition, when printing directly from AfterShot, yet another conversion to the printer color profile (actually the ink and paper profile) is performed, similar to displaying on the monitor.

Any color management-aware program will read files saved by AfterShot with a color profile, convert to its working color space profile when needed, and render it correctly using the monitor profile. Using these files in non-color managed applications, like your average web browser, deserves special care. See chapter "Showing Images Online" (p 119) for information about publishing images on the web, where everything is assumed to be in a common small color space (sRGB).

If any of the profiles in this process are wrong or the appropriate conversion is not performed, the resulting colors will not be accurate, often leading to either over-saturated or washed-out images, or heavy color casts. Converting from one color profile to another will try to keep the visual appearance of an image (more or less accurately, depending on the methods used). In contrast, assigning or assuming a color space profile will not convert the data but will only indicate how the data is to be interpreted. Therefore, assigning a profile that does not match the contents will result in wrong rendering of the image.

Figure 3.2. Color management mismatch

In figure 3.2 "Color management mismatch", you can see what happens when the color profile assumption and the reality do not match. Three of the images were generated by assigning profiles instead of converting, generating a mismatch. The top left image uses the ProPhoto RGB color profile and is properly converted to the monitor profile. This is the original image on which the other images are based. The top right image also is a ProPhoto RGB image but it has been assigned the monitor profile; the bottom left image has been assigned Adobe RGB; and the bottom right image has been assigned sRGB. Notice the differences between the properly-converted image from ProPhoto RGB vs. those that have other profiles assigned but have not been converted.

Note: *What you see in the e-book is actually a simulation of the effect, as all the images in this e-book are converted to sRGB, but it should be clear that assignment of a profile or assuming the wrong profile results in incorrect rendering.*

Note: *The example has no artificially-exaggerated colors, so depending on your viewing conditions, the differences might be more or less visible for you. The image in the top left corner should be significantly different from the others; the differences between the other images are not as pronounced.*

3.2. Device Profiling and Calibration

AfterShot users do not need to calibrate their cameras. This is done by Corel, and the first conversion happens under the hood. However, you do need to calibrate your output devices.

Working with an uncalibrated screen might be OK if you have complete control over your images from camera to printer, tweak everything yourself, and have plenty of time to do so. Most photographers interact with others, though, and if you expect to be able to compare colors or get accurate colors from a print service, your screen must be calibrated or at least profiled to give you a fixed reference point.

Profiling means reading the device characteristics and generating a profile for imaging applications, so that they know how the device interprets color information. Calibration means adjusting the device to match a specific reference point as closely as possible. After a screen has been calibrated, a profile is generated which records the exact screen characteristics after calibration. This profile is then used to tell applications about the monitor characteristics.

Screen profiling devices are available starting at just over $100. You need to get one to know the characteristics of your screen. Starting at about $200, you can get a device that allows you to calibrate your screen to a specific reference point, instead of just telling your imaging applications about its characteristics. Depending on the screen type and age, you will need to run the calibration anywhere from weekly to monthly, as monitors age and slowly change their output characteristics. If you are thinking about purchasing a new screen, instead of buying a high-end screen and having no money left for a calibration device, buy both a slightly cheaper screen and a calibration device. This combination will give you more accurate results.

Calibration software lets you set target parameters for your screen and tells you about the luminance of your setup. A luminance of 85 to 120cd/m² and a color temperature of 6500K (or 5500K) are recommended. Gamma should be 2.2 in most cases. Note that today's TFT screens are much brighter than 120cd/m² by default and need to be turned down quite a bit. Cheaper screens might only go down to about 120cd/m². A monitor luminance around 100cd/m² assumes a relatively dim workplace. Working by daylight with constantly changing light coming in through the windows is not recommended for accurate color work. If your output is primarily intended for print, staying under 100cd/m² is recommended. If your output Is more directed for web viewing, 120cd/m² is a better choice.

A quick way to verify the basic soundness of your display is by using a test chart background. At the web site of the European Color Initiative you can find screen background images that are very helpful:

http://www.eci.org/doku.php?id=en:downloads

If you print your images yourself, your ink/paper combination needs to be profiled as well. For some popular combinations, manufacturers make canned profiles available that already deliver good results. For others, or if you aim for perfection, you need custom profiles. In contrast to screen calibration devices, printer profiling tools can be quite costly. Fortunately, service bureaus (and often also camera clubs) will sell you the profiling of a specific combination for quite reasonable fees (usually less than $50 per profile).

Note: *As it is not possible in AfterShot to print without a profile, you cannot print test charts for print profiling from within AfterShot. The print profiling utility should have a tool to do that.*

3.3. Working Color Space Profile

In figure 3.1 "AfterShot color management overview", point 2 shows a working color space profile. AfterShot uses its own linear variant of ProPhoto RGB. In contrast to its predecessor - Bibble - the working color space in Aftershot cannot be changed, which removes a choice most users are not prepared to make and ensures a consistent base for plug-in authors and shareable presets. However, there are even more important reasons to use a wide working space like ProPhotoRGB for a RAW converter.

When you work in AfterShot, all color adjustments are performed on 16-bit/channel data, giving you 48 bits per pixel in total for your working space. DSLRs usually deliver 12 or more bits per channel in the RAW files that fit nicely into the data format used by AfterShot.

The working color space profile defines how the bits per channel are used to define the colors, limiting the range of displayable colors and nuances. Some working color spaces are defined to be the least common denominator for many devices, limiting the maximum gamut of the primary colors. Those color spaces will never allow you to see the full gamut of the captured image. Wide color spaces can encompass a wider gamut, allowing more saturated colors. Really wide color spaces can contain colors that can neither be displayed on the monitor nor printed. However, in contrast to narrow spaces, you can convert down to a narrower device space and get an approximation of the extreme colors, whereas when working with a small working color space, those

colors are permanently lost (or to be more precise, fixed to the initial approximation) before you even start working on the image. Think of the gamut as a pipe with semi-permeable walls. Anything that gets outside through the walls of the pipe is lost forever (see figure 3.3 "The gamut pipe").

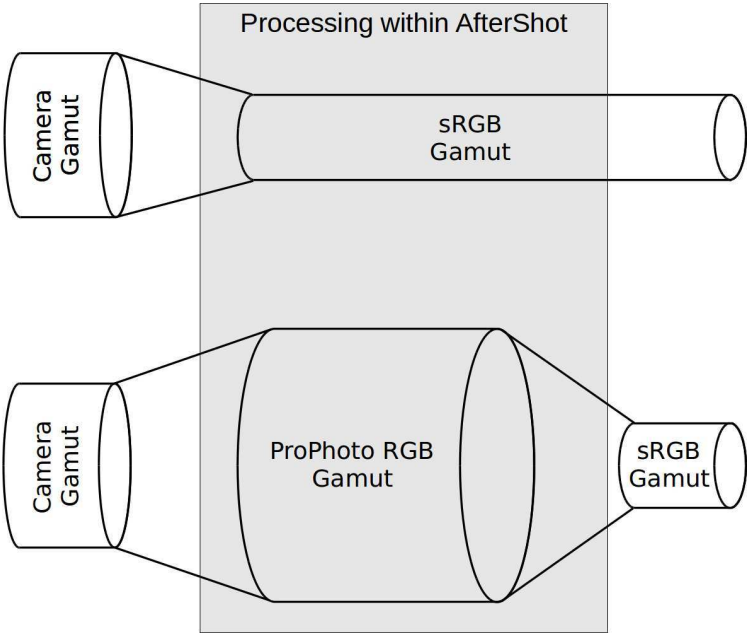


Figure 3.3. The gamut pipe

Narrow working color spaces that clip off the strongly saturated ends, like Adobe RGB or sRGB, are not designed to make optimum use of 16 bits per channel and, therefore, do not allow you to utilize all of what the 16 bits per channel operations could do or what the cameras provide. All forms of image manipulation are mathematical operations on the image data. The wider the space in which these operations take place, the less clipping at the end of the available space is performed, as the boundaries are wide enough. Therefore, from a pure image quality standpoint, it seems like a wide working color space profile like ProPhoto RGB or Wide Gamut RGB is the optimal choice. However, keep in mind that as soon as the images leave your editing process and go to the printer or online display, they usually get converted to JPEG with only 8 bits per channel. The 16 bits per channel data needs to be squeezed into an 8 bits per channel container, and there might be some information loss. This is why some people argue that it is not

really helpful to work in a wide color space that fully utilizes the 16 bits per channel if the data must later be scaled down.

The choice basically boils down to working in a small color space, risking clipping and limited colors while working and never being able to see them; or working in a wide space and then scaling down, risking loss at the final conversion. In contrast to clipping while editing, conversion is a controlled process that tries to maintain the look of the image if at all possible, therefore resulting in higher color fidelity.

As the cameras already deliver more than 8 bits per channel and have a gamut that is much wider than Adobe RGB in most cases, scaling down happens somewhere in the image handling process anyway. Logic seems to dictate that working in a wide space until the last minute offers a better chance of not losing subtle image information while performing image adjustments. Therefore, ProPhoto RGB is used by those who want maximum color quality. There are other wide spaces, for example, Wide Gamut RGB. The only potential drawback of standard ProPhoto RGB is that it uses a Gamma of 1.8. However, as AfterShot uses linear ProPhoto RGB, the issues triggered by the relatively exotic Gamma of 1.8 are avoided.

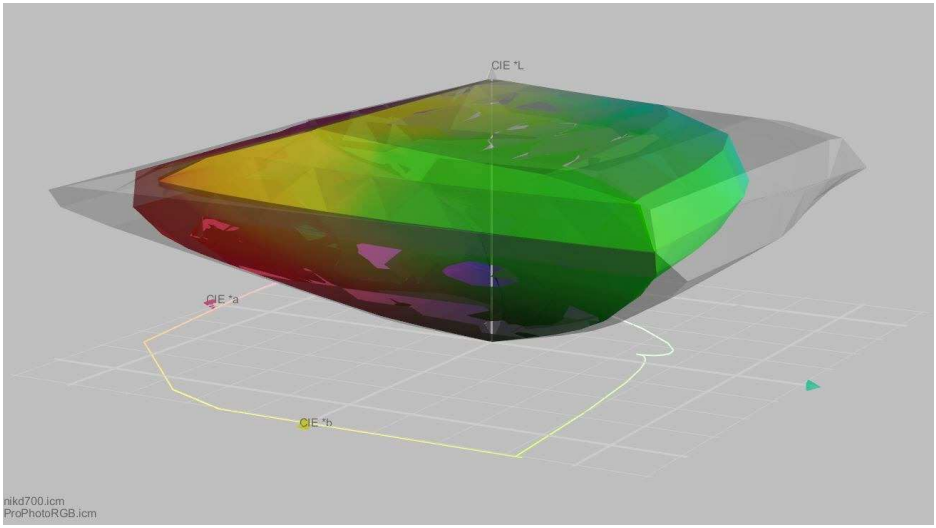


Figure 3.4. Gamut comparison: D700 vs. ProPhoto RGB

To give you a visual reference point, the gamut comparison graphs show you the difference between various color spaces in 3D models (the 2D horseshoe diagrams that are often used will not show you the

true difference and are quite misleading in comparing gamuts of color spaces).

In figure 3.4 "Gamut comparison: D700 vs. ProPhoto RGB", you can see a comparison of the gamut of a Nikon D700 vs. the ProPhoto RGB working space. The working space is shown in grey, the camera gamut in color. Notice that ProPhoto RGB pretty much encompasses the whole camera gamut.

Now let's compare this with a graph of sRGB vs. the camera gamut:

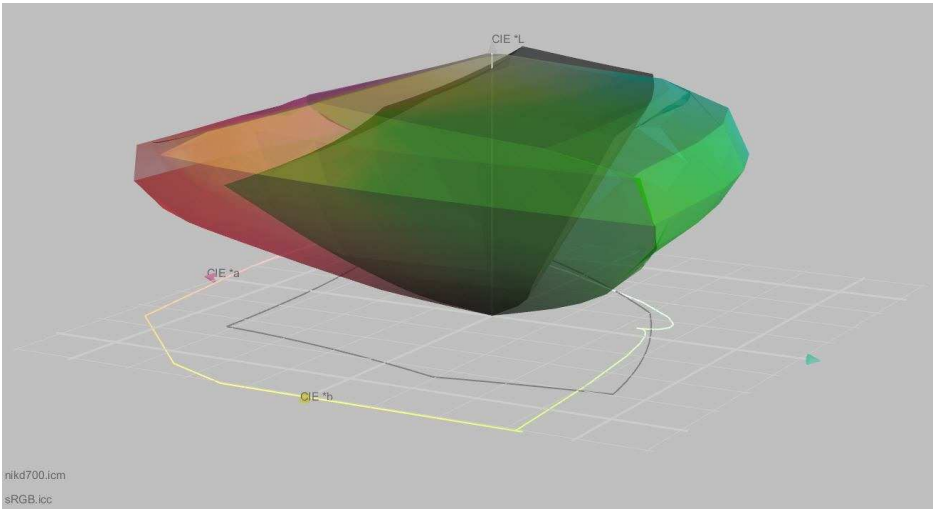


Figure 3.5. Gamut comparison: D700 vs. sRGB

In figure 3.5 "Gamut comparison: D700 vs. sRGB", the camera gamut again is shown in color. The gamut of sRGB is displayed in dark grey, the blob within the colored area. You can easily see how much wider the camera gamut is when compared to the gamut of sRGB.

Note: *The images above were generated with ICC Examin (http://www.behrmann.name/), a 3D profile visualization tool from Kai-Uwe Behrmann.*

3.4. AfterShot Color Management

Five areas in AfterShot enable you to change settings that affect color management.

First, go to (*File* → *Preferences* → *Color Management*) to check whether your monitor profile is loaded correctly. On Windows and Mac OS, Af-

terShot should pick up the current profile automatically at first start (click on the Reset button to trigger reloading if you are in doubt). On Linux, you might need to specify the monitor profile manually, as the system standard for information about the display profile is relatively new and not yet universally supported.

On the Color Management Preference page, you can also specify which profile will be assumed when loading TIFFs or JPEGs that have no profile. For JPEGs, sRGB is the obvious choice. For TIFFs, leave it at the default unless you routinely get TIFFs without a color profile that are different.

Second, go to the Color Management tool on the Color tool tab. Here, you specify whether you want color management for the input image ("ICC Profiled") or prefer to work in linear space (not recommended for most users; see ""Naked RAW" – No CM Mode" (p 203) for special uses). Here you could load your own custom camera profile. This option is useful for photographers needing extremely accurate colors in defined environments. Most users will not have to deal with custom camera profiles. "Custom Profiles" (p 37) has some hints on the process.

Making a specific camera profile the default is handled like all other image defaults; see "Default Image Adjustments" (p 99).

Third, you can affect color management by settings in the Soft Proofing setup. These settings simulate how the image will look for uses other than viewing in the current working space. You can, for example, proof to sRGB to see how it will look when exported for web use. (On your typical standard screen, which is roughly sRGB, you will not see much difference, but on a modern wide gamut screen, you might see significant differences!) More important, you can proof to your printer profile to see an approximation of how the image will be rendered on the printer. To set up the available proofing profiles, use *File → Preferences → Soft Proofing*. On the Soft Proofing Preferences page, you can set which profiles are available for proofing. This defaults to the working space profiles shipped with AfterShot. Add your printer profiles here to make them available for proofing. Under the *View* menu (or by clicking on the  button), you can then select which profile is used for proofing. To quickly toggle the proofed/unproofed display, you might want to set up a keyboard shortcut.

Note: *At the time of writing, AfterShot does not support CMYK printer profiles, only RGB profiles.*

Fourth, consider the Batch Queue settings. For each batch queue, you can specify which color profile is to be used for the output. This is typically sRGB for JPEGs and Adobe RGB or ProPhoto RGB for TIFF files.

There is also an option to specify whether the profile to which the file conforms is to be embedded in the file. Unless you generate sRGB images for web use, where sRGB is the assumed default by most applications, we strongly recommend that you always include the profile. Otherwise, other programs will not know how to interpret the colors in the file.

Finally, check the Printer Queue settings, specifically the profile specification of the printer/paper combination that you are using as your output profile. When printing to PDFs, use sRGB to generate PDFs that can be viewed on any system. As this topic is a bit more complicated, it is discussed further in "Printing Your Own Images" (p 126).

Note: *Note, all conversions to the various output profiles are performed with a perceptual rendering intent by AfterShot.*

3.4.1. AfterShot Color Management Cheat Sheet

Here is a quick cheat sheet for color management in AfterShot:

1. Set your monitor to decent defaults, like 100cd/m² or 120cd/m², D65, Gamma 2.2; and make sure your workplace has a relatively dim light. Do not change your monitor settings after you have calibrated the screen!
2. Profile your screen with an appropriate measuring device, like DTP94, Optix, i1Display Pro, or a ColorMunki. Linux users will need to get ArgyllCMS from http://www.argyllcms.com/, which supports most of the measuring devices on the market. If you dislike command-line applications, DispCalGUI (http://dispcalgui.hoech.net/) by Florian Höch will allow you to profile your screen using a GUI front-end to ArgyllCMS.

   afx: I am using a ColorMunki at the moment. I used the EyeOne Display II before that.

3. Check in *File → Preferences → Color Management* whether the generated profile is used by AfterShot automatically and if not, tell AfterShot where to find the profile.
4. Check your batch queues, so that anything destined for online viewing is generated in sRGB.
5. If you print at home:

4. AfterShot Tools

This chapter explains how AfterShot does basic, bread-and-butter processing for everyday use. You need to be comfortable with how AfterShot does basic processing in order to make efficient use of it, so it's worth exploring the core basics before moving on to more advanced topics.

4.1. A First Workflow

First, here is a quick workflow cheat sheet (for the impatient!) before we discuss the details.

"Ingest" (p 113)
Download (p 135) your images using a batch queue.

"Cull & Rate" (p 114)
To cull and rate, use the keyboard as shown in "Efficient Browsing" (p 102). To decide which images to keep and which to delete, use the methods described in "Judging Changes and Comparing Images" (p 90).

"Apply Metadata" (p 115)
Use the Metadata Tool (p 139) and the Keyword tool together with Metadata Presets (p 96) and Metadata Copy Sets (p 95) to quickly annotate and tag your images.

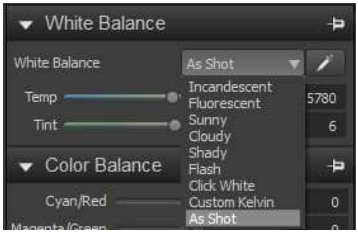
"Adjust" (p 116)
Fix white balance (p 44) and exposure (p 46), straighten and crop (p 62). If needed, use regional corrections (p 74) to adjust exposure and color details (p 58). Adjust noise reduction (p 65) and sharpening (p 86) to your liking. Of course, the tools used to compare images in the culling step above can also be used to compare the result of different types of adjustments. Selective Copy (p 93), Copy Sets (p 95), and Presets (p 96) can speed this up considerably.

"Catalog Import" (p 116)
If you work with catalogs (p 143), now is the time to import them.

"Output" (p 117)
Finally, generate some output, either using batch queues (p 105) or a printer (p 126), or enjoy a slideshow(p 123).

4.2. White Balance

What is white balance? It is a way of specifying how white your white is, giving you a reference point. Human vision is very adaptable. Depending on the light, light grey or slightly off-white colors are seen as white. A DSLR, however, is not as flexible. It needs to be told which color is truly white (actually any neutral grey will do) to produce an accurate image. White balance is linked to the color temperature of the light. Lower color temperatures are called warm and look reddish, while higher color temperatures are visually colder and look more bluish. Color temperatures are specified in °K (degrees Kelvin). You can find more details on color temperature at Wikipedia: http://en.wikipedia.org/wiki/Color_temperature.



Your camera has presets for various standard color temperatures that are similar to the presets built into AfterShot.

Your camera also has an automatic white balance mode, where the camera analyzes the light and automatically selects the proper white balance. It also has a special measuring mode, where you can instruct the camera to measure the color temperature of the light from a white or grey object and use that as a base. Alternatively, you can explicitly specify a color temperature in degrees Kelvin. The more accurately you set your white balance, the better the results. Even though AfterShot can adjust the white balance after the shot, this can be time consuming if you work with more than a handful of images.

You might have been told that when you shoot in RAW, you can always set the white balance later without problems. This is only partly true. If you check your exposure on the camera's screen or using the camera's histogram, the white balance of the camera has an influence on the image and histogram that you see. The image you see is a camera-generated JPEG that is influenced by the white balance set for that image. The histogram is also based on this JPEG (and the color profile it uses). Using a wrong white balance while shooting might lead to exposure errors, because the photographer might misjudge the image display. (Shoot the same scene with different white balance presets and compare the in-camera histograms.)

If you shoot in low-light situations, a wrong white balance will often increase your noise in the blue channel, as this is typically the weakest channel and needs the most amplification. With a wrong white balance,

the blue channel needs even more amplification, leading to a noisier signal.

Also, when shooting in mixed-light situations (like concerts), you might not be able to use presets or even the Click White cursor in AfterShot to find the correct value. One of the worst scenarios is stage lighting. You are much better off setting the camera to a fixed Kelvin number that matches the basic stage lighting before the filters are put on.

The bottom line is that you should try to get the white balance right when shooting. This is, of course, not always possible, so then you must resort to using the AfterShot white balance adjustment tools to get it right.

4.2.1. White Balance vs. Color Temperature

While the color temperature is often simply specified in degrees Kelvin, it really needs a second dimension, the tint. That's why the AfterShot White Balance tool has two sliders: one for the base color temperature and one for the tint. Think of tint as fine-tuning the white balance along the green-magenta axis.

AfterShot offers the usual assortment of preset white balance values (similar to those offered by the camera manufacturers) plus "As Shot", "Click White", and "Custom".

Using "As Shot" basically take the white balance recorded in the RAW file as supplied by the cameras settings. "Click White" sets the white balance to a value calculated from the area of the image you click on. The area size used for "Click White" varies according to the setting in (*File → Preferences → General → Default sample size for tools*). Setting this value to a larger size usually is better, as it averages over potential noise. If the size of the Click White cursor is too small, it will pick up minor variations and result in an inconsistent, slightly off-white balance.

Note: *The RGB values displayed for the Click White spot will not be identical after the white balance adjustment, as the reported values (in the lower right side of the AfterShot window) are reported in the working space, but are neutralized in camera space.*

If you have a set of images that all need the same white balance, you can correct the first one and then use selective copy & paste to apply it to the others. However, if you have an image that has the right white balance without any adjustments and then copy that to other images, you will just copy the setting that tells AfterShot to use "As Shot".

Therefore, switch to “Custom” first before using selective copy, and make sure the actual values are copied.

Often the Click White cursor is too brutal when working with moody light. You do not want true white balance, for example, when shooting images in candlelight. To adjust those images, “Click White” can be used to find a baseline and then you can adjust from there, typically increasing the Kelvin numbers. Note that “Click White” and manual adjustment in AfterShot will go down to 1500K, while many cameras can only go to 2500K and in-camera auto-white balance often only reaches 3500K at the lower end.

4.3. Exposure, AutoLevel, and Fill Light

After the white balance, the next thing you usually check in a photo is whether it is properly exposed. You usually first visually check whether everything looks like you expect it to, and then check the histogram to verify whether any details are over- or under-exposed.

A common rule in digital photography is “expose to the right”, although this is less of an issue with current, highly-advanced cameras. "Expose to the right" means that you should expose your photo such that you use most of your sensor's capabilities without either under- or over-exposing the image.

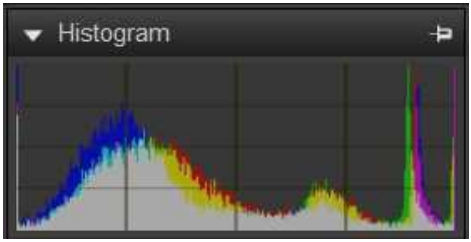


Figure 4.1. The histogram

How can you check this? The basis for employing the strategy “expose to the right” is the histogram. A histogram can be displayed on your camera, in AfterShot, or in other imaging tools. But what exactly is a histogram?

In photography and imaging, a histogram represents the distribution of tones in a photo. Black (0) is at the extreme left of the horizontal axis, while white (255) is at the extreme right. All other tones are distributed within the range 0-255. The number of pixels with a certain tone is shown on the vertical axis. Modern cameras and applications