

Sharpening technique has improved more rapidly over the past ten years than any other area of color correction. We have greater appreciation of the inadequacies of past approaches. Faster computing speeds have enabled sophisticated new solutions. Many people have put a lot of thought into how best to sharpen. Any of the many intelligent suggestions now available can make a big difference as opposed to not sharpening at all or doing a bad job of it.

We are about to look at the most complicated action in the Picture Postcard Workflow set, yet it is not an integral part of the workflow. Since sharpening ordinarily comes near the end of the correction process, you could substitute your own preferred method if you don't like this one, without losing any benefits of previous steps.

We should recall before beginning that sharpening is the most subjective area of color correction, the one where two people are most likely to have differences of opinion. In addition, it (and its close relative, excessive noise) are the most difficult to evaluate on screen. Ansel Adams summarized everything as follows:

"Some photographic issues seem to defy precise explanation. Visual impressions are difficult to assess in verbal form, and we grope for words that encompass the qualities of the medium. One such elusive concept

is sharpness. It is worthwhile in this volume to consider sharpness and related concepts in physical terms, but in discussing mechanical or optical issues we must not lose sight of the much greater importance of image content—emotional, aesthetic, or literal. I believe there is nothing more disturbing than a sharp image of a fuzzy concept!"

This action/script is designed to meet six criteria.

- It incorporates at least five and up to seven types of sharpen, all configurable separately.
- All sharpening is done by editable halo map, as opposed to filtering the base image. This means that, if necessary, objectionable parts of the sharpen can be erased.
- For those interested in spending extra time in search of the perfect sharpening, there is great flexibility in how the layers and their masks can be configured, and in how to set up the action's defaults.
- On the other hand (and far more importantly) it is set up to produce a high-quality sharpen quickly, for those who do not have time to do a lot of fancy manipulation.
- It also needs a method of compensating for previous sharpening, either in-camera or in a raw module.
- It can be set (user option) to recognize the size of the file being worked on and alter the sharpening artifacts accordingly. (Only available within the PPW panel.)

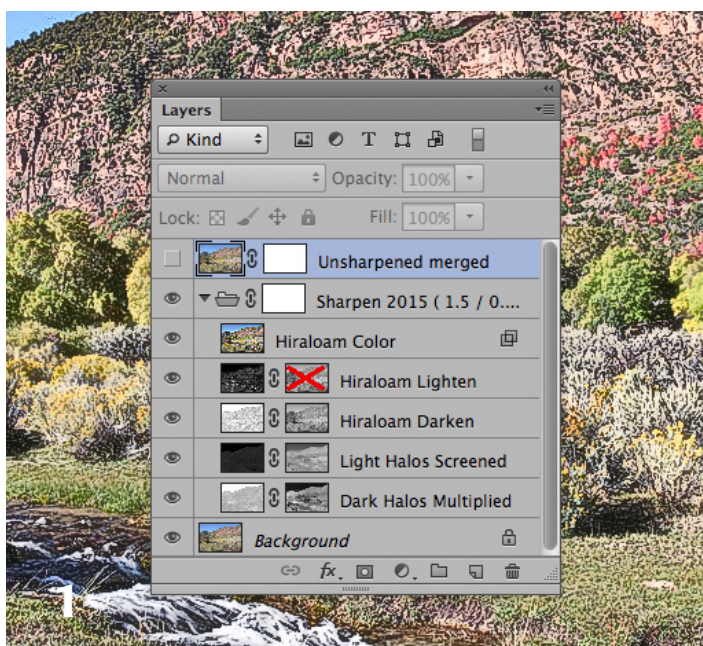
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The sharpening action is the most complex of all the actions in our package. In version 4.0, it contains around 150 steps, so duplicating it without some kind of automation would take forever. Furthermore, the action probably isn't practicable on a computer more than a few years old; it would be too slow.

The default file structure is shown in Figure 1. As you can see, it consists of a base plus five separate layers joined into a group, whose opacity can be reduced to cut the overall sharpening effect. Options introduced in v4 can increase this number to seven layers. On the top is an Unsharpened Merged layer, representing the state of the file prior to the action. This can be used for comparison or for blending.

Sharpening needs to be done at or near the end of the process. The PPW's recommended procedure always ends up in LAB, normally with the Color Boost and/or Modern Man from Mars action/scripts. It's an easy transition, therefore, into Sharpen 2015, which also runs

Figure 1. The v4 Layers palette after the action is run.



in LAB. If you are not in LAB when invoking the action, by default you'll get a warning asking what to do. You can establish one of six preferences for this situation. If you are already in LAB, preferences allow you to retain or flatten any existing layers. Leaving the layer structure intact makes for a larger file, but it also gives unparalleled flexibility: since the sharpening layers are all halo maps, we can adjust color in the unsharpened layers underneath without having to resharpen afterward.

- Running the action inadvertently is no problem if you are using our PPW panel, which sees the action as a single history state. You can Command-Z to get back to where you were. However, if you are using the action from the Actions palette, something with so many steps flushes the image history. You can activate the top (unsharpened) layer and flatten, but you can't get back to a previous state.
- The PPW panel also installs Sharpen 2015 as an option under Filter in Photoshop's menu bar. This includes the ability to access Sharpen 2015's Options menu by Option-selecting the filter name.
- When originally designed, this action was seen as a general-purpose sharpen for files roughly of 10-30 MB. This is a

Figures 2, 3, and 4. The file before sharpening; sharpened while at 300 pixels per inch and downsampled to 150 ppi; one downsized to 150 and then sharpened.



wildly broad range, considering that sharpening is highly image-specific. Neither this method nor any other can ever produce a perfect sharpen sight unseen; the question is whether it is “good enough” most of the time, and how easily we can then modify it in the event that “good enough” isn’t good enough for our purposes. That said, if your images are generally smaller or larger than the range just stated you may wish to make some modifications to the action’s default behavior. If you are accessing the action directly through the Actions palette, you have to edit the action manually.

We will study the action’s impact, using Figure 2 as the file to be sharpened. The resolution of the files used for this PDF is 150 pixels per inch, meaning that they typically are about 2 MB at the cropped size shown here. This resolution is lower than what the action was designed for. It doesn’t stop us from using it; it only means that we would probably have to intervene to reduce the effect, which is easy enough.

Figure 3 was sharpened when the file was at 300 ppi (meaning that file size was four times what it is now) and downsized for placement. Figure 4 was downsized first and sharpened at its current size. You can see that it

appears rougher, or sharper if you prefer. In the interest of making clear what the action does, all subsequent examples will be shown sharpened at this resolution; please keep this in mind before saying they are overdone.

Practical Uses in a Workflow: Four Categories

How to use the action depends on the importance of the image, which is another way of saying how much time you wish to allot to sharpening.

The easiest category is the one that must be done quickly. If you have to do a real estate catalog showing 300 properties for sale, and you don’t want to spend all day on it, it seems perfectly logical to set up a hot folder and just run this action on all of them plus a flatten image, and call it a day—no human intervention at all. It’s true that some will seem oversharpened, but better over- than undersharpened. If the alternative is no sharpening at all, or a more primitive automated sharpen, this process looks pretty good.

The second category is by far the largest. It assumes you have time for one easy adjustment if needed, and one only. It’s unlikely that you’ll feel that the action didn’t make the picture sharp enough. So if you don’t like it, we

Figures 5 and 6. *The original (Figure 2) repeated, and the result of the Dark Halos Multiplied layer.*



assume it will be because you find the result too sharp. The solution: activate and make visible the top (unsharpened) layer and reduce its opacity to taste. If the picture is only mildly too sharp in your opinion, maybe 10% opacity of the unsharpened layer will do the trick. And so on.

The third category assumes that if the image is too sharp, probably one layer, possibly more, bears much of the blame. So, if the opacity of that offending layer is reduced, the result will seem more focused and perhaps more natural than if you had just used the top layer to reduce everything.

The fourth category is almost a subset of the third. It is conceivable that reducing the opacity of a certain layer may still not produce the desired effect. In this case it may be useful to edit the contents of the layer, or its mask.

Caution, though: you will likely reach a point of diminishing returns. Just sticking with the second category, adjusting the top layer only, is quite effective. Certain types of category three and four moves are more common than others. If you know what they are you can execute

them quickly. However, spending a lot of time investigating other possibilities, though theoretically probably the right thing to do, is usually not worth it in my experience.

We'll now go through the function of each layer with this image, bottom to top, and talk about how likely we are to want to change opacity. Then we'll run through specifics of each layer again, using different images, talking about what other edits are possible.

Five Layers Summarized

- **The Dark Halos Multiplied layer.**

Figure 5 repeats the unsharpened version (Figure 2) for convenience. This version is the Background layer, and also exists as an invisible top layer. Figure 6 adds the Dark Halos Multiplied layer. The default opacity is 100%.

Structure: The sharpening is in traditional form, which is to say small, but violent artifacts, usually called halos. As the name suggests, only darkening is permitted. The layer mask emphasizes sharpening in near-neutral areas in the quarter- and midtone. As the image gets more colorful or significantly lighter or darker the mask restricts the

Figures 7 and 8. The sharpening algorithms of Adobe and some other vendors produce equally strong light and dark halos when sharpening at a low radius. This is a poor policy because light halos are more obtrusive. Left, the two conventional layers of the sharpen action only (Dark Halos Multiplied and Light Halos Screened). Right, the image is sharpened instead in Photoshop using insofar as possible the same settings as the version at left, including its layer mask.



effect. The changes are to the L channel only, so color is unaffected.

Potential problems: This is unlikely to be offensive unless the original is noisy, in which case it may exaggerate the noise.

- **The Light Halos Screened layer.**

Structure: This is the counterpart of the previous layer, but it is not applied nearly as strongly. Therefore, the action's light halos are both narrower and less intense than the dark ones. Its mask protects dark areas, which are vulnerable to white noise, as well as colored ones. The default layer opacity is 75%. Again, color is unaffected.

Compare Figure 7, which adds the action's light halos to Figure 6, to Figure 8. That version is sharpened in Photoshop, using the same mask, but without the reduction in the light halos.

The reason is that Photoshop is stuck in the early 1980s with respect to sharpening. That light halos are more offensive than dark ones has been known for half a century. Pre-Photoshop, all drum scanners toned them down by default. In early versions of Photoshop this was not possible; just a simple filter that treated light and dark halos alike took forever to run. With today's computers,

however, there's not much excuse to have sharpening as poor as in Photoshop (or for that matter, in Adobe's raw modules.)

Potential problems: Reducing layer opacity is the easy solution if you find these halos too obtrusive. Also, occasionally you will find pictures where you want stronger white halos, which is why room is left to *increase* opacity as well.

- **The Hiraloom Darken layer.**

Structure: We now move to the High Radius, Low Amount type of sharpening. Instead of using violent, small halos, this layer adds large, subtle ones. As with the two conventional layers beneath it, both work with an unsharpened original and does not affect color. A mask prevents the Hiraloom Darken layer from plugging shadows, a common problem with this type of sharpening. The default opacity is 30%.

Figure 9 shows this layer added to Figure 8. Its main role in this image appears to be to differentiate the trees from the lighter rocks and also to make the shrubbery more realistic.

Figure 10 shows, in wildly exaggerated form, the halos that this layer applies, as modified by the layer mask. No-

Figures 9 and 10. The Hiraloom Darken layer is added to Figure 8; the Hiraloom Darken layer, greatly exaggerated, by itself. Note how the masking results in blurry areas that would ordinarily be dark.



tice the areas that seem to have been blurred or even partially erased. They correspond to the darkest areas in Figure 9, and show the impact of the mask in preventing them from getting dark.

Potential problems: Hiraloam Darken has proven the most volatile of the five layers. We've changed the defaults several times. If the subject is a person, especially a young one, this layer is often best set to an opacity of 0%. On the other hand its impact here seems fine and I would not object to increasing the opacity. Because of this split personality, in v3 of the panel we overhauled the way these halos are constructed, trying to reduce obvious artifacting. This change, which is maintained in v4, took place after the publication of *Modern Photoshop Color Workflow*. Still, in general, if you think the action is making the picture look ugly, the two prime suspects are this layer and the Light Halos Screened beneath it.

- **The Hiraloam Lighten layer.**

Structure: This is the counterpart of the Hiraloam Darken layer. Figure 11 shows what happens when it is added to Figure 9. Again, there is no impact on color. The layer has a mask based on luminosity, but by default the mask is disabled. (To enable it, Shift-click its icon). The default opacity is 18%.

Figures 11, 12, and 13. The Hiraloam Lighten layer is added to Figure 10; the Hiraloam Color layer is added to Figure 11; the opacity of the Hiraloam Color layer is run out to 100%.



This layer is the only one of the four we've looked at so far that has the potential to improve the picture drastically. If the shadows are closed, raising the opacity of this layer can make a really big difference.

Potential problems: This is less likely than others to cause issues, at least if you don't raise its opacity. There may be some occasions where you would like to see more of an effect in the midtones than the shadows. In this case you should raise opacity, but enable the layer mask.

Also, at high opacities this layer can almost have the impact of lightening the image's midtone with a curve. This sometimes gives more life to a background than we might like, distracting attention from the main subject.

- **The Hiraloom Color layer.**

Structure: A unique concept: sharpening the AB channels only, a pure color sharpen. A Blend If partially excludes highlights and shadows. The default layer opacity is 20%. This creates a subtle but pleasing effect in most cases.

The right image for a heavier use of this technique doesn't come up that often, but when it does, Hiraloom Color can have a decisive impact. The typical example is something somewhat similar to the one we're working on, with small areas of color. We see splotches of yellow

and red, and we know what they represent. But we know these because our brain has put them in context, not because our eyes can actually distinguish flowers and plants at this microscopic size.

Figure 12 adds this layer at its default. You can hardly see the difference from Figure 11. But in Figure 13, the opacity is run all the way out to 100%. I am not suggesting you put it way out there, but rather trying to illustrate the huge impact on small areas of color. Meanwhile, the basic color of the rocks and greenery in the background is little changed. I know of no way to get this effect through curves or any other correction method. You would choose some intermediate opacity to your own taste, but I can't believe you would leave it with the 15% of Figure 12.

Potential problems: In portraits, teeth and/or the whites of the eyes may be turned blue or green as they move away from the reddish skintone. In other types of picture gross defects are rare. If you choose to increase the opacity of this layer in landscape shots, be wary of what happens when the sky hits the horizon. Note the big shift toward green in this area of Figure 13. In such a case, put in a layer mask to block the offending area.

- **The Soften Shadows layer (optional).**

Structure: When this option is chosen, either as a de-

Figures 14 and 15. A file prior to sharpening; sharpened using the action's defaults except that Hiraloom Color has been disabled.



fault or as a one-time correction, a mild blur is applied to darker areas. The effect is housed on its own layer, so that it can be turned off or masked if needed.

The original idea of this option was to combat shadow noise. We have since seen that it has a pleasant effect whenever softer shadows are desired. It is useful, for example, in fashion work where the model has dark hair; the layer softens it as well as eyebrows.

Potential problems: Areas of critical shadow detail need to be removed by means of layer mask. A common problem: in the fashion work described above, the eyes may lose their sharpness. It is easy enough to exclude them from the layer.

- **The Exclude Blues layer (optional).**

Structure: This optional layer prevents the sharpening of anything significantly negative in the B channel of LAB, which is to say, anything that has a blue component.

The main reason for the option is handling of skies, which are unique in that we don't wish to sharpen them *at all*. This differentiates them from, say, faces or flowers. The action limits sharpening of these objects, but it does not prevent it altogether. But in Figures 1-13 and 21-23, the preferred amount of sharpening for the sky is zero.

Note also that in these two photos the skies are the only blue objects, which is quite normal.

If there are other blue objects in the image that you do wish to sharpen, use a layer mask to exclude them from the Exclude Blues layer.

Potential problems: This layer can't do anything offensive, which is why I recommend changing preferences so that it is included by default. Remember, though, that it excludes everything with a blue component. This may include certain purple flowers, as well as obviously blue items. Also, the layer would need to be disabled in a case like Figures 14-17, where it is important to enhance the blue fireworks.

Summary, Strategies, and Special Occasions

The practical meaning of the above descriptions can be summarized as follows.

- It is perfectly reasonable to adapt a workflow where the only adjustment is to activate the top (unsharpened) layer if the file looks oversharpened, and play with its opacity.
- If you choose the route of marginally higher quality at the cost of extra time, know that only two of the five

Figures 16 and 17. Hiraloam Color is added to Figure 15 at 100% opacity, with a copy of the A channel as a layer mask, and Hiraloam Darken is increased to 100% opacity; a version done using the Color Boost action instead of sharpening.



default layers and one of the optional ones commonly cause problems; two other defaults and one optional are unlikely to cause problems but offer opportunities for major improvements in certain cases; and a final default fits into neither category.

- The Light Halos Screened and the Hiraloam Dark layers are the ones that cause the most problems. The default is good for most images but you must monitor them closely. If Softer Shadows is chosen as an option you must be careful with important dark objects, particularly eyes.
- The Hiraloam Light and Hiraloam Color layers rarely cause problems if left alone, but in certain cases can be very useful if their opacity is increased.
- The optional Exclude Blues layer is defensive in nature and cannot cause trouble, but be alert to the possibility that blues that you do want to sharpen may exist.
- The Dark Halos Multiply layer can usually be left alone unless the image is noisy.

Let's now have a look at some practical occasions

Figures 18, 19, and 20. The unsharpened file, a default sharpen except that Hiraloam Lighten has been turned off completely; and a default sharpen with Hiraloam Lighten increased to 30% opacity.



where we might want to alter the five default layers. This time, the order is reversed, from the top down. Reminder: these files were all much smaller than the ones you would typically sharpen. Therefore, the action's effect is overstated. For this exercise, as I want there to be little doubt as to what is happening, I have not activated the Automatic option of v4, which would recognize the smaller file and reduce the sharpening.

A Fire in the Sky: Hiraloam Color and Darken

Fireworks against a night sky constitute an impossible task for the retoucher. In real life, they are blinding. In print, or on screen, the intensity is gone. We can only try to suggest their brilliance.

This type of image screams louder than a Roman candle for hiraloam color sharpening. We would like a huge color shift where the fireworks hit the sky, and we don't particularly care whether the colors are accurate as long as they're brilliant. So, Figure 14 is the version prior to sharpening, and for the sake of argument Figure 15 is the default sharpen, with the Hiraloam Color layer disabled.

This image also benefits from a healthy increase in

Figures 21, 22, and 23. The unsharpened version; the defaults of the sharpening action with Hiraloam Darken disabled; the defaults with Hiraloam Darken raised to 80% opacity.



Hiraloam Darken, which puts wide, dark halos in transition areas. In Figure 16, the setting has been moved all the way to the maximum 100%. That puts some dark haloing behind the fireworks, which we can mask out if we don't like it. But the dark halos it's putting on the sides and tops of the buildings are attractive, giving the impression of more contrast.

The big deal, however, remains the Hiraloam Color layer. In Figure 16, it has been moved to 100% opacity. It is masked by the A channel of LAB, to prevent greens from getting too colorful. That is the issue in Figure 17, which is not sharpened, but instead gets its color from an aggressive application of the Color Boost action. It achieves the same kind of color in the fireworks, but the sky gets greener, the fireworks are not as varied, and the lights of the buildings become distracting.

Between Figures 14 and 16, then, the only difference, and it's a significant one, is the sharpening action.

Light From Darkness: Hiraloam Lighten

Figures 24, 25, and 26. The unsharpened version; the defaults of the sharpening action with Hiraloam Darken disabled; the defaults with Hiraloam Darken raised to 80% opacity.



In this fireworks picture the Hiraloam Lighten layer did almost nothing. The only thing that it could lighten effectively is the sky immediately surrounding the buildings. In theory it could also lighten the fireworks and the lights in the buildings, but in practice this is impossible because they're already as light as can be.

Another way of describing it is that we were not after contrast in the darkest areas. Yes, we wanted the buildings to be darker against the sky, but we were not after any kind of internal contrast within them.

Figure 18 is a different story. The photo is somewhat dark to begin with. We would definitely like to see contrast between the sweater and the camera, both of which are dark. We could probably use more contrast in the hair. If the shirt becomes lighter where it butts the neck, this is probably OK as well. The only area of concern is where the greenery hits the hair or the sweater. Hiraloam lighten may make it lighter and more attractive, but it may also distract from the man.

Figures 27, 28, and 29. Top, the unsharpened version (Figure 24) is repeated for convenience. Bottom left, the sharpening action is run at defaults except Hiraloam Darken is set to 50% opacity, but an area is highlighted to show a very rough selection. Bottom right, the hiraloam darken halos are deleted in the selected area, whose sloppiness is undetectable. The woman's face is thus not affected by the dark hiraloam halos (see Figure 26) but the tiger and the shirt are.



Anyhow, Figure 19 is a default run of the sharpen action with the Hiraloam Lighten layer disabled. Contrast seems to have improved. The impact of the Hiraloam Color layer is subdued and we have to keep it that way. If it were to be increased the way it was in the fireworks image, the teeth would turn blue-green, the white P in the parking sign would become reddish, and so would the pavement where it butts the green car. We expect all these areas to be a specific color. That's the difference between them and the fireworks, which could have been any color as far as we're concerned, provided they were brilliant.

Figure 20 turns up the Hiraloam Lighten layer to 30% opacity. Doing this may cause you to reevaluate the Light Halos Screened layer, which inserts narrower halos. In Figure 20 you may or may not like the emphasis on the pepper-and-salt character of the hair. If you don't, those white hairs are actually halos, but halos too narrow and too pronounced to have been put in by Hiraloam Lighten. So, if you wish, you would go in and reduce opacity of the Light Halos Screened layer.

If you do that, though, you might regret it in that it would darken the white trim areas on the camera and strap. So a reasonable alternative would be to enter the Light Halos Screened layer proper and erase (or minimize) the halos in the hair with a painting tool. We'll discuss how to do that shortly.

Wild Card and Wild Animal: Hiraloam Darken

The Hiraloam Darken layer is difficult to manage. Sometimes the default is too low and sometimes too high. The halos that the layer inserts are large. If they happen to

fall in a smooth area they become obvious, but if there is texture they are hidden and effective. Skies and faces are often trouble spots.

To show how different types of subject respond very differently, check out the two sets that follow. Figures 21–23 and 24–26 use the same procedure, again reminding you that the sharpen was applied to a small file and is therefore stronger than what we would usually see.

The first version (Figures 21 and 24) is unsharpened. Then comes (Figures 22 and 25) a version using the default action except that the Hiraloam Darken layer has been disabled. Finally, (Figures 23 and 26) Hiraloam Darken comes back in at 80% opacity, more than double the default setting.

In spite of this heavy dose of Hiraloam Darken the desert scene of Figure 23 looks reasonable. The dark halos are disguised by the texture of the rocks and the vegetation. The impression is of stronger sunlight because the shadows being cast are heavier. They are, of course, hiraloam halos.

The same effect is not as attractive in the woman's face of Figure 26. Nasty-looking shadows appear on the side of the nose and in the cheek. The hair on the left side of the picture has darkened, though few would recognize it as a hiraloam halo. Also, as commonly happens, hiraloam darkening makes the subject look older. It should be pointed out that this series was prepared prior to 2013, when the hiraloam darken algorithm was revised. If this were redone today, the artifacting in the face would not be so offensive—but you might still wish to reduce it further.

In the desert picture, if you find Figure 23 too peppy,

Figures 30 through 33. The unsharpened version, the defaults of the sharpening action with Light Halos Screened disabled; the defaults with Light Halos Screened set to 100% opacity; and with Light Halos Screened at 100% opacity with its layer mask disabled.



31



32



33



you presumably split the difference somehow rather than using Figure 22 as is. In the shot of the woman, I would leave the Hiraloam Darken layer off completely—if that were the only choice.

The woman is not, however the only object in the scene. She is the most important, but the tiger and the shirt can't be ignored. And those two items definitely benefit from the Hiraloam Darken layer.

Accordingly, if time permits, I would erase the hiraloam darken halos from the woman's face. And actually time would probably permit, because erasing is easy. If time were really an issue, you wouldn't have looked at the Hiraloam Darken layer at all; you would have just decided that the overall effect of the five layers was too much and you would have activated the top layer to blend some of it away.

But if you have already found it worthwhile to look at what the individual layers are doing, and have just discovered that you don't like what the Hiraloam Darken layer is doing, then fixing it takes seconds. Yes, a selection is necessary—but it can be as rough a

Figures 34, 35, and 36. The unsharpened version; the defaults of the sharpening action with Dark Halos Multiplied disabled; the defaults with both Dark Halos Multiplied and Hiraloam Darken disabled.



selection as ever you like.

Figure 27 repeats the unsharpened original, Figure 24, for convenience. We now run a default sharpen with, for the sake of argument, the Hiraloam Darken layer set to 50% opacity. Figure 28 shows what happens when you try to make a selection of a woman's face and hair in two seconds or less.

The inaccuracy doesn't matter. Figure 29 uses this same horrible selection to eliminate the hiraloam darken from the face. Look as carefully as you like. Do you see any evidence at all of what took place? Yet the tiger and the shirt have received the full benefit of hiraloam darken; compare Figure 29 to 27.

To erase halos, make a selection and then either attack the layer itself or its mask. If we are speaking, as here, of halos that darken, you could erase them from the layer itself by Edit: Fill>White. If instead you wish to work on the layer mask, the fill would be with black, to prevent that part of the layer from affecting anything underneath. If you are working on a layer that lightens, the white and black fills would be reversed. In any of these cases you can use Edit: Fade directly

Figures 37, 38, and 39. Top, the addition of the Dark Halos Multiplied layer changes little from Figure 36. Bottom, two attempts to provoke a stronger dark halo effect. Left, duplicating the Dark Halos Multiply layer, including its mask, doubles the impact. Right, back to only one such layer, eliminating the layer mask puts disagreeable noise in the face.



after the fill if you wish to reduce the halos but not eliminate them.

The chances of this chicanery being detected are infinitesimal. The face is still being sharpened four different ways. That a fifth abruptly vanished won't look unnatural.

Conventional Light Halos

We now move away from the soft, diffuse halos of hiraloam into the thinner, more brutal kind typical of the conventional kind of sharpening that has been around for as long as color separations. Lightening halos of this variety can have a nasty impact, which is why the action's defaults make them so much weaker than their dark counterparts. However, they can be useful in the somewhat unusual case where you don't mind blowing out some thin white detail.

That's a good description of the light markings on the man's camera in Figure 18. If they (and the buckle on the strap, too) blow out completely, so much the better: it creates more apparent contrast. However, as

Figures 40, 41, and 42. *The unsharpened version; the defaults of the sharpening action with Dark Halos Multiplied disabled; the defaults with both Dark Halos Multiplied and Hiraloam Darken disabled.*



Figure 20 suggests, when the same thing happens to his white hairs, it isn't all that agreeable. (It is happening in the sweater, too, but because of the purple color, the action already is downplaying that area.)

It would have to be a pretty important camera in a pretty important picture to make this move worth the time, but an erasure along the lines of what we did with the last picture is there if you want it. Meanwhile, you should keep an eye out for similar situations involving light halos that don't have such drawbacks.

Figure 30 is the unsharpened version. Figure 31 shows the sharpening action with Light Halos Screened turned off. Plenty of life has still been added by the two hiraloam layers; we see better shape everywhere.

The white areas of the instrument dials are similar to the camera markings. Blowing them out completely is acceptable. In Figure 32, the Light Halos Screened layer is moved past the default 75% opacity all the way to 100%.

Beyond that point, diminishing returns set in. In Figure 33,

Figures 43, 44, and 45. *Top, the action defaults except that Hiraloam Color has been increased to 50% in an effort to enhance the rainbow. Bottom, two attempts to provoke a stronger dark halo effect, while retaining the extra hiraloam color. Left, duplicating the Dark Halos Multiply layer, including its mask, doubles the impact. Right, back to a single layer, eliminating the layer mask puts noise into the sky.*



opacity is still 100%, but the layer mask that cuts the impact of the Light Halos Screened layer has been disabled (to do this, Shift-click the mask's icon). Since the mask was trying to limit sharpening in colored areas, such as the blue panel, that area becomes, er, sharply lighter.

A look at how the final layer operates gives some insight as to why such a saturation-related mask is a good thing.

Dark Halos Multiplied: The Role of the Mask

We move on one example of each of the two types of image we've worked on: a portrait and a scenic. The two may help us summarize the utility of the overall action, as well as introduce the last layer and describe why its mask does what it does.

Figure 34 is the unsharpened original. As is customary, the next one, Figure 35, shows the default sharpening action with the exclusion of the one layer being studied, here the Dark Halos Multiplied.

Unlike the other examples, this one isn't clearly an improvement on the original. The culprit is the Hiraloam Darken layer. As discussed in the previous picture of

the lady and the tiger (Figure 24), that layer can give the impression of age by emphasizing shadowy areas in the face. If this were a picture of a man, or of an athlete, or for an outdoor magazine, or of a teenager, we might consider the effect pleasing. And, for all I know, some people might like Figure 35. For the sake of argument, however, we'll say that it's not a good idea. Therefore, Figure 36 is the defaults, minus both Hiraloam Darken and Dark Halos Multiplied.

This time it's harder to criticize. The hair gets a nice sheen from the Hiraloam Lighten layer, and the eyes get some sparkle from Light Halos Screened. Adding Dark Halos Multiplied into the mix at its default 100% doesn't do much. Compare Figures 36 and 37. The hair is slightly darker, the embroidery on the sleeve more pronounced, and that's about it.

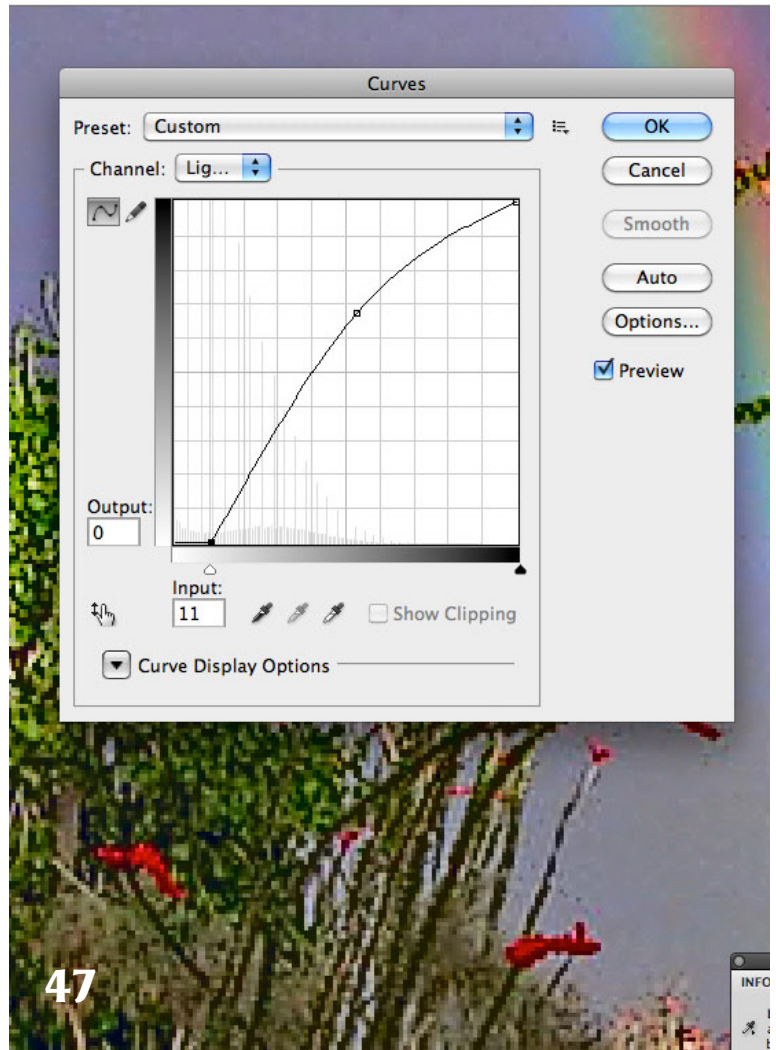
It's not clear that we want more. We should always be cautious about oversharpening faces, particularly those of women. Faces are about the only category of things we work with where extra detail isn't welcome, because it often represents a blemish or other imperfection.

If you must have more of the small dark halos, how-

Figures 46 and 47. Left, the Dark Halos Multiplied layer, without any mask being applied. The sky is unacceptably noisy. To prevent this, the curve at right, applied directly to the layer, is the equivalent of the Photoshop Threshold field. It eliminates mild artifacts while keeping stronger ones. The result of this curve is shown on the next page as Figure 48.



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47

ever, I offer two choices. Figure 38 doubles down on Figure 37. The Dark Halos Multiplied layer has been duplicated, mask and all, so the effect is twice as much. I am not sure why anyone would want this, as it seems just to make the hair darker, but it isn't dreadful.

This is more than can be said for Figure 39, which kills the duplicate layer but removes the layer mask from the existing one. And now we can see what that mask's purpose is.

Sharpening and Neutrality

The human visual system evolved at a time when our foreparents were considered to be choice morsels by various beasts of prey, and also when they had to hunt other animals for their own food. In daily life, it was imperative for our prehistoric ancestors to be able to determine instantaneously whether they were confronted by an animal they thought good to eat, or one that thought *them* good to eat.

Neither category of animal would be colorful. Whether predator or prey, why advertise one's presence?

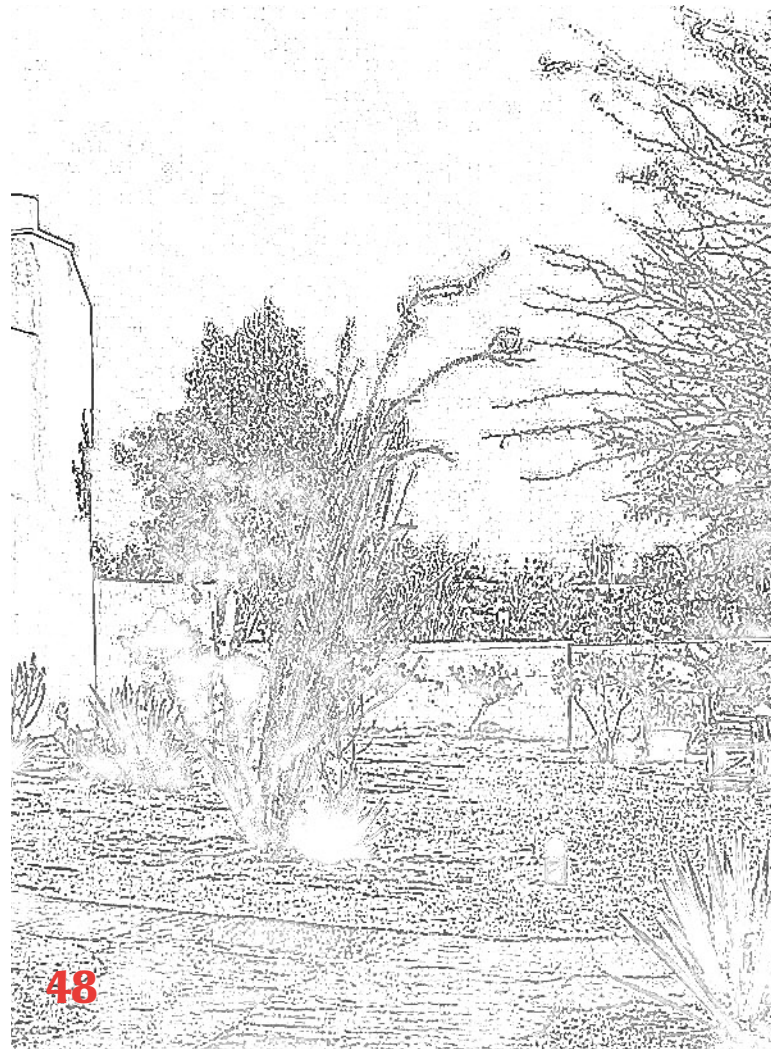
Consequently, our visual systems presumably are much better equipped to make fine decisions about slightly warm grays than they would be about, say, the brilliant reds found in some flowers. In other words, where color serves to identify an object (or at least to eliminate it as a threat) we may not devote as much brainpower to resolve it as we would in trying to determine what type of large mammal is confronting us.

Best sharpening practice caters to this principle. The more colorful an object is, the less it should be sharpened. Think about examples, and the logic becomes apparent. Flowers should generally not be sharpened. Neither should blue skies. But neutrals and near-neutrals should be. Faces are somewhere in the middle. They aren't neutral, but they aren't extremely colorful either, so the sharpening effect should, in my opinion, be toned down—not eliminated, but reduced.

The failure to do this dooms Figure 39. The facial detail that the sharpen brings out is real, but it's unattractive, and unlikely to be accepted.

When other colors are involved the effect may not be as bad as with skin, but it can still produce the impression of needless noise. Figure 40 is the new unsharpened original, and Figure 41 is, as always, the default sharpen minus the layer we are concerned with, here the Dark Halos Multiplied.

To keep things the same as in the last example, Figure 42 also eliminates the Hiraloom Darken layer. Now the decision is tougher than it was in the portrait of the woman, where it seemed that the large halos were definitely bad. I would



Figures 48 and 49. Top, after the application of the curve of Figure 47, Figure 46 has less noise in the sky. Bottom, starting instead with the masked version of the Dark Halos Multiplied layer and using a similar curve, except that the light point is not moved to the right as it is in Figure 47.

they aren't as pleasant as they were in Figure 23, the desert shot. In Figure 41 the shadows have become darker, which is probably good. Dark halos have appeared in the sky around the building, which is probably not so good, and behind the rainbow, which probably helps. In real life I would probably want to retain some but not all of these things, and would reduce opacity of the Hiraloom Darken layer. But, for the sake of argument, we'll say it's OK as is here and proceed.

If you're thinking that this might be a good image to just forget the individual layers and use the top (unsharpened) one to reduce the overall sharpening effect, please remember that the focal point of this picture is the rainbow and that we perceive rainbows as quite colorful. We can make the picture itself colorful, and the rainbow with it, but this may be distracting. The Hiraloom Color layer accentuates all color transitions. Figure 43 moves its opacity up to 50% from the default 15%. The two darkening layers are also present at their defaults. Compare this to the unsharpened version, Figure 40, for another indication of how much can be accomplished with sharpening alone.

Continuing the comparison with the previous example, we now look at increasing the impact of the Dark Halos Multiplied layer. As before, Figure 44 doubles the effect by duplicating the layer together with its mask. Figure 45 does not have the duplicate layer, but the mask has been disabled.

This image starts out, even in the unsharpened Figure 40, with noise in the sky. Figure 43 accentuates it somewhat. Figure 44 does it a lot. And Figure 45 is unacceptable for noise, among other things. In addition to putting some unpleasant noise into the building, it darkens the bright reds and the bright green shrub to the right of the building. As all these objects are brightly colored, the layer mask would have protected them.

The Threshold Equivalent

Those experienced in the use of Photoshop's Unsharp Mask filter know how important its Threshold field is. Raising Threshold eliminates sharpening of small variations, such as the existing noise in the sky here, or the unwanted detail in the face of Figure 39, while permitting it in edges of stronger contrast.

Using this action reduces the need for a threshold, because noise is, as we have just seen, more objectionable in colored areas that our masks protect. Occasionally we still need one. If so, the culprit is the Dark Halos Multiplied layer. Noise occasionally exists in the Light Halos Screened layer as well, but that is easily handled by reducing opacity. The Dark Halos Multiplied layer, however,

is important enough that we might like to establish the equivalent of a threshold while retaining, or even increasing, sharpening in other areas.

Finding an image where this would make a major improvement is not very easy, so I will cheat by using Figure 45, the unmasked version, as the starting point. I stress that this is not right the way to do things and that the mask is there for a reason. But the sky noise is obvious in Figure 45, so it will be easy to see when it is being eliminated. Meanwhile, we can also see how the mask is effective in minimizing the problem in the first place.

Figure 46 shows the actual contents of the Dark Halos Multiplied layer, unmasked. In principle, this gets multiplied into the original. Currently the layer is much too heavy for such a direct multiplication. The mask lessens the impact of the layer, which is why the action can have an opacity of 100% on this layer. But if the mask did not exist we could try to compensate by reducing opacity.

That might be acceptable, but it still wouldn't be good. Notice how much garbage Figure 46's sky has. Just reducing opacity won't make it more pleasant; instead we need a way to *eliminate* the sky noise without diminishing the rest of the sharpen. Making a selection and erasing the sky is difficult because of the complex shapes of the foliage that intersects it. Instead, the best procedure is to apply a curve like that of Figure 47 directly to the Dark Halos Multiplied layer (Figure 46), not to its mask. It wipes out the lightest parts of the layer, while accentuating darker things. The result is Figure 48.

That takes care of the sky noise, which was the nominal objective, but consider the alternative. We have seen the unmasked version, Figure 47. Comparing it to the result through the mask wouldn't be interesting because of the huge difference in darkness. But I do have a copy of the masked version. (To produce it, I filled the bottom layer with white, changed the mode of the Dark Halos Multiplied layer from Multiply to Normal, and deactivated all other layers.)

I took that copy of the masked version and applied to it a curve similar to that of Figure 47, except that I didn't move the lower left point in to blow out the highlights, and I raised the center point slightly for a darker effect. The result of this is Figure 49.

Even though no effort has been made to protect the sky, Figure 49 has less noise there than Figure 46 does. Perhaps a slight move of the lower left curve point to reduce noise would still be justified. But Figure 49 has better definition of every significant object.

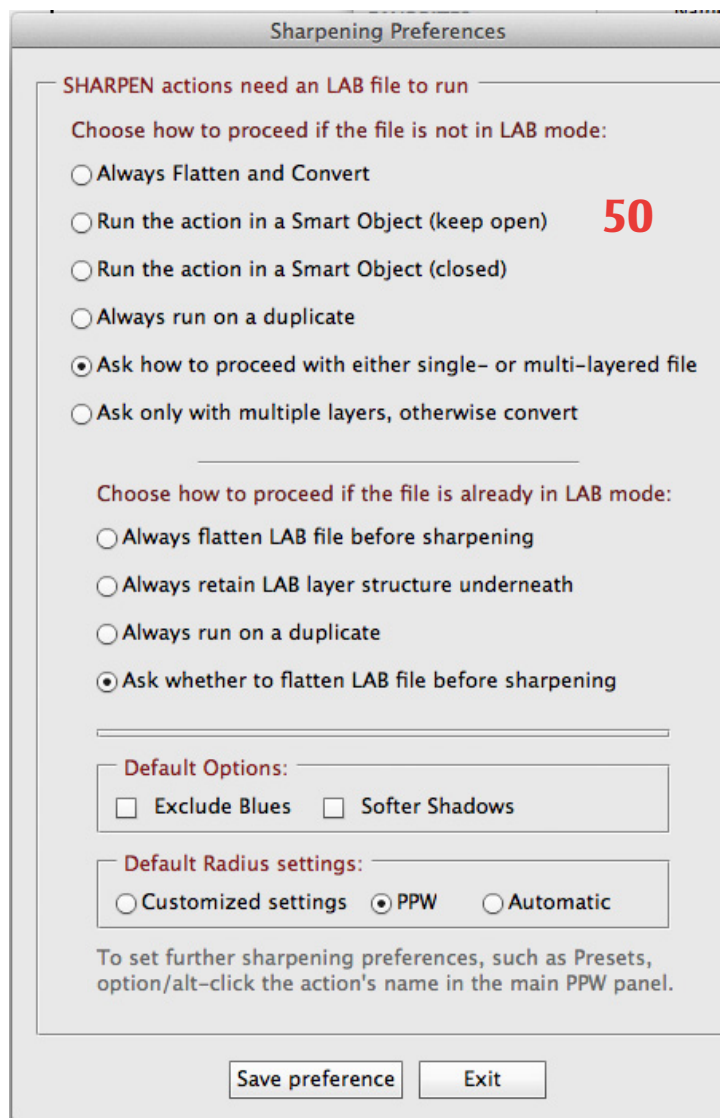
Curves and Their Uses

Figure 49 also explains why the Dark Halos Multiply layer

is the only one of the five whose default opacity is 100%. It is true that in some cases, although we haven't looked at any, a heavier sharpen is needed. When the halos are darker the question of noise arises. Doubling up on the darkening layer, as in Figures 38 and 44, may or may not exaggerate noise. The most flexible solution is to use a curve to darken the midtone of the layer, with the option of wiping out the highlight or not as the case may be.

Mastery of curves is also important in dealing with a uniquely modern problem: images that arrive with a light pre-sharpen, courtesy of the camera, a raw module, or a user's foolish decision. Trying to get more sharpness into such a file can be a chore. Most of these early sharpens emphasize light haloing too much, so if we run the action on it we may have to turn off Light Halos Screened altogether. Since none of these pre-sharpens typically add hiraloom or anything like it, they don't affect the operation of those three layers in our action.

Figures 50 and 51. Left, the v4 Sharpening Preferences dialog. Right, the Options window.

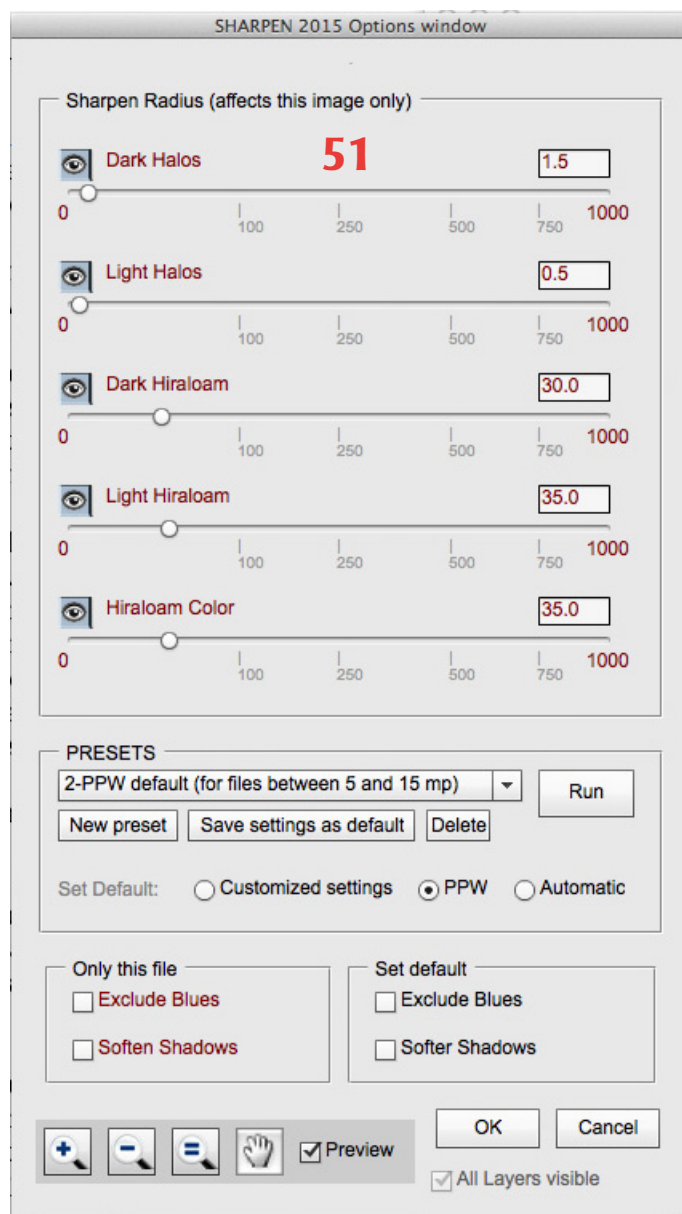


But the Dark Halos Multiplied layer may need different treatment depending upon what was done earlier. Sometimes the pre-sharpening introduces noise that has to be addressed with a curve similar to that of Figure 47. But at other times the presharpen exaggerates the strongest transitions. Rather than exaggerate them further, we might try flattening the dark half of the curve.

File Structure in Panel Version 4

Version 4 of the PPW panel adds major new options for those who are psychopathic about getting the best sharpening possible. Everything is included in the Sharpening Preferences dialog, accessible through Preferences in the top right corner of the panel, or the Sharpen 2015 Options window, which is opened by Option-clicking the action within the panel. Figures 50 and 51 show the default settings for these two dialogs.

Increases in computing power mean that some users



will wish to retain a previously existing layer structure while running Sharpen 2015. Since the sharpen layers are in the form of halo maps, many adjustments are still possible on the underlying layers without disrupting the sharpening. If it does, the sharpening layers can always be deleted and the new file re-sharpened.

The price of this flexibility can be an awkwardly large file. The action's default is to ask what to do when encountering multiple layers. You can choose to always retain (among many other options) in the Sharpening Preferences dialog.

The action operates in LAB, so RGB files present problems. The default is to ask what to do, and many options are offered, including running on a duplicate, or making a Smart Object. All can be established as new standards in Sharpening Preferences. Always be aware that adjustment layers will not survive the transition from RGB to LAB, so flattening (or a Smart Object) is needed.

Version 4 of the PPW panel permits unlimited user-defined presets for the width of sharpening halos. We now supply four, rather than a one-size-fits-all-files setting. As tastes vary, you can roll your own, choose one of our four, or most interestingly, allow the panel to choose of of our four based on the size of your file. I recommend this option, but we are not making it the default for fear of causing unpleasant surprises for those experienced with the Sharpen 2013 action. If you want to implement it, choose Automatic in either of the dialogs.

You can also use the Options panel to impose a certain preset on a one-time only basis, by choosing it in the Presets section shown in Figure 51. Please note, however, that although the preview will update, clicking OK will not implement the new preset! Instead, you must click Run before exiting the dialog with an OK.

Keep in mind that people generally agree, more or less, about the size of the conventional (small) halos—the ones produced by the Dark Halos Multiplied and Light Halos Screened layers. However, tastes vary as to the width of hiraloam halos. You may find that you simply disagree with the PPW settings on aesthetic grounds.

However you decide to choose the halo widths, including letting the panel do it for you, the settings that were used are shown in the name of the layer group within the Layers palette.

As described earlier, PPW panel v4 permits two new types of sharpening layers, Exclude Blues and Soften Shadows. Either or both can be implemented as a general practice in either of the dialogs; using them only on the current image is done in the Options window, which lets us override certain settings, save others as presets, and enjoy a highly interactive preview.

The top five sliders govern the width of the blur function that produces the sharpening artifacts in each method. Our defaults are shown; you can substitute your own and, if desired, save them for future use.

If in the mood to experiment, you can disable certain layers by toggling the eye icon next to the slider. If you are also adjusting the sliders, the panel will try to give you an interactive preview, but if you're on a slow computer or have a very large file, performance may become an issue. To stop this, uncheck the Preview box, and only recheck it when you're ready to review.

Summary and Current Impressions

The recommendations for specific uses of this action/script are not as important as more general recommendations about sharpening, but here they are anyway.

- First, decide whether your general policy is going to be the quick and easy one of just adjusting the layer group when you find something to be “too sharp”, or whether you are willing to take the extra time to mess around with the individual layers.
- Even if you have decided to stay mostly with the top adjustment, learn to recognize the cases that benefit from heavy use of Hiraloam Color and/or Hiraloam Lighten. It is hard to get these effects any other way.
- Remember that if the file looks too sharp the two most likely culprits are Hiraloam Darken and Light Halos Screened. Practice with these two, because if you can quickly identify them as causing the problem, you can eliminate it just as fast, and more effectively, than by adjusting the top layer.
- Also remember that the default Hiraloam Darken setting is usually pretty good for scenics but may be too heavy for faces, unless you are specifically interested in a rugged look.
- Two new options, Automatic and Exclude Blues, are recommended for most users. You have to implement them yourself, because we don't want out-of-the-box behavior to be seriously different from previous versions.
- During beta testing of the PPW panel the Sharpen 2015 action failed (stopped before completion) for certain users. We believe the problem has been extirpated, however if you run into it, the solution has been to go into the PPW panel's Preferences sub-panel, and choose Reset All Preferences.

And now, some general comments about sharpening.

- The idea of sharpening is to add the appearance of focus, with the aid of artifacts that hopefully will not be detectable as such.
- Remember, though, that you are much better at knowing what sharpening artifacts look like than your

likely audience is. Just because you can see sharpening halos and recognize them as such does not imply that a layperson can detect anything other than that the picture looks better.

- Spending a few extra seconds on custom sharpening can pay dividends. Spending a few extra *minutes* usually does not, for two reasons. First, doing it only gets the sharpening to your precise satisfaction, which is probably not the same as the viewer's. Second, if you have three minutes to sharpen they are better spent in preparing a new PPW version from scratch. There is a lot more to

gain if that second version turns out to be better in certain respects than if you get perfect rather than very good sharpening on what you have.

- Some sharpening methods are better than others, but sharpening is rarely the deciding factor in whether one picture looks better than another, unless one doesn't have any sharpening at all.

The action/script's tools will let you bring your own pictures into sharp focus, provided that, as Adams suggested, you have come up with sharp enough concepts to work with.