Varis PhotoMedia Tutorials

Welcome

This tutorial has been prepared for the photographer who is striving to learn digital imaging. I make an effort to supply current information about digital imaging techniques and general information about computer technology that is pertinent for today's professional photographer. This information is based on my personal experience down in the trenches at the front lines of the digital revolution that is sweeping the photographic industry.

One thing is certain: all of the information contained herein will be obsolete in a fairly short time - how short, I can't say. Be forewarned that things are changing very rapidly and the only way to stay competitive is to keep learning. I devote a good percentage of my time learning new things and I am attempting to share what I learn with you but this information will go out of date so you should be flexible and not take this tutorial to be the ultimate statement on the subject.

I maintain a web site where I post additional information, examples and tutorials. You are invited to browse various portfolios as well as download free material and purchase additional tutorials at:

http://www.varis.com

I hope you find the information contained in this tutorial helpful. Please let me know if you find any errors or omissions - I'm always trying to improve these materials! You may contact me via E-mail at:

varis@varis.com

best regards, Lee Varis 2003

Download Sample Files

Sample files for this tutorial are available for download. All images are copyrighted © 2003 by Lee Varis unless otherwise noted. Use of these files is restricted to personal education in this tutorial - no other use is permited. By clicking the download button below you are agreeing to these terms.

Download Files

These files are compressed in a Binhex archive. To use these files you must first extract them from the archive using a file compression utility. You can download the excellent free “Stuffit Expander” utility from Aladin Software by clicking below:

Stuffit Expander

Choose your platform from the buttons at the top of the web page - Mac, Windows and Unix

RGB Skin Tone

Natural Enhancement for Portraits

Photographers are most often called upon to portray their subjects in a flattering light. In some cases, the subject can be artificially glamorized, rendered absolutely devoid of defects. Other situations call for a more subtle naturalistic approach. Sometimes we are even asked to create the final effect "without retouching". Everybody really wants to believe that they look good without retouching and, as a consequence, nobody wants to notice the retouching even if it has been applied liberally.

The first enhancement that can be applied without the damaging the "mystique of reality" is color correction – specifically skin color. Skin color is so important for the flattering portrait that much time, energy and expense is spent on makeup. Bad makeup can ruin a shot as easily as bad lighting or bad exposure! In skilled hands, Photoshop can provide the enhancement normally demanded of makeup. It can be applied secretly and it washes off without a trace.

The following project showcases a naturalistic approach to skin tone and texture enhancement in a promotional headshot. The subject is a middle aged man who is not about to wear makeup but we must still solve a problem that would commonly call for makeup. In the process we will use profile manipulation, color correction, layer blend modes and filters but we will not touch the Healing Brush or the Clone Tool!

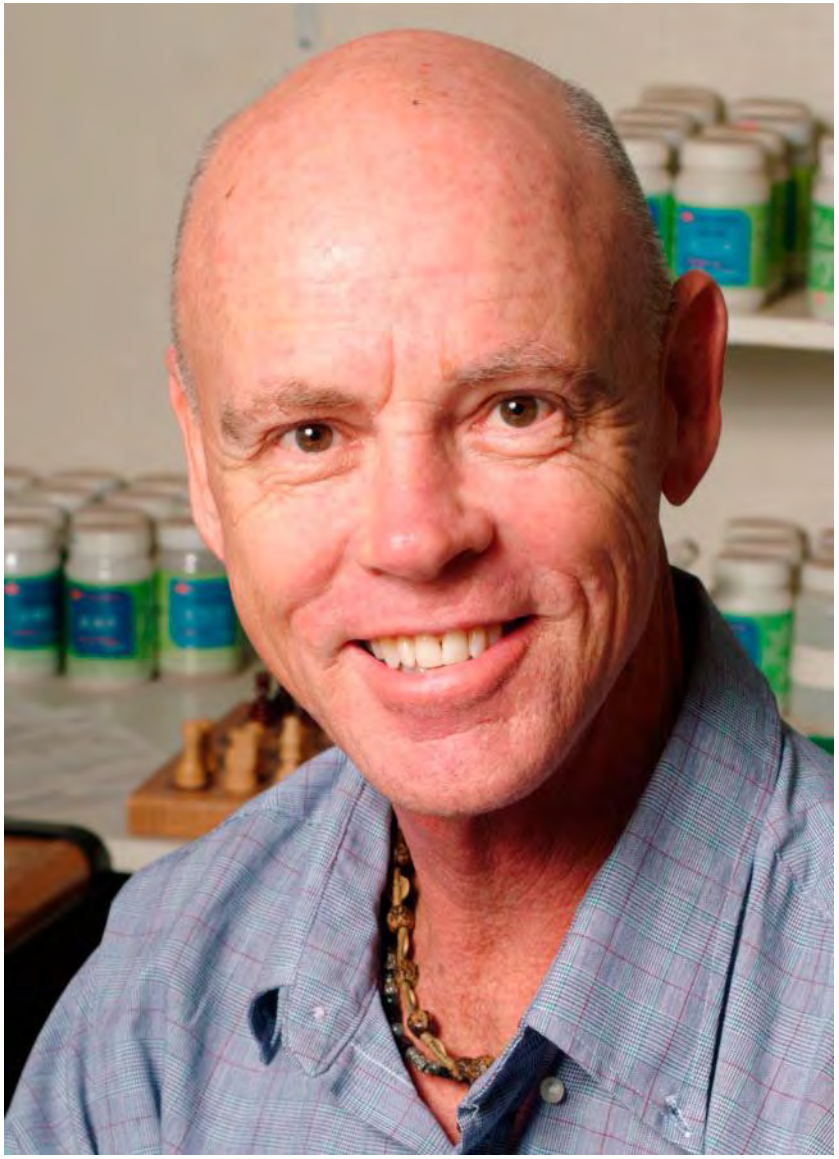
The Demanding Subject

Here is the original digital capture I did of E. Douglas Kihn. "Dr. Doug" is an Acupuncturist and Chinese Herbalist. He runs the California Longevity Center (http://www.calongevity.com/) and he needs this photo for his web site and other publishing materials. Dr. Doug would like to look like the friendly, healthy, professional that he is.

The digital camera is delivering a file in what passes for Adobe 98 colorspace – this image suffers from a common malady of overly saturated red tones that is primarily exhibited in the bright pink skin tone seen here. Now, while Doug has a naturally reddish skin color, he doesn't look quite so cartoony in person. Very often, when a camera manufacturer offers the option to save a captured file as Adobe 98, what they are really doing is simply assigning Adobe 98 as the profile. Mostly, the natural colorspace for the camera files is sRGB!

The first thing you should do, when presented with this sort of thing is to try assigning another profile to see if it improves the overall color. This is a no-penalty way of adjusting the image because it doesn't involve changing the actual "numbers" of the RGB file...

Select: Image-> Mode-> Assign Profile... and choose sRGB...



Click to Assign sRGB

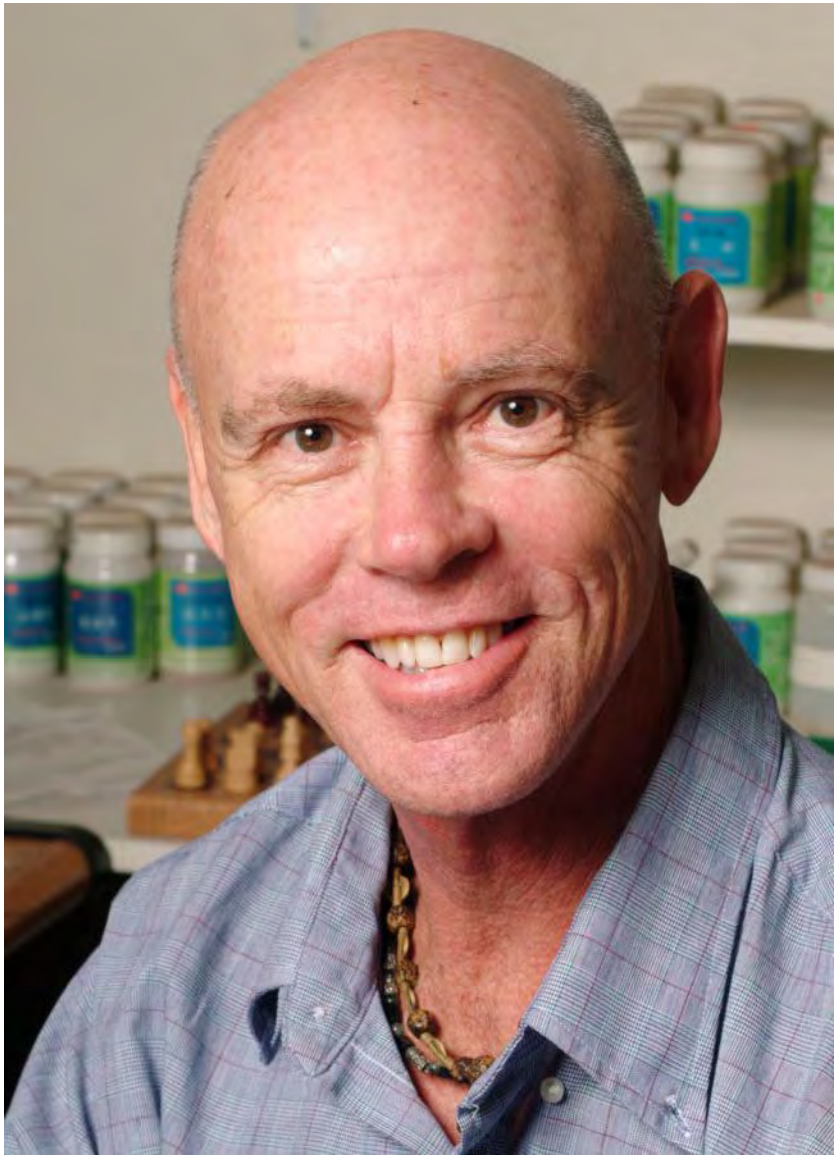
sRGB - sometimes its not so "shitty "RGB

sRGB has an undeserved reputation as a "bad" colorspace. It is not good or bad in and of itself - only when mis-applied. In this case, sRGB was actually the correct colorspace for this image. Not all cameras will "cheat" with colorspaces but many do and its worth experimenting a bit to find out what your particular camera is doing.

This only applies to files delivered as Tiff or Jpeg straight from the camera. If you save out the "Raw" file you can control the color rendering more fully in post processing. This particular shot was primarily targeted for use on the Web and shot as Jpeg just for convenience.

While this little Profile move has improved the color there are still some problems to be addressed. Overall the skin color is a tad too "Magenta" but the biggest problem is that now we can see that there are some red blotchy areas around the nose, mouth and chin. This is just the thing that makeup would fix but alas, no makeup artist was available and I doubt whether Doug would have submitted to the indignation (makeup is not a health practice he would endorse).

The solution is to equalize the skin tones using a Hue/Saturation adjustment layer...

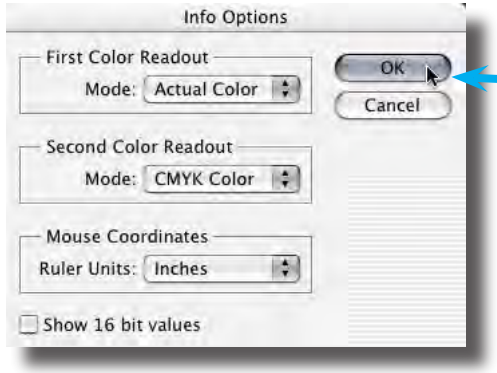


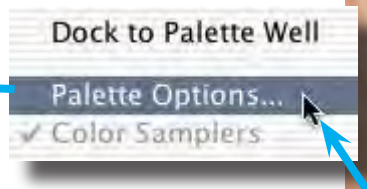
Click Back to Adobe 98

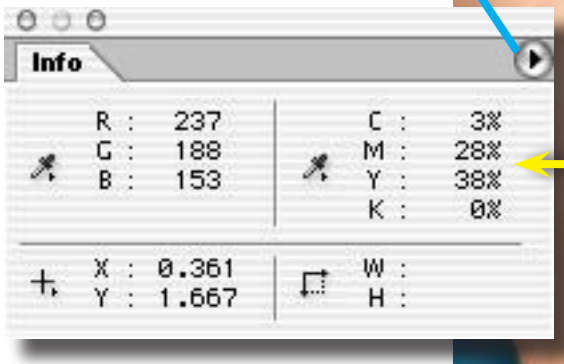
Click to Final Version

Analyzing the Problem

Reading the Info Palette "Numbers"

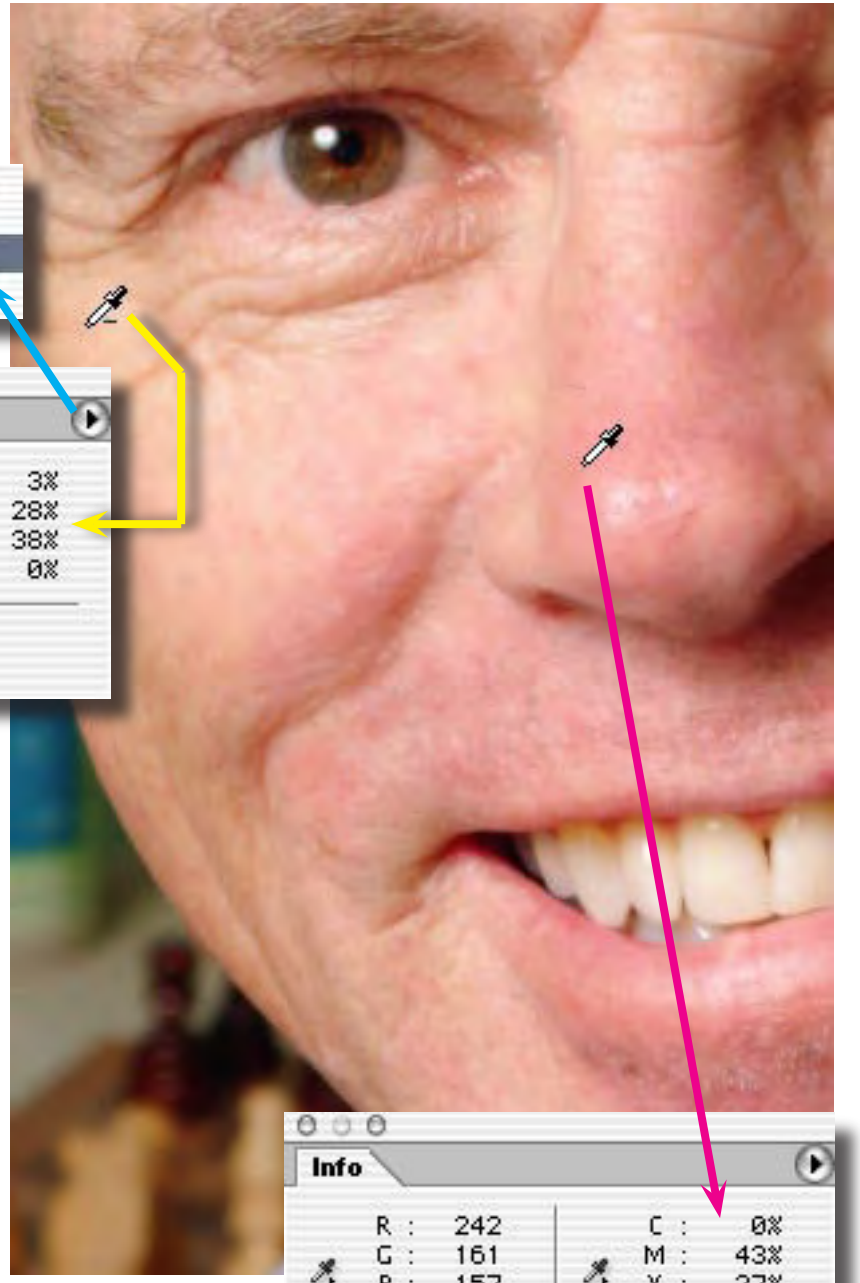


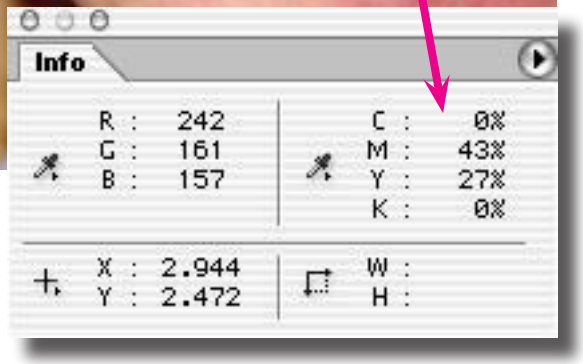




We start by analyzing the color "numbers" to get a idea about what specific color adjustment we'll need. When dealing with skin color it is most helpful to look at CMY "numbers" rather than RGB numbers. Make sure you set up the info palette to display "CMYK Color" as the Second Color Readout in the Info Palette Options. Do this by selecting "Palette Options" from the fly out menu at the upper right of the Info Palette.

The RGB numbers reveal that both areas in question are mostly red with a slight yellow bias - how red or yellow is hard to determine from the numbers alone. The CMY numbers clearly reveal that the nose is more magenta than yellow while the side of the face is more yellow than magenta. A good formula for skin color (in western European culture) is roughly equal "M" and "Y" with yellow a few points higher. If magenta is higher you have a sunburn or acne, neither of which is appropriate for our good doctor. We need to get the side of the face to be a little more magenta and the red blotchy areas to be less magenta and more yellow...





Hue/Saturation

Adjustment Layer

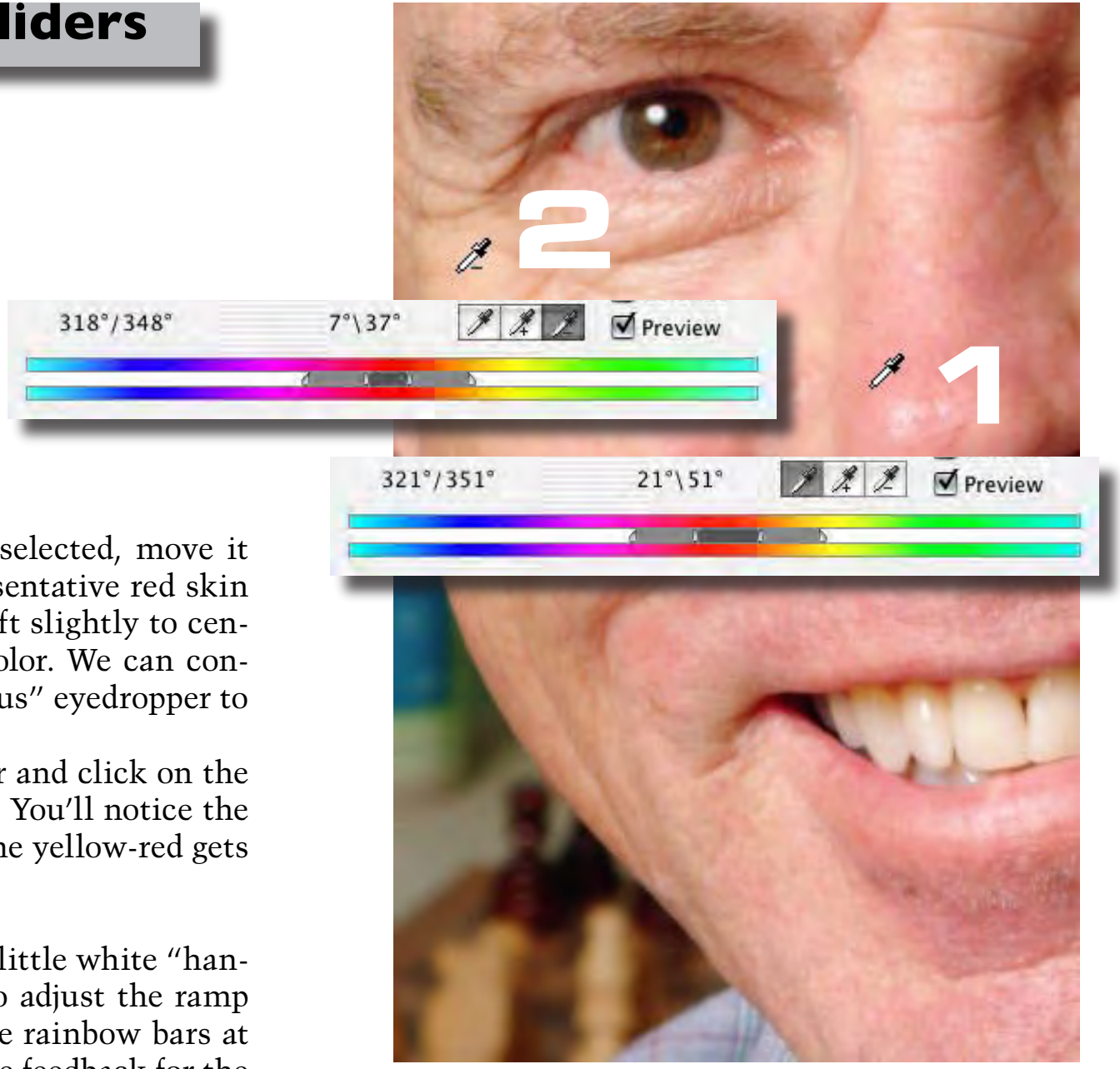
We will use a Hue/Saturation Layer to selectively shift the red areas towards yellow and the yellow areas towards red.

(1) Select: Hue/Saturation from the adjustment layer icon at the bottom of the "Layers" palette.
(2) Set up the Hue/Saturation dialog to "Edit" Reds by selecting "Reds" from the Edit Menu at the top of the dialog.

You will notice that triangle sliders appear between the colored bars at the bottom of the dialog. The gray region between these sliders represent the color range that will be affected when we move the Hue, Saturation or Lightness sliders in the center of the dialog. The dark gray center bar is the range that if fully affected and the lighter gray bars to each side are the regions that "ramp off" from fully affected to unaffected.

There are three eyedroppers - normal, plus and minus. The normal one is selected by default as soon as you select a color range from the "Edit" menu. We will use this "normal" eyedropper to select the specific red color in the image that we wish to shift...

Hue/Sat Range Sliders



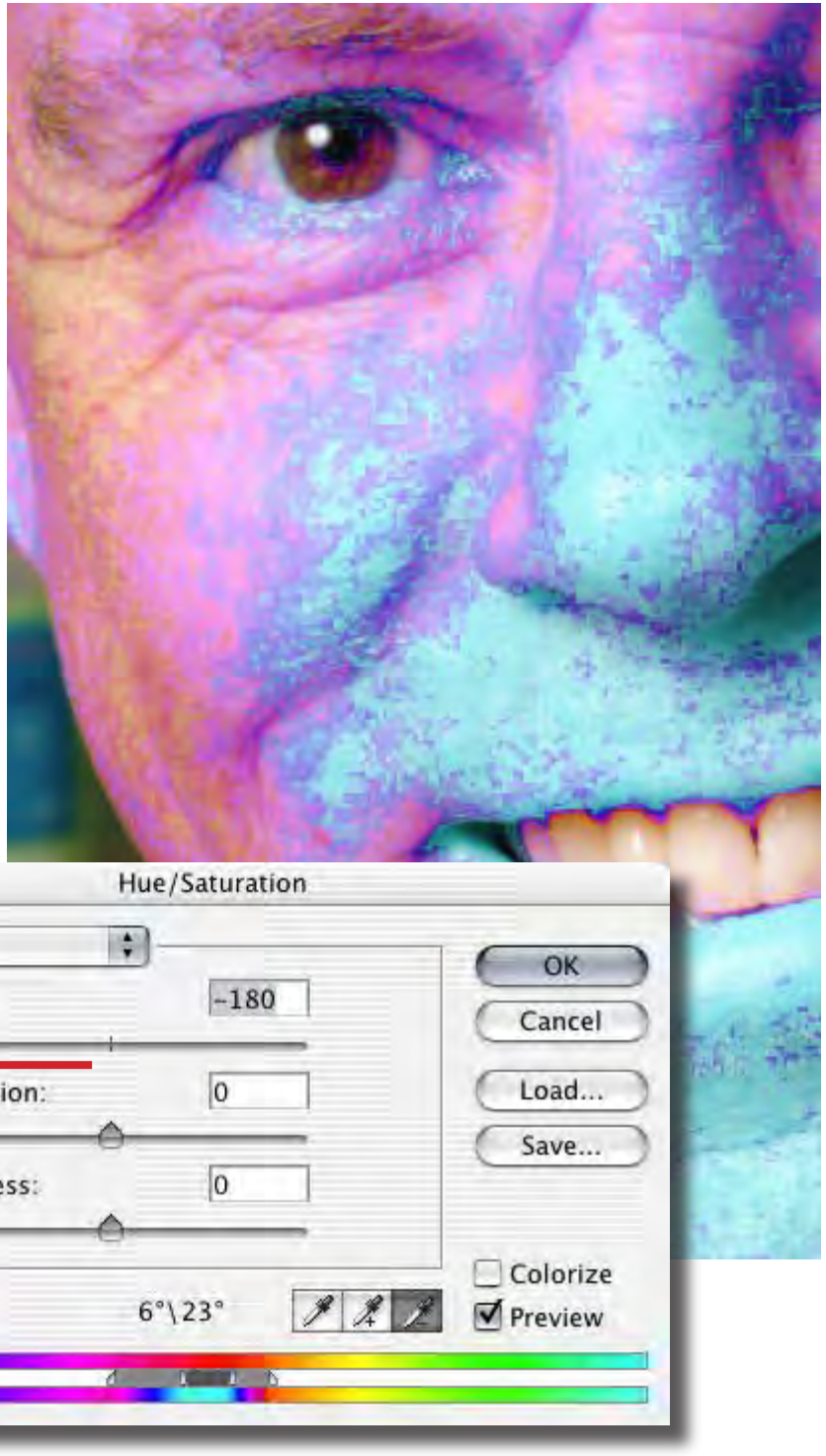
(1) With the normal eyedropper selected, move it into the image and click on a representative red skin tone. The gray "range" bars will shift slightly to center on the region containing that color. We can constrain this region by using the "minus" eyedropper to subtract a color from the region.

(2) Select the "minus" eyedropper and click on the yellower skin at the side of the face. You'll notice the middle gray region gets smaller as the yellow-red gets subtracted

You can also manually move the little white "handles" at the ends of the gray bars to adjust the ramp or the center gray regions. While the rainbow bars at the bottom of the dialog give us some feedback for the region we're going to affect, we need to get a little better preview of what parts in the image are going to be affected...

Testing the Range

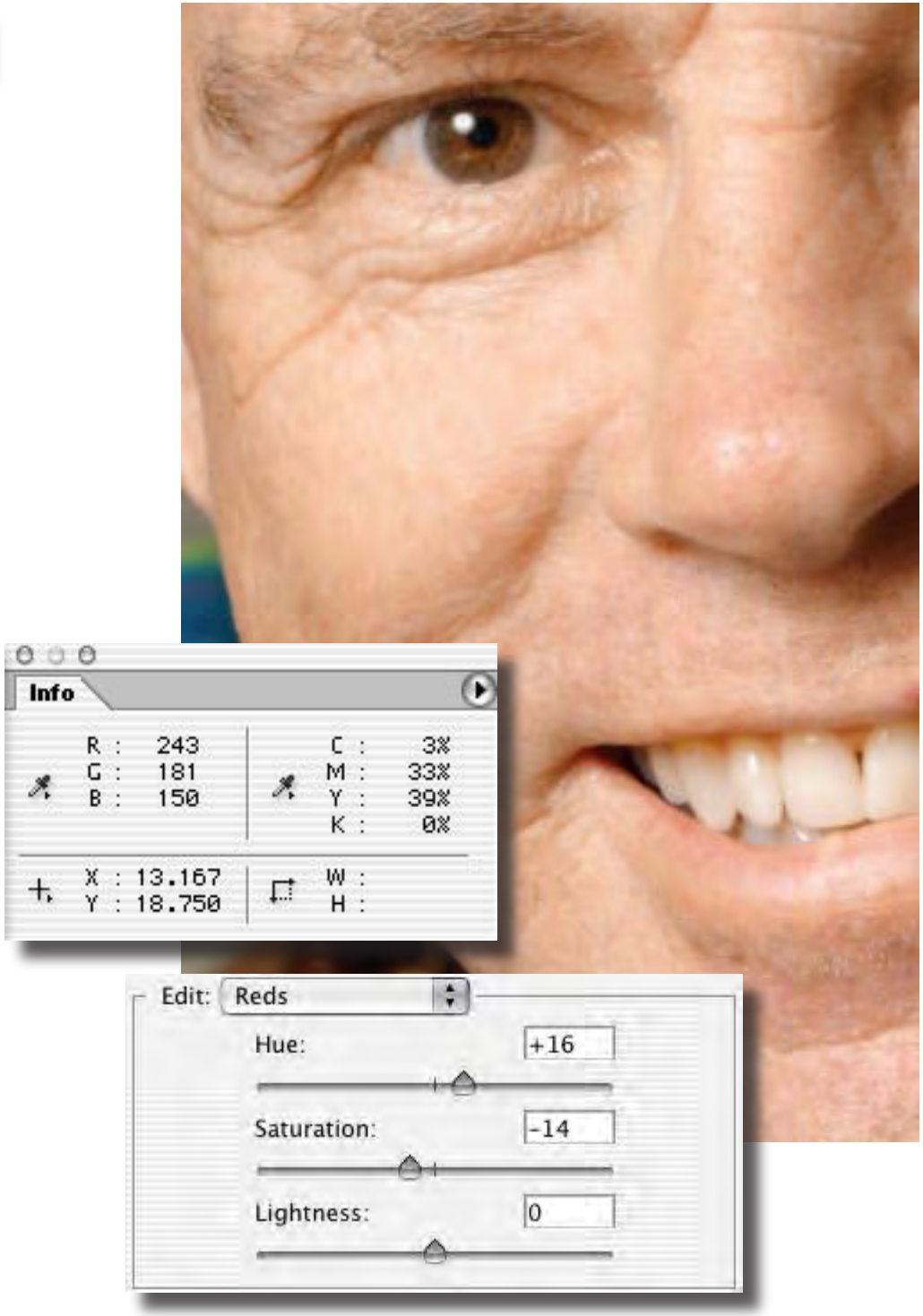
Slide the "Hue" slider full left to rotate the hue 180°. The fully affected region will turn a bright cyan with the ramped areas showing up as blue-magenta areas. While you have the hue slider set this way you can move the gray region sliders to constrain your ultimate hue shift to just the regions that need it.



Shifting the Hue

Once you have "trimmed" the range where you like it return the Hue slider to zero - then push the slider to the right, towards yellow, until the red blotchy areas start to blend into the other skin tone. Keep your eye on the info palette! The ideal skin tone will have yellow and magenta very close with yellow a few points higher. Cyan should be between 1/4 and 1/3 of the magenta value. If cyan is at "0" the color is too saturated! A high cyan value means the skin is too gray.

Our shot of Dr. Doug has the opposite problem – the color is perhaps too Disneyesque. Move the saturation slider to the left. The value of the skin is fairly light so we will have to compromise a bit on the level of cyan – of course you're allowed to look at the monitor as well. Just remember you're looking for a good color for human skin not Barbi Doll plastic!



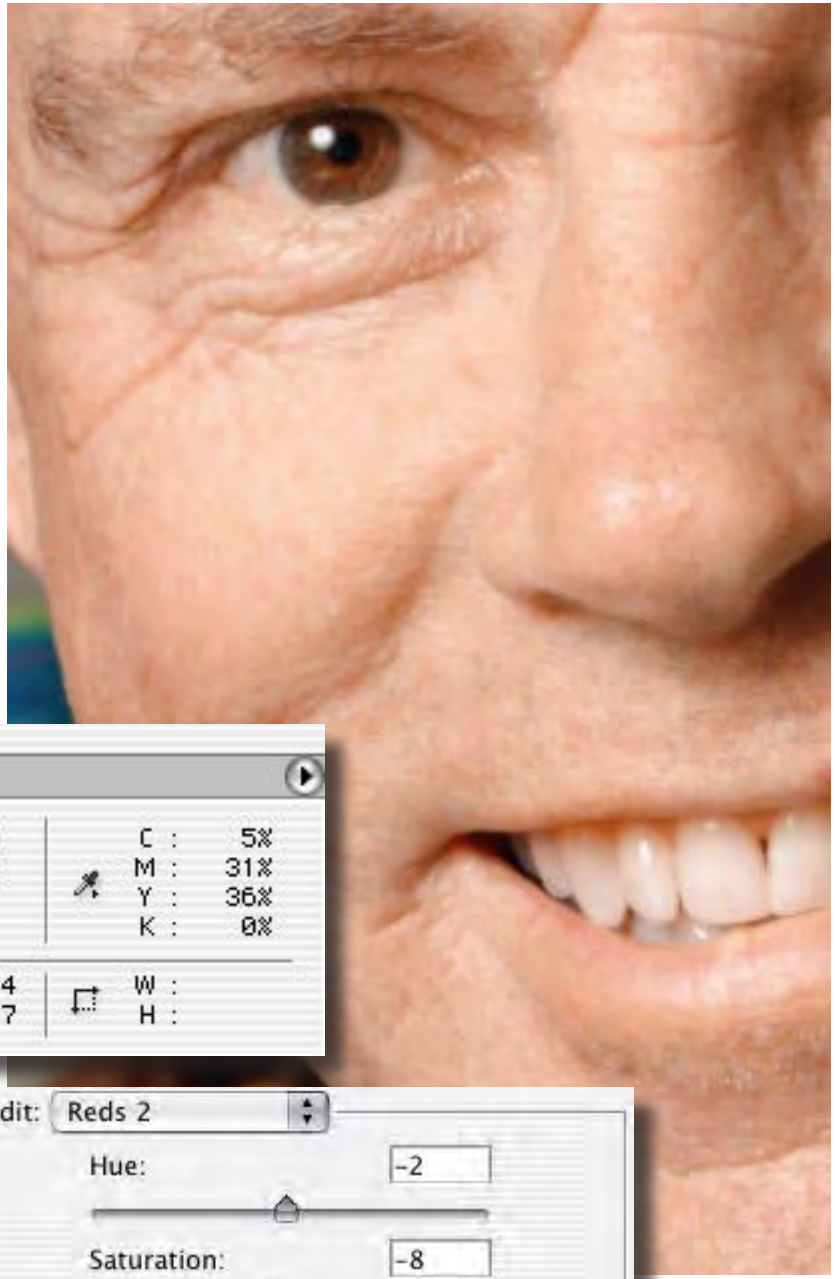
Trim Range for Yellow

Now that we've taken care of the skin that's too red we will address the skin that's a tad too yellow. First we have to select another color range. Go to the "Edit" menu and select: "Yellows". The range bars will move into the yellow region. Take the eyedropper and click on the side of the face where the skin color is more yellow. The range bars will shift back a bit into the red region and the "Edit" menu will probably change automatically to: "Reds 2" - this happens because, as far as Photoshop is concerned, the skin color you clicked on is more red than yellow.

Move the Hue slider back to the left, as before, shifting the color of the affected areas to cyan. Trim the region sliders until you have isolated the affected area to just the side of the face. Now we can finish equalizing the skin color.

Equalizing the Skin Color

Once we have our color region in place we can shift the Hue slider to the left just a bit towards red. Again we're aiming for Yellow and magenta close with yellow a few points higher – don't try to "hit" an exact color; some color variation is natural and desirable. Equalizing the skin tone this way is very much like using a makeup base color to even out the skin and cover up blemishes. If you handle this well it will be seem as if nothing were done to the image and yet it has a huge impact!



Masking off the Adjustment

All this hue shifting has caused the teeth and lips to look just a bit off. We need to mask the effect in this region. Make sure the layer mask for the Hue/Saturation adjustment is active – click on the mask thumbnail in the "Layers" palette so that the mask icon is visible next to the eye for that Layer. Now take a brush with black and paint over the area of the lips and teeth. You might want to do this with a reduced opacity setting and gradually remove the color shift, returning the lips to a more natural pink color and the teeth to a more natural yellow!

Final Skin Color

The final skin color looks a lot healthier and it also minimizes the freckles and skin texture without looking unnatural or "painted".

To see how far we've come click on the "Original" button below

Click to Original

Original Color

The original image might not seem so bad if we hadn't seen the corrected version. Analyzing the color in the first step was our first clue and by using the values in the info palette we were able to remove all traces of red blotchy skin without resorting to painting or cloning.

This technique can work miracles with teenage acne, red veins in noses, puffy eyes, etc...

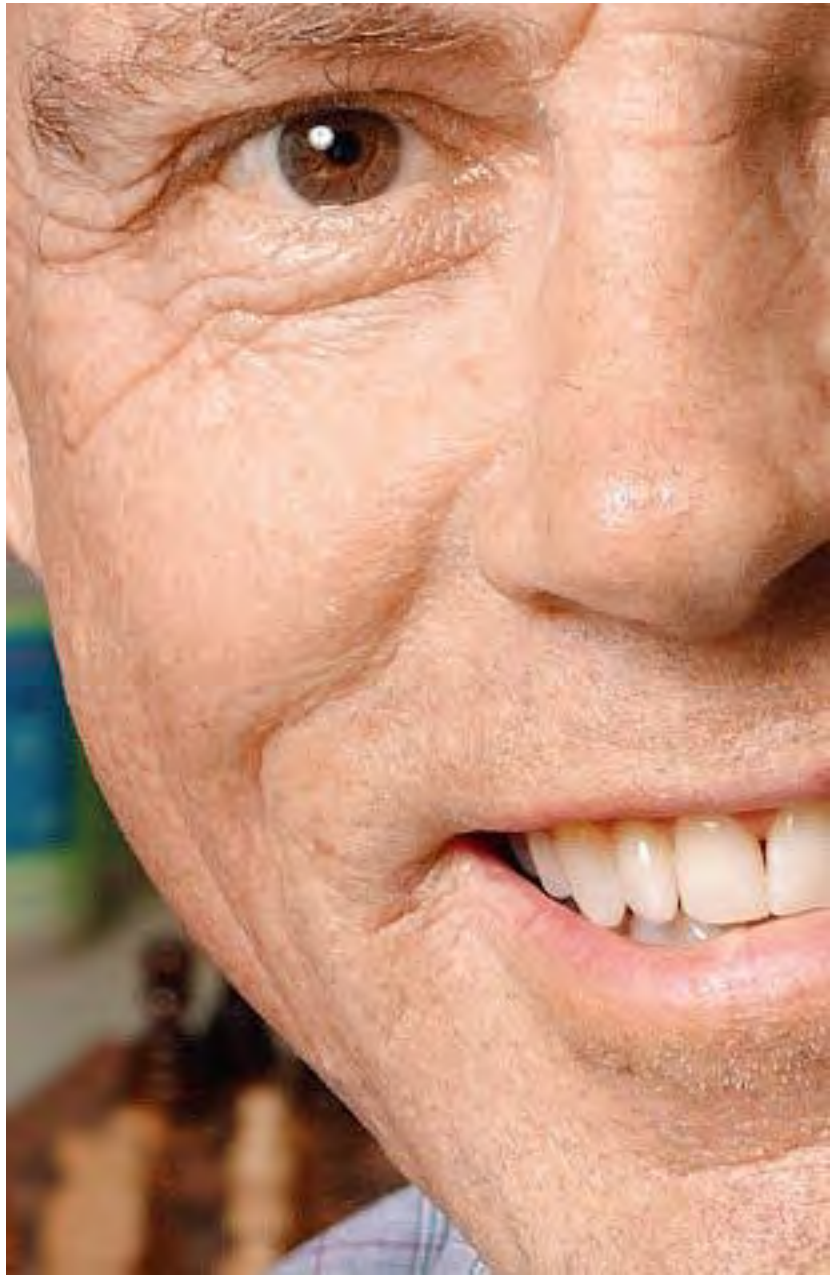
Click to Adjusted Color

Click to Final

Sharp? not for Skin

You may have noticed that this photo has not been sharpened and so it has appeared to be a little soft. When it comes time to print this image we will need to apply some level of sharpening. Once we do even a modest amount of unsharp mask we encounter another problem. The skin that we worked so hard on has now taken on a much harsher texture – though the sharpening works for the sparkle in his eyes and teeth we'd prefer not to have so much detail in the skin texture.

Lets back up! We will first apply a skin smoothing technique that "fills in" most of the wrinkles without an excessively retouched look!

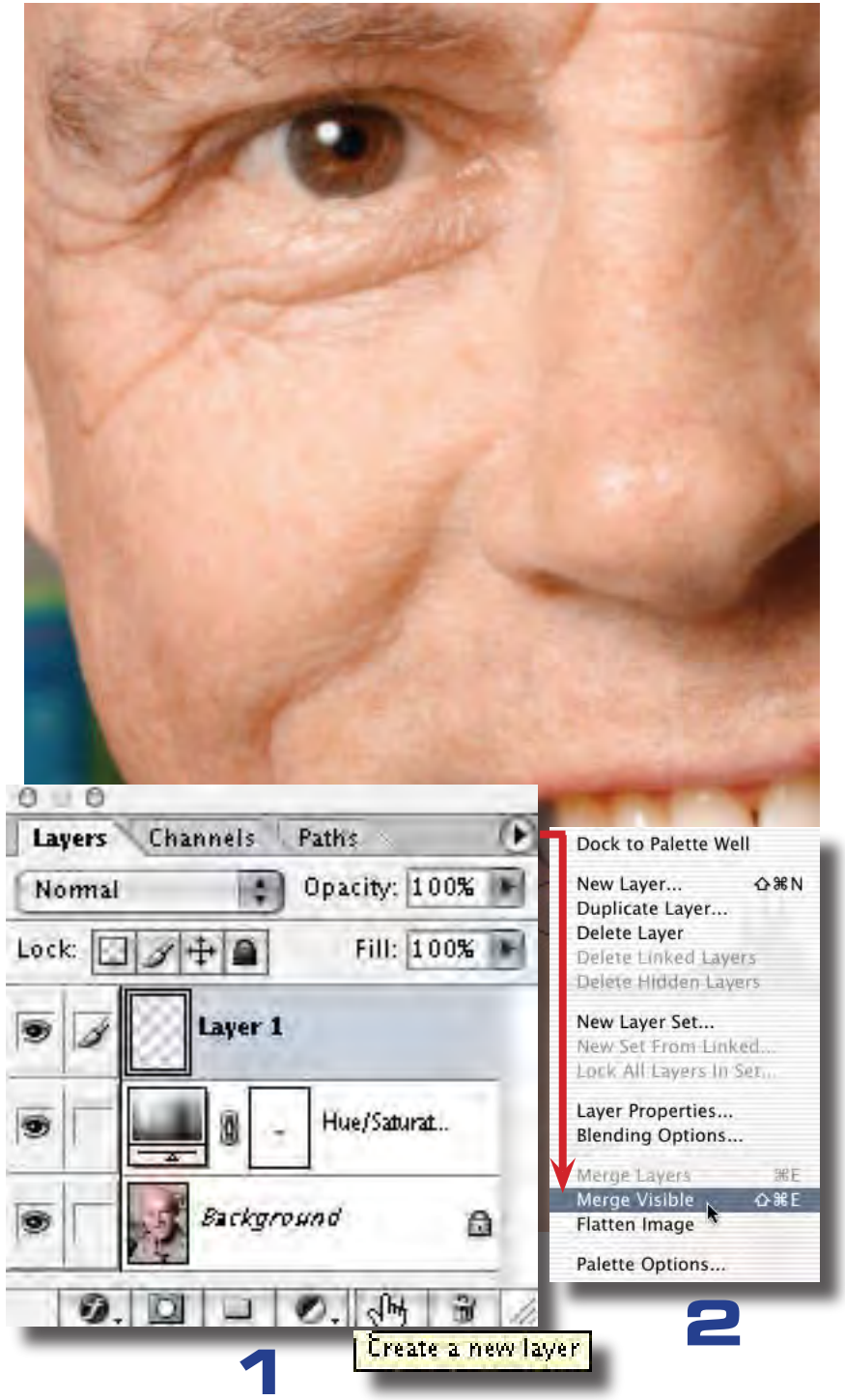


Set Up Smoothing

Now we're going to set up two "smoothing" layers!

(1) Create a new empty layer at the top of the "Layers" palette by clicking the new layer icon at the bottom of the Layers palette.

(2) With this layer selected, hold down the "option/alt" key and select: "Merge Visible" from the layer options menu at the upper right of the Layer palette. This will "stamp" the composite result of all the layers into this top most layer.



Median Filter

Now we'll blur this new layer. I always do this sort of thing as a two step process.

First run the Median Filter – select: Filter-> Noise-> Median... this filter is a special type of blur that is normally used to smooth out noise. The Median filter tries to preserve sharpness at major edge transitions. We get a good deal of texture smoothing without totally obliterating image features. This will be important once we blend this blur over the regular layers.

The second step involves the Gaussian Blur filter to take a little of the "edge" out of the Median result...

Gaussian Blur

After running the Median filter, there is some subtle banding visible in the smooth areas - I like to kill this with a slight Gaussian Blur. This is not strictly necessary for the application we have in mind but I like to do this as a matter of habit. Select: Filter-> Blur-> Gaussian Blur... Use a small radius... just enough to smooth out the micro bands left over from the Median filter...

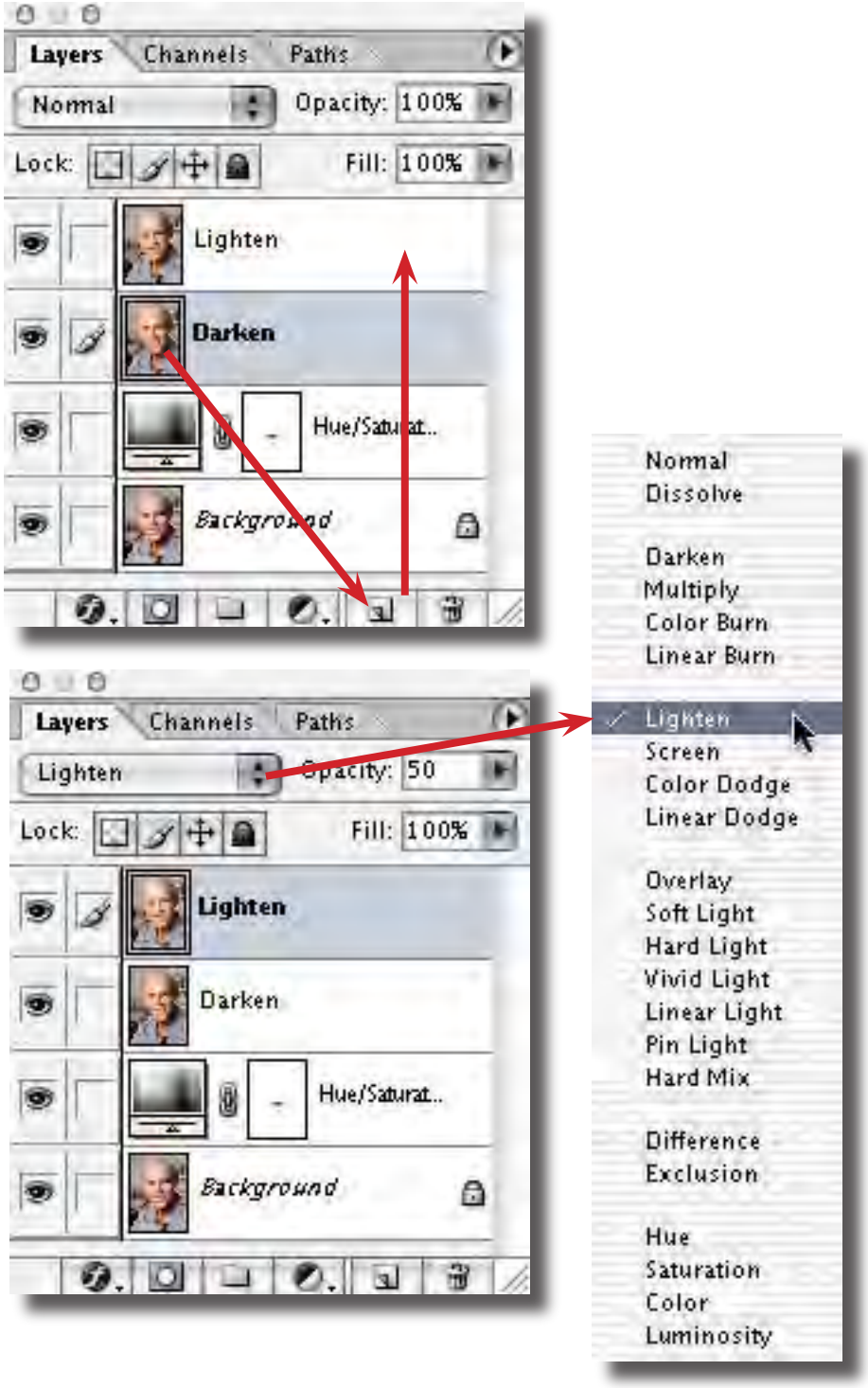
Set Up Light & Dark Layers

Next we will copy this blur layer – drag the layer thumbnail onto the new layer icon at the bottom of the Layers palette. This will create a duplicate at the top of the layer stack. Re-name these layers "Darken" and "Lighten" – double click the name next to the thumbnail to edit the text.

Now, change the Apply Mode to Lighten and Darken to match up with the named layers – select: "Lighten" from the apply modes menu just below the "Layers" tab in the palette.

Once you do this, you will you will have two smooth layers - one with a "Darken" apply mode and the other with the "Lighten" apply mode. We will use the interaction of these two apply modes with the underlying layers to "fill in" the pores and smaller wrinkles in the face.

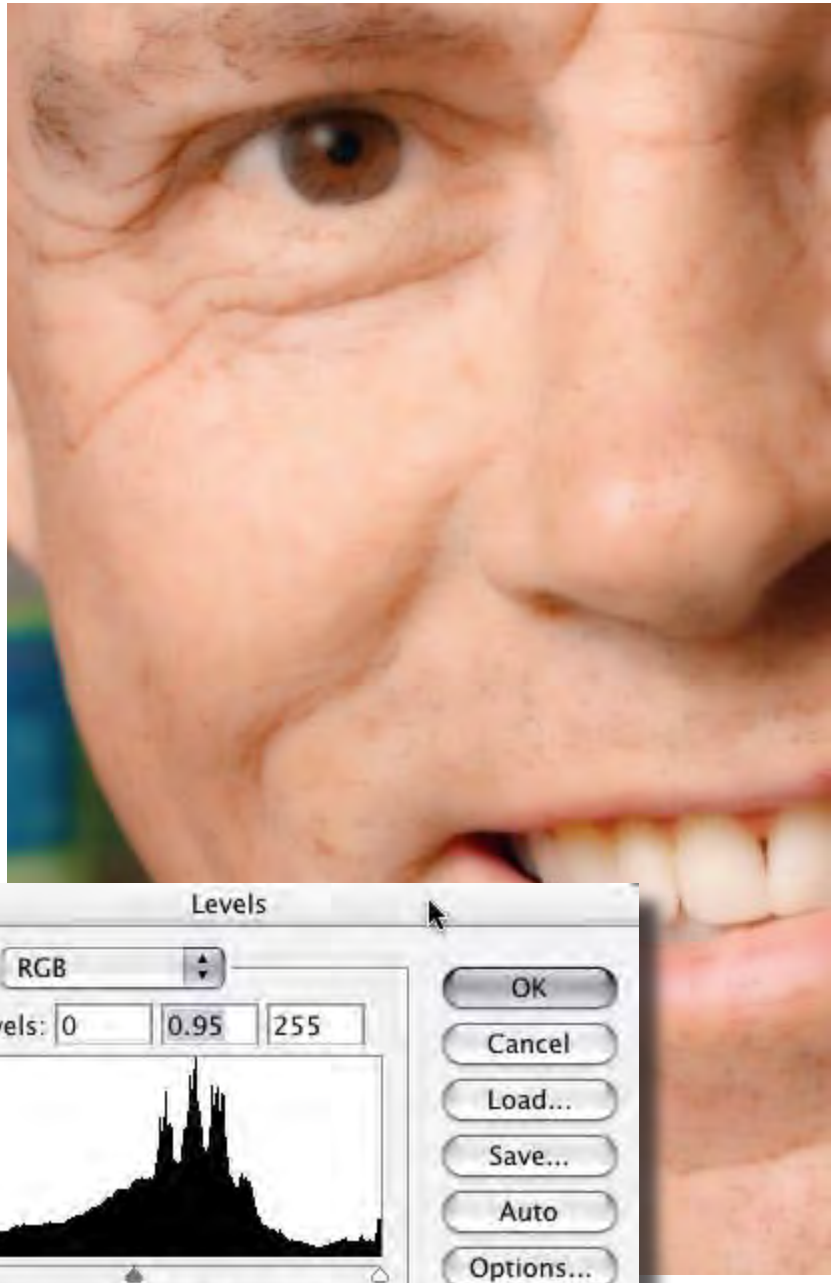
Before proceeding, turn off the visibility of the "Lighten" layer by clicking off the "eye" for that layer...



Darken Apply Mode

The Median/Blurred layer applied over the regular image in "Darken" mode creates a kind of diffusion effect where the darker details remain unaffected and show up as dark lines. The lighter details in the skin texture are covered up with the blurred layer. Darken applies only where it can make the underlying layers darker. We can control how much or how little we cover up by some subtle moves with Levels and blending options.

Open the Levels dialog directly on the "Darken" layer: Image-> Adjustments-> Levels (cmd/ctrl-L). To cover up more dark details move the midpoint slider to the right, darkening the layer slightly. Most of the skin texture we want to obscure is dark so by darkening the "Darken" layer more detail is covered by the smoothing.

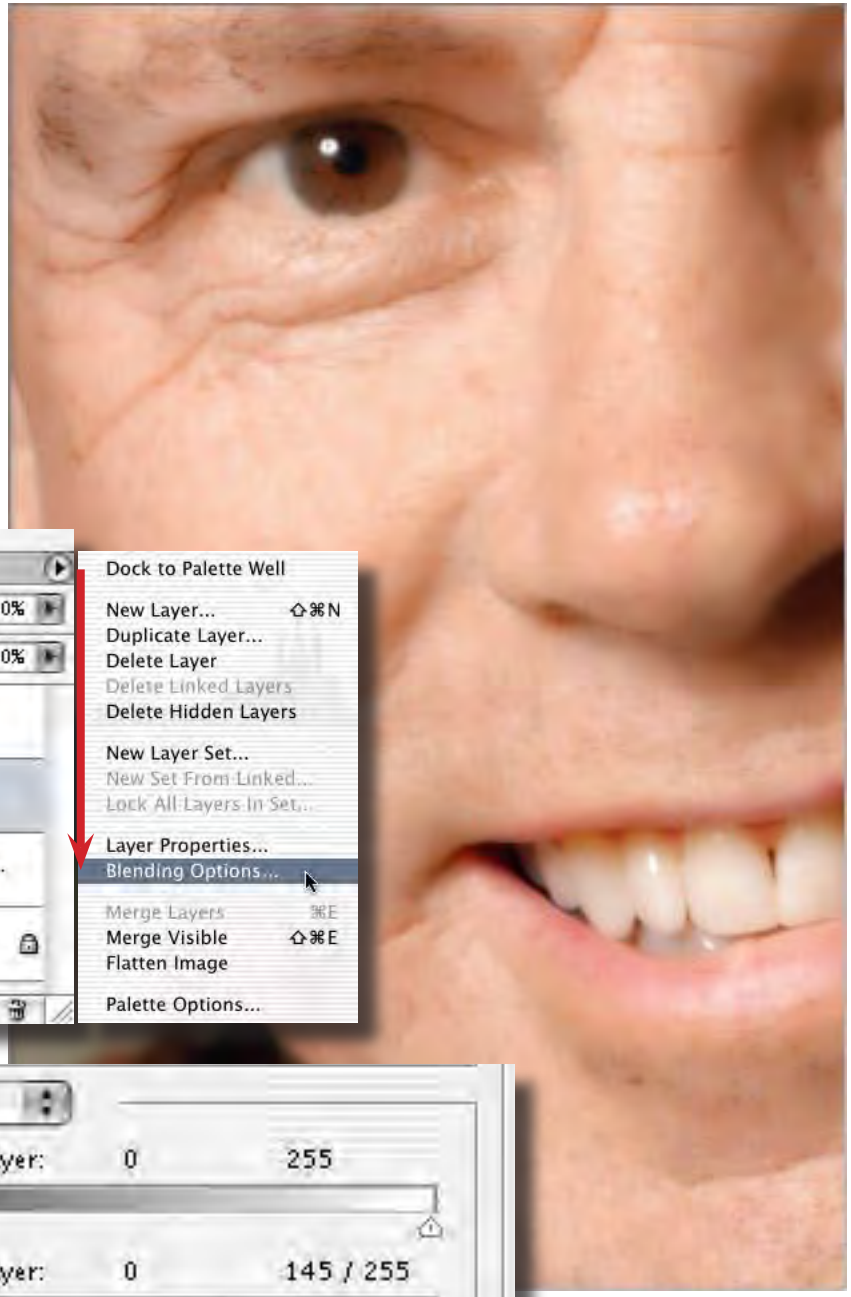


Blending Options

This next step brings back some of the highlights: Select: "Blending Options" from the layer options drop down menu. This opens the "Layer Styles" dialog – we're only concerned with the lower part of the dialog: Blend If "Gray" (as shown below). Move the right triangle slider just a bit to the left until the specular highlight in the eye becomes visible. Now hold down the "option/alt" key and "split" the slider, move the left half over to the left until a few more highlight details are visible.

At this point, you've achieved a fairly subtle diffusion effect and for many images this may be all that is needed. You can temper the effect by reducing the opacity slider for this darken layer to reveal just enough of the sharper image below. For this particular project we're going to combine both Darken and Lighten layers for a more controlled way to "fill-in" midtone details and preserve only the highlight and shadow details we want.

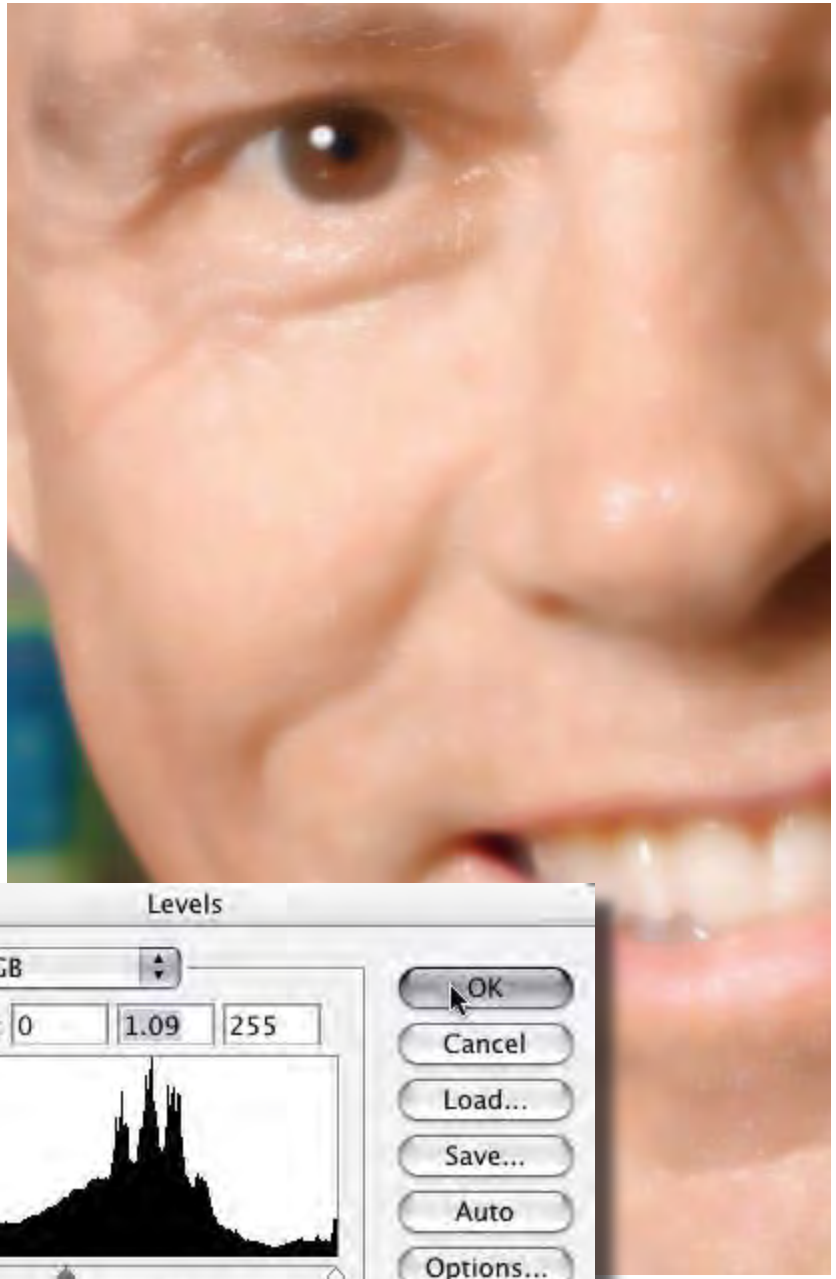
Change the layer opacity to 50% and then turn off visibility for this "Darken" layer so we can concentrate on the "Lighten" layer...



Lighten Apply Mode

Select the "Lighten" layer and, as we did before, run a "levels" command on the layer. If we darken this layer we will show more of the light details. For many images this might be desirable but here all the little white lines that show up are distracting. In this case, I prefer to cover up a little bit more so we move the midpoint slider to the left.

Now, we have two layers really doing the work that one "Normal" layer could do – after all, the normal apply would cover both dark and light details and you could still use "Blending Options" to adjust what gets covered and what gets exposed. In many cases this would be a perfectly acceptable strategy. However, having the lighten and darken components separated allows for much finer more subtle control for creating a "look" that is completely natural and undetectable as retouching or diffusion.



Blending Options/Opacity

As before, select: "Blending Options" from the layer options menu – this time we will blend into the shadows using the slider positions shown below.

If we use both layers at 50% the areas in the image where we have full coverage in the respective layers will be smoothed completely with the combination of both layers. The blend point between what shows and what doesn't can be interactively controlled by adjusting the blending options in each layer as well as the opacity in each layer. You can favor lighten or darken smoothing as fits the image. In the shot of Dr. Doug we'll use a pretty even blend but I encourage you to test out different variations to see how this all works.

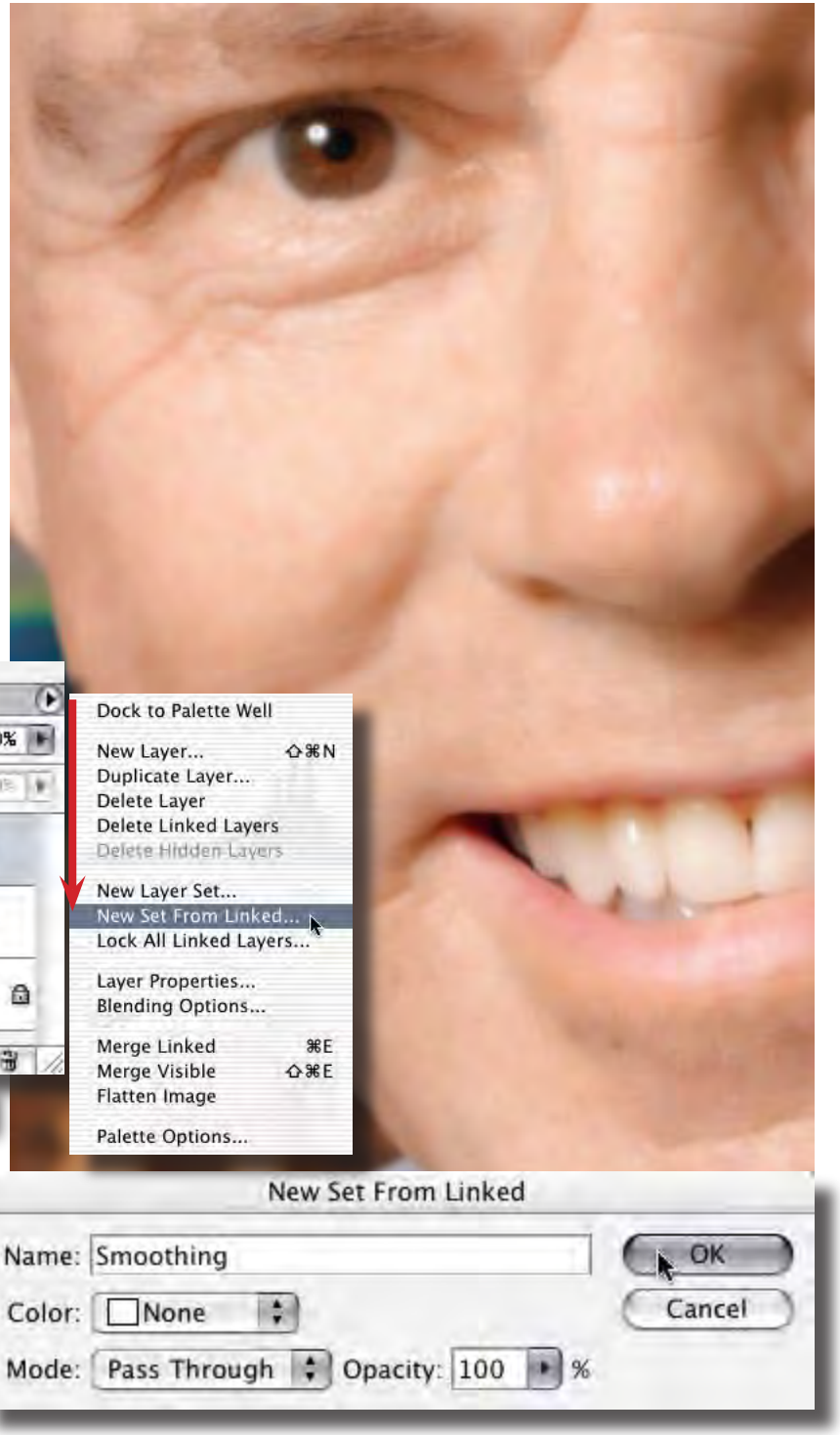
Change the opacity of the layer to 50%, turn on the visibility of the "Darken" layer and now "link" the two layers by clicking in the "well" to the left of the "Darken" layer thumbnail. In the next step we will turn these linked layers into a Layer Set...

Layer Set- Two Layers into One

Now that the two smoothing layers are in place, we have soothed out the offensive skin texture but there are areas that are too smooth where we want full detail to show, like the eyes, lips and teeth. In order to avoid having to duplicate any masking work we might do in two layers we will combine both the Lighten and Darken layers into a Layer Set.

With the two Layers now linked, select: "New Set From Linked" in the layer options drop down menu. Name the set "Smoothing" and make a mask for the set by clicking on the "mask" icon at the bottom of the "Layers" palette.

We can now paint into this "Layer Mask" to hide the smoothing effects in the eyes, hair, teeth, lips – anywhere we might want full sharp focus.

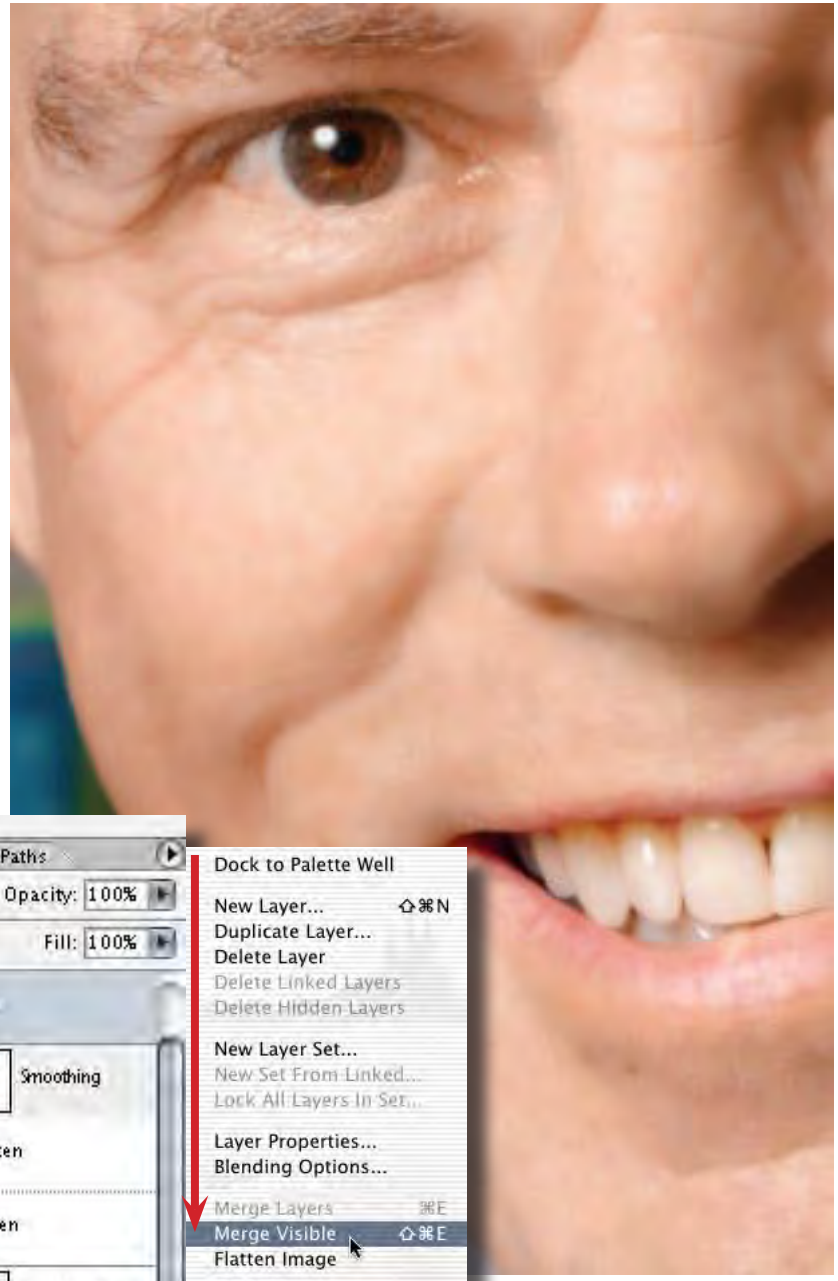


Layer Mask for Control

Here we have begun to mask off the smoothing in the eye and eyebrow as well as the teeth and lips. You only need to have certain details sharp to convince the viewer that the image is in focus. We leave the skin soft – when we apply unsharp mask to the whole image the pre-softened skin won't end up looking bad.

To properly set up a "Sharpen" layer, first create an empty layer at the top of the layer stack, hold down the "option/alt" key and select: "Merge Visible" from the layer options menu. Finally, change the layer apply mode to "Luminosity" by selecting from the apply modes menu just under the "Layers" tab.

Next we will apply unsharp mask to this layer...



Apply Unsharp Mask

By applying unsharp mask to a "Luminosity" layer, we avoid creating colored halos that can make the sharpening look unnatural. Usually we only want to apply sharpening when we know what kind of output we are going to. However, I like to apply a very narrow radius sharpen as a first stage sharpening even before I am certain of the output.

If I think that I might scale the image up in size I will use a fairly modest amount, usually 200% or less. If I think that I will use the image at the same size or smaller I will sharpen at 350 - 400%.

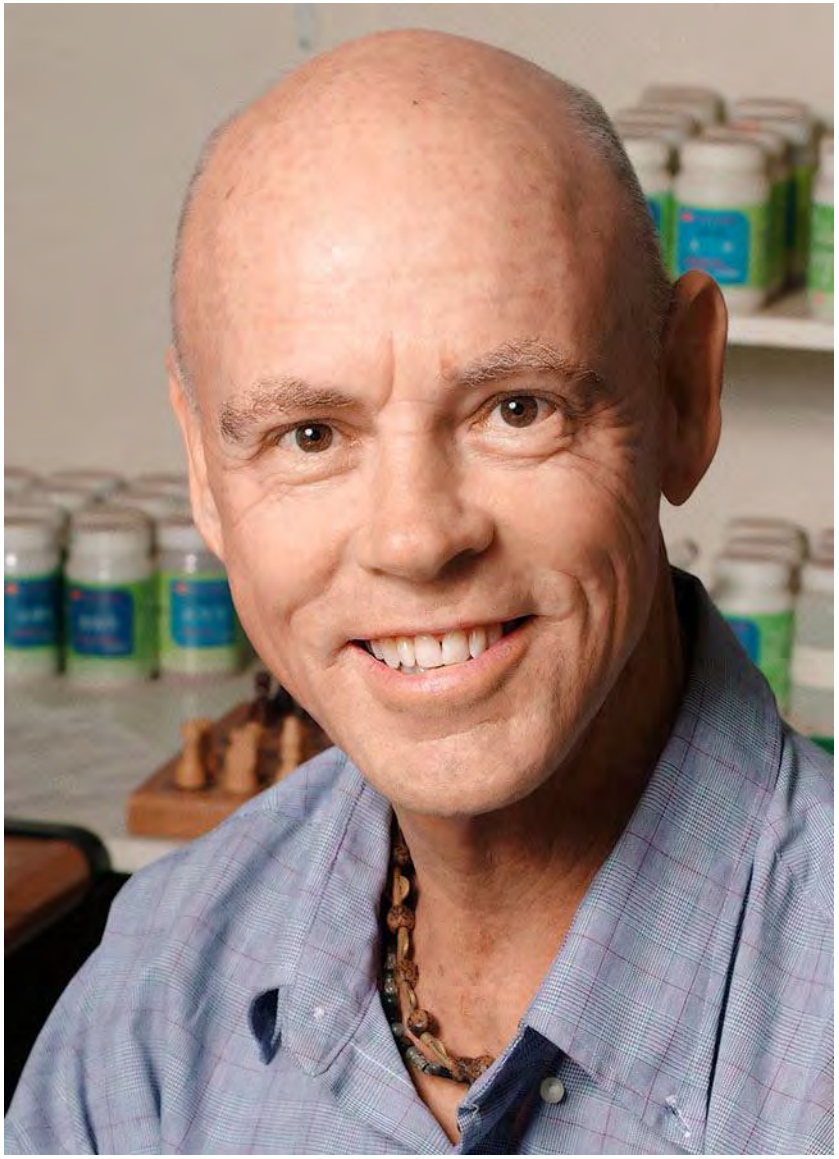
In both cases I use very narrow, sub-pixel Radius settings - with clean digital captures like this one I set the Threshold to "0"

To see how far we've come from the original click on the button under the image to the right...

Click to Original

Finished Version

Here is the full version as it appears on Doug's web site. You can toggle between the original sRGB version and this one by clicking the button. At this size the smoothing is not apparent at all. Even at full res on a print the viewer will not be aware that any retouching was done. Most of the natural wrinkles (what we like to call "character lines") show up but they don't look quite as deep and the skin texture is a lot smoother. Of course the red blotchiness is all gone. The good thing is that Doug is not even aware that anything has been done



Click to Original

Conclusion

Natural Enhancement for Portraits

This technique turns out to be quite useful in digital captures of people. Most digital cameras tend to emphasize red skin tones as a result of the infrared sensitivity of the CCD or CMOS chip. There is a trade off between ISO sensitivity and infra-red cut-off – many cameras use a slightly less dense "green" infra-red filter on the chip to gain better signal to noise sensitivity in shadow tones. Most often, even custom camera profiles fail to fully compensate for this in skin tones. Unfortunate blemishes, veins and skin pores are rendered redder than normal. Working the Hue/Saturation adjustment ranges can work miracles with problem skin tones.

The 2nd part of this technique overcomes the common problem encountered when sharpening portraits – skin texture in highly detailed digital portraits can get overly harsh once appropriate sharpening is applied for final output! The two layer smoothing gives you very fine control over the amount of smoothing and where smoothing "kicks in".

Mastering these techniques will lend your images the subtle quality the separates a great image from a simply good image. The time spent experimenting with these techniques will be well rewarded.

Varis PhotoMedia Tutorials

Thank you

I hope you enjoyed this tutorial. The techniques outlined here represent just the tip of the iceberg. Photoshop is a very deep application - a person could spend years studying it and there will always be more to learn. If all this seems a little overwhelming, take a break, do what you feel comfortable doing in Photoshop and return to this tutorial again later on. Often, it takes several weeks for a particular technique to sink in so give it time.

I have other tutorials available online (navigate to the methods section), some are free and some are available for a modest charge. See tutorials and some examples of my work at:

http://www.varis.com

There are many learning resourses available on the web - here are a few other sites with good information:

http://www.russellbrown.com

http://www.creativepro.com

http://luminous-landscape.com/

http://www.imaging-resource.com/HOWTO.HTM

http://www.photoworkshop.com/

http://www.adobe.com/misc/training.html

http://studio.adobe.com/expertcenter/photoshop/main.html

http://www.ledet.com/margulis/articles.html

http://www.steves-digicams.com/

http://www.photoshopuser.com/

http://www.handson.nu/

http://photoshopgurus.info/

These last two links are typical of the majority of Photoshop tutorial sites - they are focused on cool graphics effects not photography. You might want to look over this material anyway - sometimes you can learn a lot about basic functions in Photoshop.

I'm always trying to improve these materials and I'm always open to your feedback. You may contatct me via email at:

varis@varis.com

best regards, Lee Varis 2003