

Ethics and Computational Photography

Fredo Durand
MIT EECS & CSAIL

Class morph

- <https://www.youtube.com/watch?v=Fx0xFNSbZDU>

-

Plan

- Photo manipulation exists
- Manipulation can be problematic
 - Beauty, photojournalism, propaganda, law
- Context matters

An abbreviated history (or zoo?) of photo manipulation

Fredo Durand

MIT EECS & CSAIL

See also [https://en.wikipedia.org/wiki/Photo_manipulation?](https://en.wikipedia.org/wiki/Photo_manipulation?fbclid=IwAR08aJPk9mVXY3P8a_ADX_4jVwsvCUC_C2sum4-SL4n5tWU_nADUuzFskKw)

[fbclid=IwAR08aJPk9mVXY3P8a_ADX_4jVwsvCUC_C2sum4-SL4n5tWU_nADUuzFskKw](https://en.wikipedia.org/wiki/Photo_manipulation?fbclid=IwAR08aJPk9mVXY3P8a_ADX_4jVwsvCUC_C2sum4-SL4n5tWU_nADUuzFskKw)

After Yezhov's fall



**In this 1944 photograph
of Benito Mussolini...**



**...the horse handler
was removed to make
it look more heroic.**



GRANT - CIVIL WAR - WITH GRANT

LC-USZ62-21992

PRESIDENT FILE



EVERETT 1865
K. H. H. H.

GENERAL GRANT - CIVIL WAR

Compton photo

This picture of President U.S. Grant is pretty ambitious for someone who's never heard of Photoshop. It's made up of three different shots: A background of Confederate Soldiers captured at Fisher's Hill, the body and horse from a picture of Major General Alexander M. McCook, and the portrait of Grant shown at right.

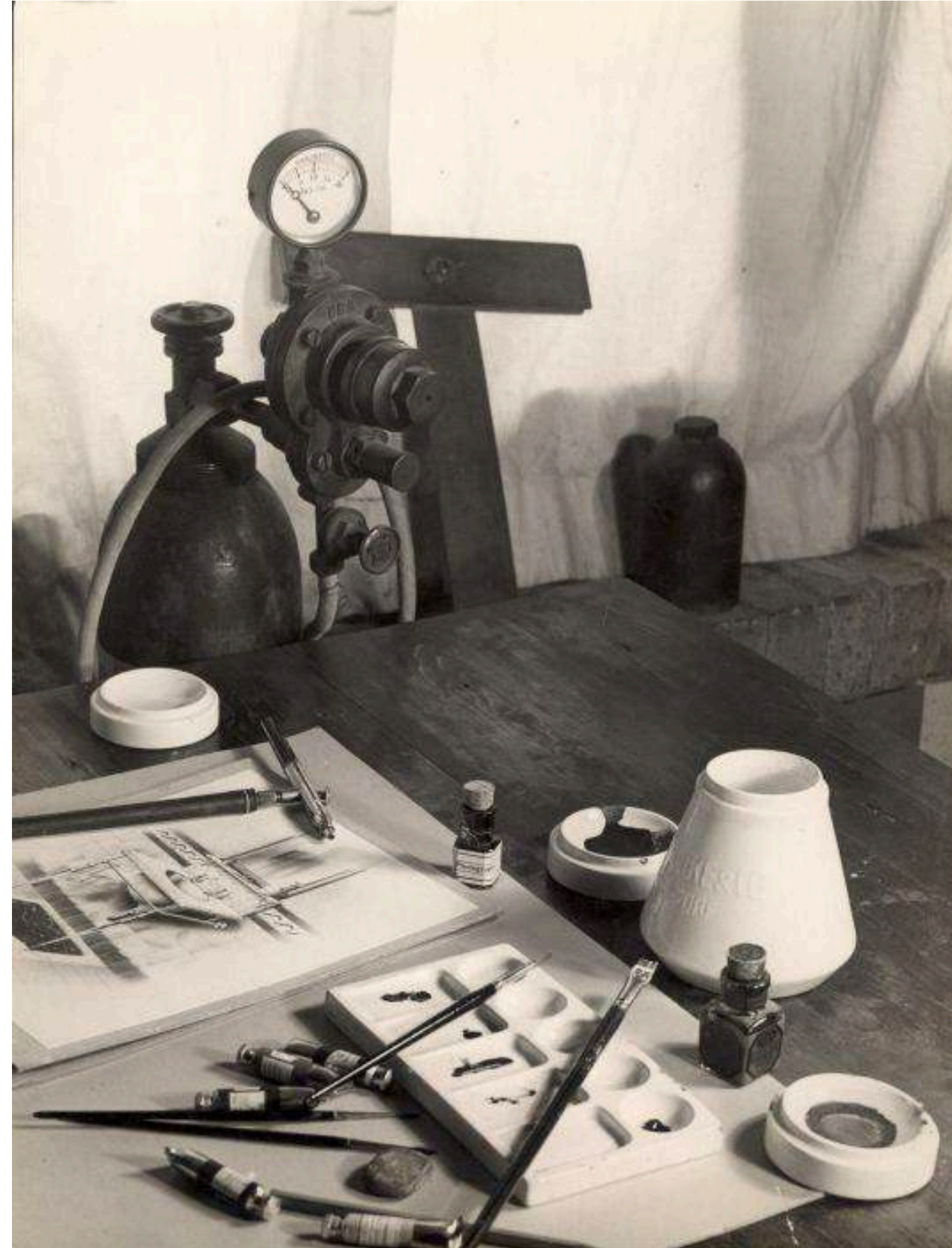


Major General A. M. D. McCook



CRACKED.COM

Old tools



Rolling Stones

ROLLING STONES RARITIES

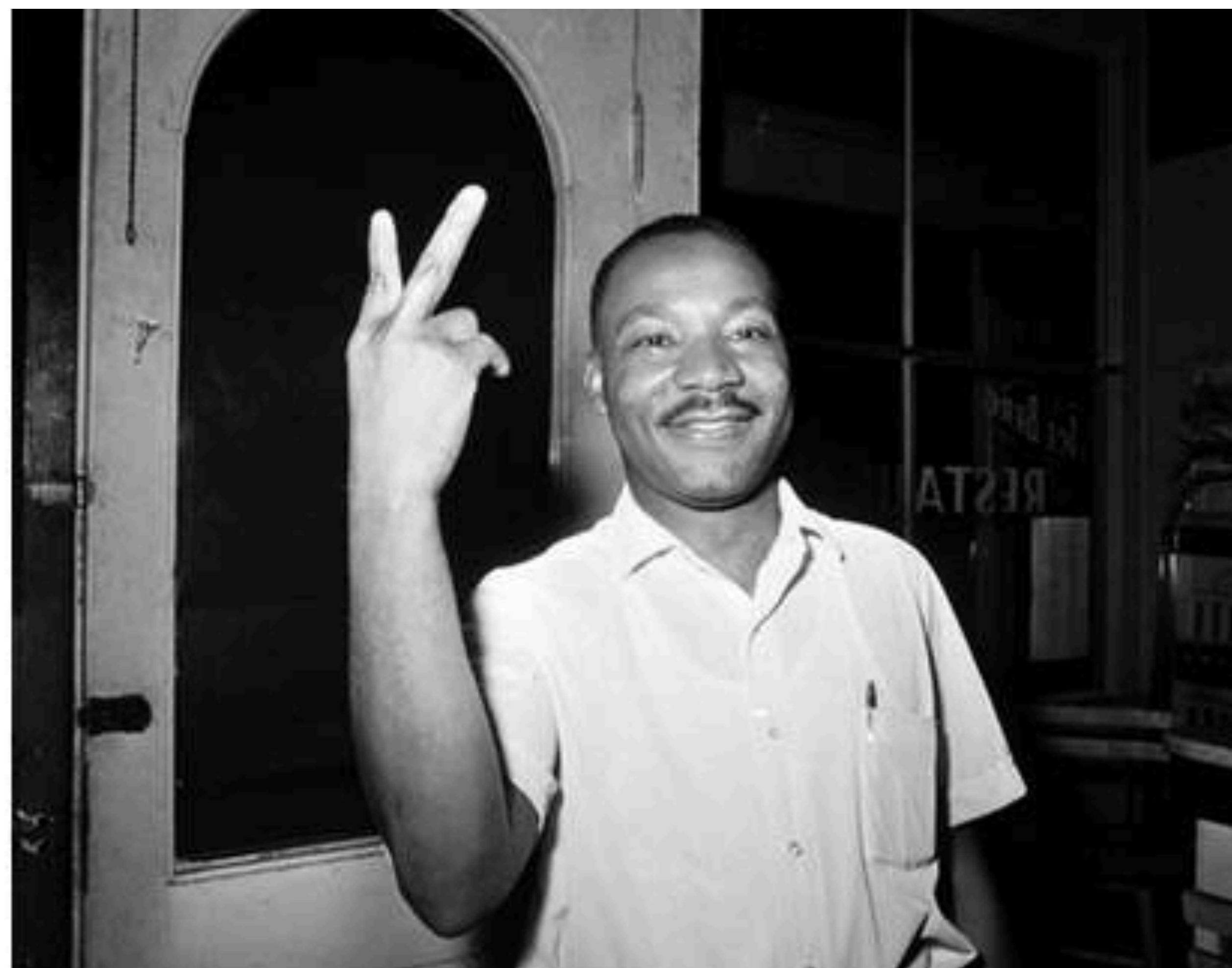
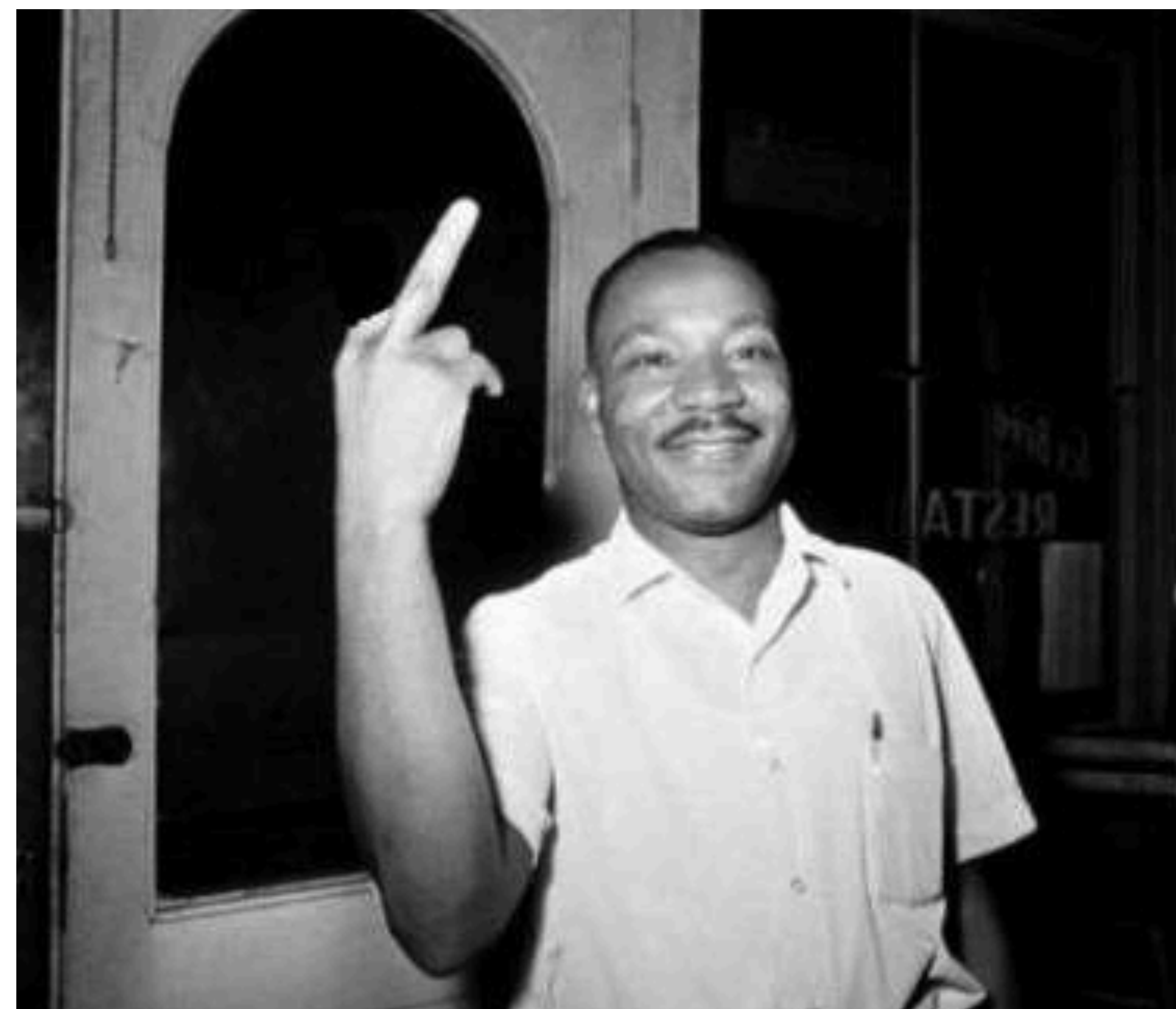
1971-2003



Taking a page out of Stalin's playbook, The cover of the Rolling Stones album *Rarities 1971-2003* has Bill Wyman removed from the original photograph, because Wyman left the band in 1992.

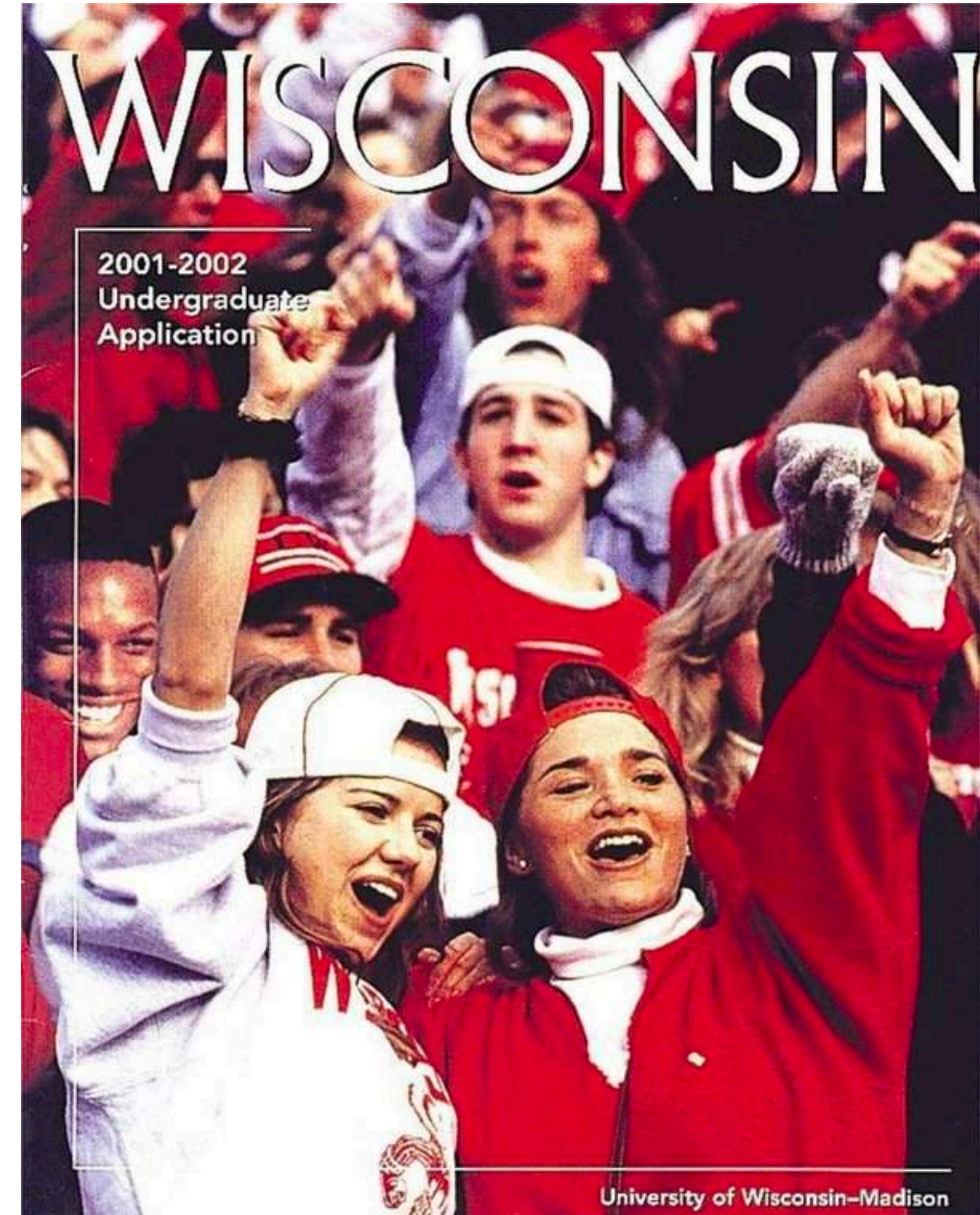
CRACKED.COM

MLK Jr



University of Wisconsin Booklet Photoshopped to Add Black Student

- <https://www.snopes.com/fact-check/photo-finish-2/>
- <https://thesocietypages.org/socimages/2009/09/02/doctoring-diversity-race-and-photoshop/>
-



Kerry/Fonda

Fonda Speaks To Vietnam Veterans At Anti-War Rally



Actress And Anti-War Activist Jane Fonda Speaks to a crowd of Vietnam Veterans as Activist and former Vietnam Vet John Kerry (LEFT) listens and prepares to speak next concerning the war in Vietnam (AP Photo)





This is what you get when
you put Oprah Winfrey's face...



...on Ann Margret's body.





**This is Patriarch Kirill I,
the leader of the
Russian Orthodox church...**

...and this is his \$30,000 watch...



...before it was edited out...

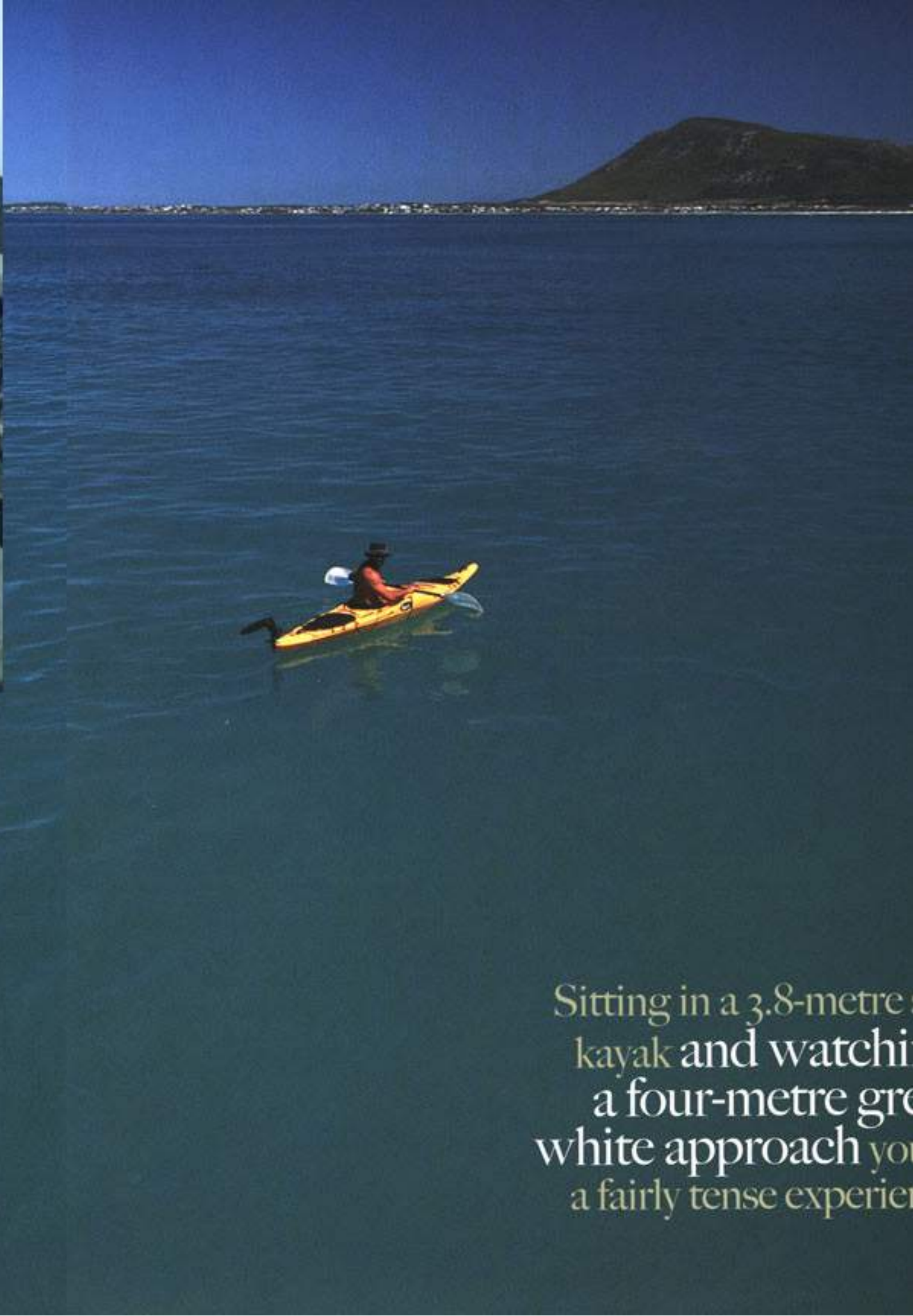
...kind of.

MGM Lion









Sitting in a 3.8-metre
kayak and watching
a four-metre grey
white approach you
a fairly tense experience



Context++

- Digital Wizardry, creative Photoshop techniques, Amphoto books, 1998



Fake fake

Jack Cashill, author of the book *Deconstructing Obama* claimed to have discovered a photoshopped photo of President Obama and his grandparents sitting on a New York City bench...



Presenting this version of the "original picture" below as proof that the photo had been manipulated.



Well, one of them has... but it's the supposed "original". Anyone even slightly familiar with Photoshop will see the stone background to the right of this picture is one of the worst examples of "clone stutter" ever produced. Also, he forgot to Photoshop out Obama's knee, between the grandparents.

CRACKED.COM

Fake as an excuse

- https://www.cnn.com/2018/04/20/middleeast/iraq-parliament-candidate-withdraws/index.html?fbclid=IwAR30SzDby_Wjdz-he_bscMcxh2hidprEXuopQ71rz_qOIFNy7QnJTnRJXO4
-

-
- More at <https://www.quora.com/What-are-some-of-the-most-widely-circulated-fake-pictures>
 - <https://www.cracked.com/pictofacts-41-24-famous-photos-you-wont-believe-were-fake/>
 - <https://www.snopes.com/fact-check/category/photos/>



OJ



Adnan Hajj photographs controversy

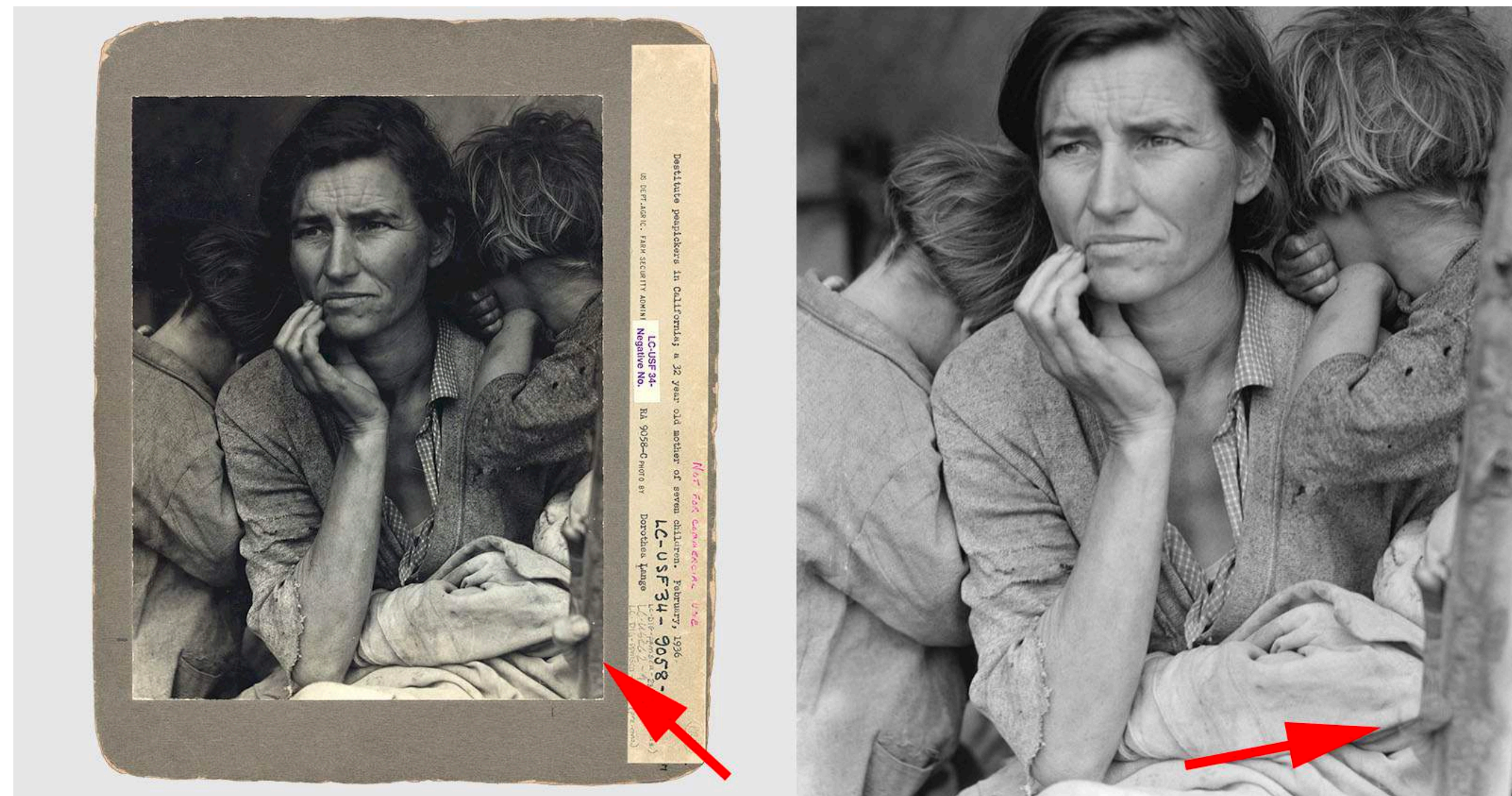


World Press Photo competition

- 2015, 20 percent of finalists eliminated because too retouched (once compared two RAW files)
- <https://lens.blogs.nytimes.com/2015/02/17/world-press-photo-manipulation-ethics-of-digital-photojournalism/>
- e.g. tone mapping that renders some parts too dark, remove objects,
- But note that raw files could be manipulated too.
- <https://www.worldpressphoto.org/programs/contests/photo-contest/verification-process/what-counts-as-manipulation/28615>

Dorothea Lange, Migrant mother

- <https://petapixel.com/2018/11/30/that-iconic-migrant-mother-photo-was-photoshopped/>



- More importantly it is staged. <https://www.diyphotography.net/how-the-iconic-photo-migrant-mother-was-staged-and-captured/>. <https://www.popphoto.com/how-dorothea-lange-created-her-migrant-mother-photo#page-2>

Steve McCurry

- <http://time.com/4351725/steve-mccurry-not-photojournalist/>
- <https://www.digitalrev.com/article/eyes-of-the-afghan-girl-a-critical-take-on-the-steve-mccurry-scandal>
- Caption: “Haunted eyes tell of an Afghan refugee’s fears”



Texture

- <https://www.popphoto.com/american-photo/processing-news-retouching-photojournalism#page-2>
- Claudio Palmisano, of 10b Photography, based in Rome, processed the images in this story for the journalists who shot them.



Texture

- <https://www.popphoto.com/american-photo/processing-news-retouching-photojournalism#page-2>
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Iwo Jima

- <http://web.mit.edu/drb/Public/PhotoThesis/>
- The confusion over the authenticity of the famous photograph resulted from Rosenthal's casual response to a correspondent back at Guam. The reporter congratulated Rosenthal on the image and then asked if it was posed. Thinking that the writer meant the third picture, Rosenthal admitted that it had been set-up.
- In decades previous, there would have been no ethical problem either way - had Rosenthal posed the picture or had he not, nobody would have protested. Technology, however, made it possible to capture images like Rosenthal's without interfering with the scene.



Brian Walski, LA Times Iraq photo

- <http://www.alteredimagesbdc.org/walski>
- The published photo is a composite of two images taken seconds apart. After the Hartford Courant published the image, a Courant employee noticed a duplication of civilians in the background. The Los Angeles Times confronted Walski, who confessed to having digitally merged the two photographs to improve the composition.



The Actual Photos





Context matters



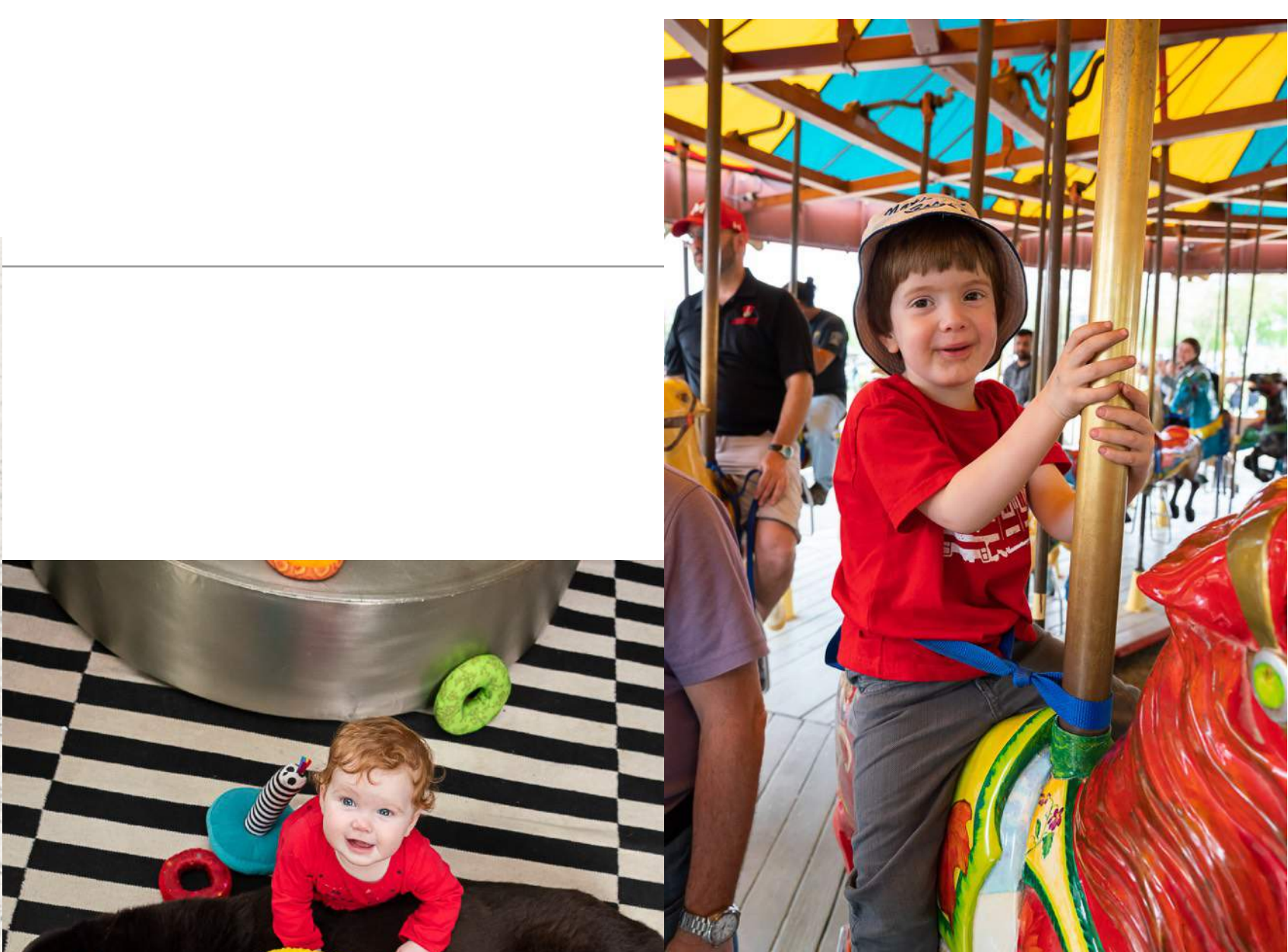
- <https://petapixel.com/2019/05/07/this-milky-way-photo-on-nat-geo-is-raising-eyebrows/>



Family trip to DC and selective editing



Family trip to DC and selective editing



Fake captions

- Claim: Ronald Reagan met with the Taliban in 1985 and compared them to the founding fathers of the United States.



False, Mujahideen

-
- Does this photo show Houston after severe rains in 2015?
 - No. While this photograph does show flood waters in Houston, the above-displayed image was taken in 2001.
 - <https://www.snopes.com/fact-check/houston-flood-photo/>



Is This a Photograph of the ‘Organizer’ of the Immigrant Caravan?

- <https://www.snopes.com/fact-check/caravan-organizer-photo/>
- In reality, the man in the photograph was Rubén Albarrán, lead singer of the popular Mexican band Café Tacvba. The photograph was likely taken during a visit Albarrán and bandmate Emmanuel del Real made to caravan members during their stop in Mexico City.



Does This Photograph Show Barack Obama Dressed as Satan?

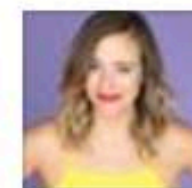
- <https://www.snopes.com/fact-check/barack-obama-illuminati-photo/>
- The head piece in this photograph, which was created by Miss G Designs and the pictured costume were both worn to a Burning Man Festival in 2015 by New York Real Estate agent Michel Madie. We've found several other images of Madie in this headdress and costume via Ben Henretig, Scott London, and Facebook:



News & fake news

- Retouched photo
- Fake caption
- Selective choice of photos to take, publish
- Choice of topics to cover and emphasize

Careful with humor



Janell Lenfert

about 4 years ago



If you need a babysitter, please let me know! Also can't believe I need to say this but THIS IS FAKE. ITS BAKING FLOUR PEOPLE!!

Video is harder to manipulate, still possible though

Fake dragon air landing

- <https://www.snopes.com/fact-check/dragonair-737-typhoon/>
- <https://www.youtube.com/watch?v=fYCQ87kGUP0>
- created by “MeniThings,” a production company which specializes in CGI



Peele Obama

- <https://www.youtube.com/watch?v=cQ54GDm1eL0>

-



Also
<https://www.youtube.com/watch?v=DIZf7eR1D4w>

Harrison Ford in Solo movie?

- <https://www.youtube.com/watch?v=ANXucrz7Hjs>



Deep fake

- <https://goberoi.com/exploring-deepfakes-20c9947c22d9>
- <https://www.economist.com/science-and-technology/2017/07/01/fake-news-you-aint-seen-nothing-yet>
- <https://github.com/deepfakes/faceswap>
- <https://www.dailymail.co.uk/sciencetech/article-5492713/Experts-warn-deepfakes-videos-politicians-manipulated.html>
-

- https://www.motherjones.com/politics/2019/03/deepfake-gabon-ali-bongo/?fbclid=IwAR1d4b7YGKtryyYMX9twTEeYrBckEz3TF5b5rF-bp_fCgiBXULQvzobjQg1o

The Bizarre and Terrifying Case of the “Deepfake” Video that Helped Bring an African Nation to the Brink

A controversial appearance by the president of Gabon portends a future where you can't believe your eyes.



ALI BRELAND

Reporter

[Bio](#)



Government of Gabon

Jim Acosta

- White House reposted a doctored video (timing altered) to justify revoking CNN's Jim Acosta's credentials



Fake porn

- <https://www.dailydot.com/unclick/deepfakes-ai-celebrity-porn/>
- https://www.vice.com/en_us/article/gydydm/gal-gadot-fake-ai-porn
- <https://www.theverge.com/2017/12/12/16766596/ai-fake-porn-celebrities-machine-learning>
- <https://www.youtube.com/watch?v=0vI6Xw-htBs>
- <https://en.wikipedia.org/wiki/Deepfake>

Making images out of nothing

- https://github.com/tkarras/progressive_growing_of_gans
- <https://www.youtube.com/watch?v=G06dEcZ-QTg&feature=youtu.be>



Other context

Law

- **Under the “pictorial testimony” theory, photographic evidence is admissible when a sponsoring witness can testify that it is a fair and accurate representation of the subject matter.**
- Currently, the admissibility of photographic evidence is based on two different theories. Under the “pictorial testimony” theory, photographic evidence is admissible when a sponsoring witness can testify that it is a fair and accurate representation of the subject matter. It is important to note, this theory is based on the personal observation(s) of the witness. Under the “silent witness” theory, photographic evidence is admissible if the process used to produce the photograph is accurate and reputable. This theory speaks for itself, hence the “silent witness” designation.
- **Under the “silent witness” theory, photographic evidence is admissible if the process used to produce the photograph is accurate and reputable.**
- These two theories represent a departure from earlier requirements, which required authenticating testimony from the photographer and/or an expert witness regarding the reliability of the recording process. Notwithstanding the ease with which photographs or videos may now be introduced into evidence, a trial judge may still require expert testimony. For example, when a defense seeks to minimize the injury to the plaintiff’s person by showing minor injury to the vehicle via photographs, expert testimony may be required. Thus, before photographic evidence is used at trial, the trial attorney must consider the purpose of the photographic evidence and the need for expert testimony.
- <https://www.lexology.com/library/detail.aspx?g=8451aeb6-b353-47af-920d-badbdba86906>

-
- <http://illinoisjltip.com/journal/wp-content/uploads/2013/10/Parry2.pdf>
 - <https://via.library.depaul.edu/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=3747&context=law-review>
 -

College admissions



Not a real fake

Beauty

Fredo Durand
MIT EECS & CSAIL

See also [https://en.wikipedia.org/wiki/Photo_manipulation?
fbclid=IwAR08aJPk9mVXY3P8a_ADX_4jVwsvCUC_C2sum4-SL4n5tWU_nADUuzFskKw](https://en.wikipedia.org/wiki/Photo_manipulation?fbclid=IwAR08aJPk9mVXY3P8a_ADX_4jVwsvCUC_C2sum4-SL4n5tWU_nADUuzFskKw)

Dove

- https://www.youtube.com/watch?v=iYhCn0jf46U&fbclid=IwAR3baUR0oxl0YdsCn82INog_tUhUKCrSS9yYKXZJtSnBMh1FGu2-l3bJNds

-



-
- https://www.youtube.com/watch?time_continue=16&v=xKQdwjGiF-s



-
- <https://www.youtube.com/watch?v=318iFsOOWr8>



**No Make-up,
Studio Lighting**



**With Make-up,
Studio Lighting**



**With Make-up, Studio Lighting
and Retouching**

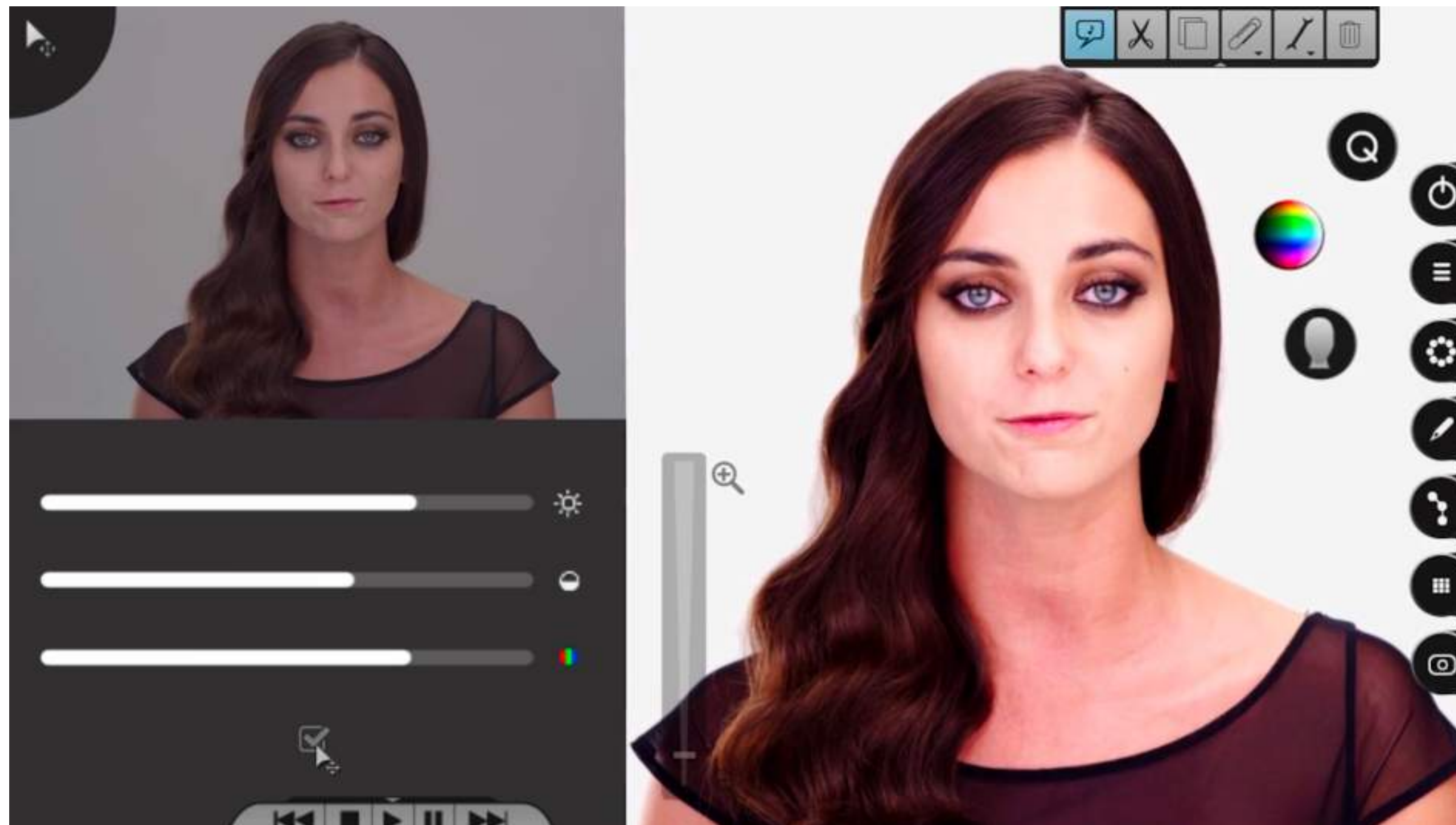


Not just digital

- Makeup
- Lighting
- Pose
- Plastic surgery
- Model selection

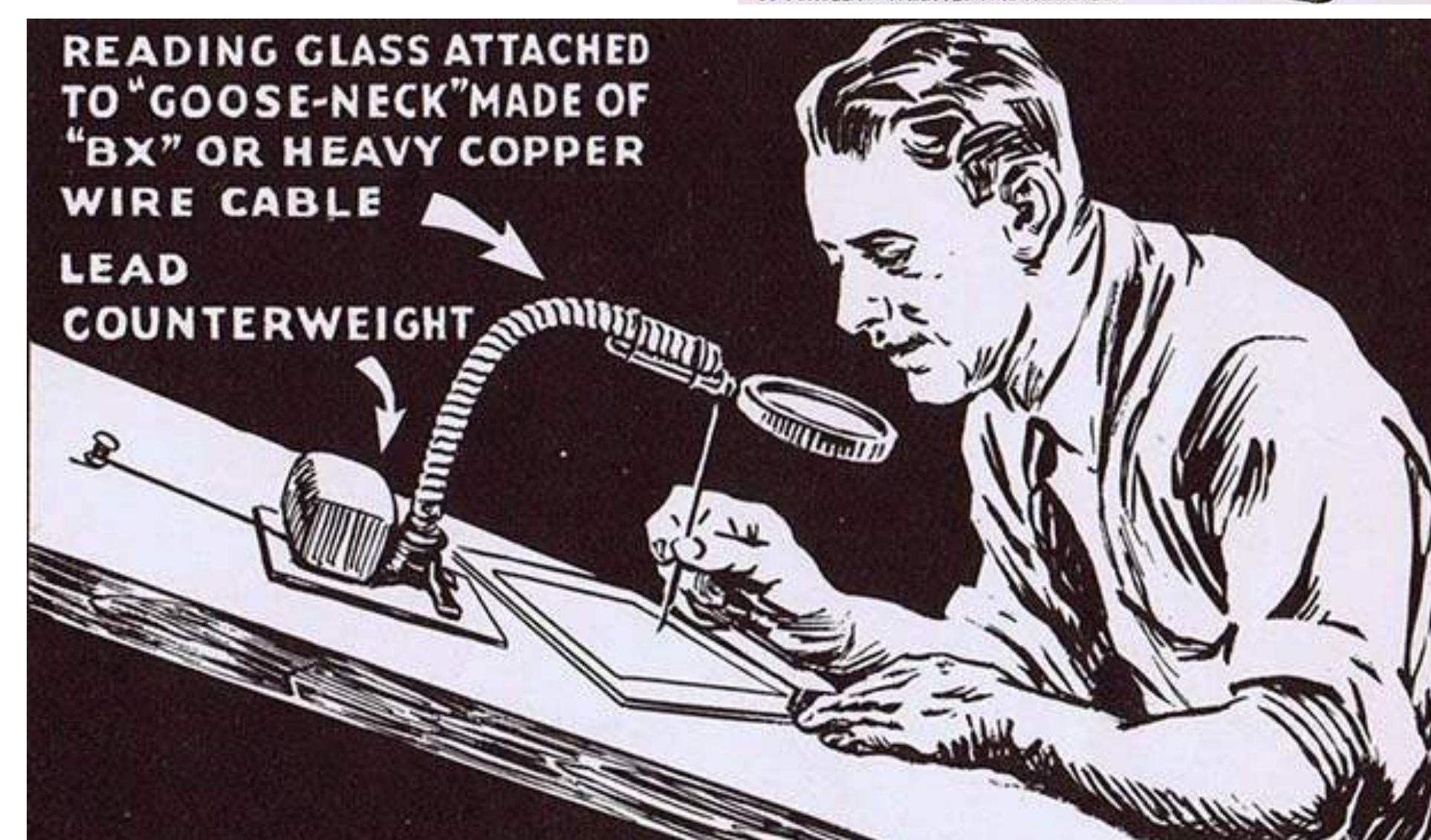
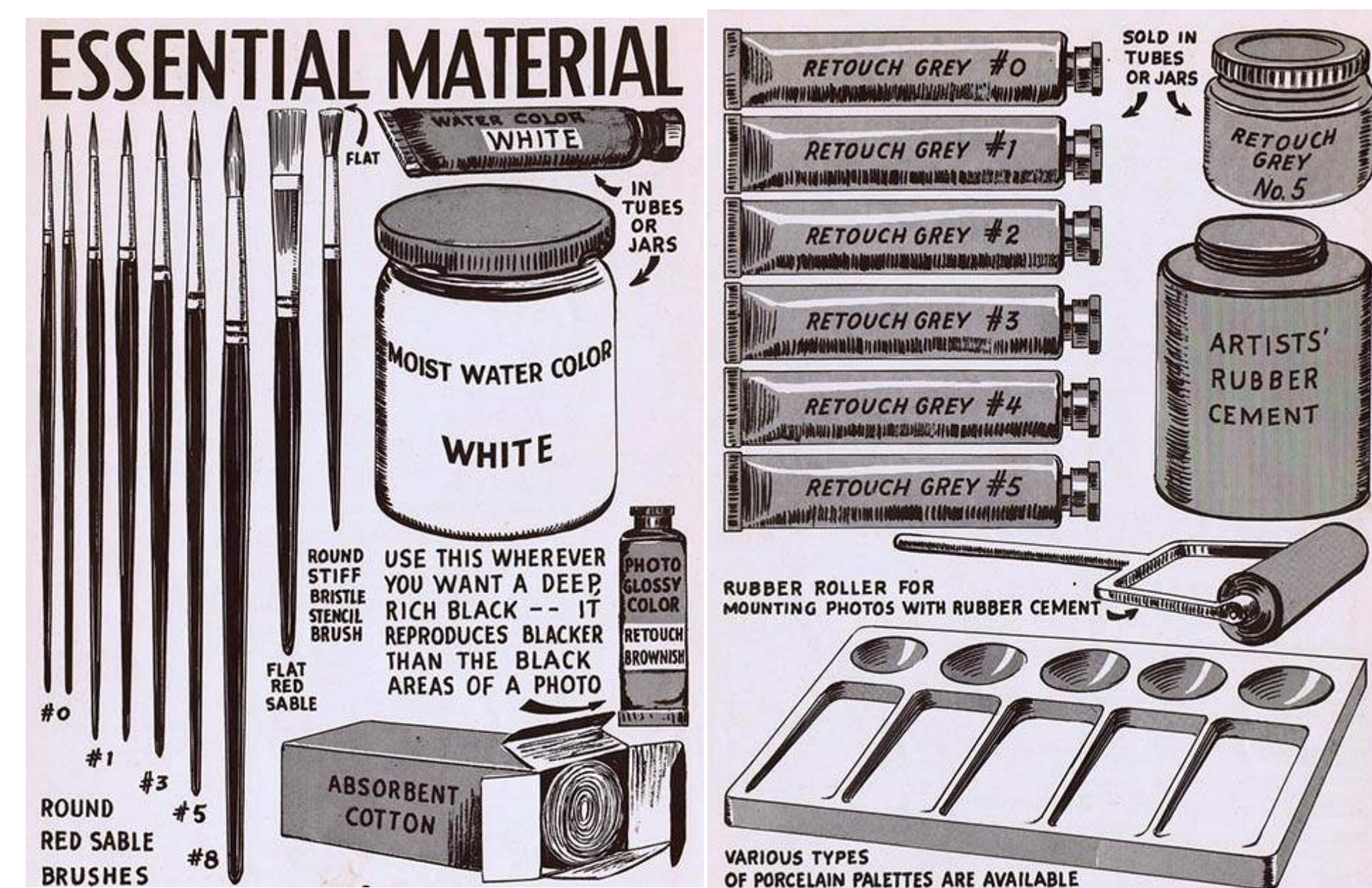
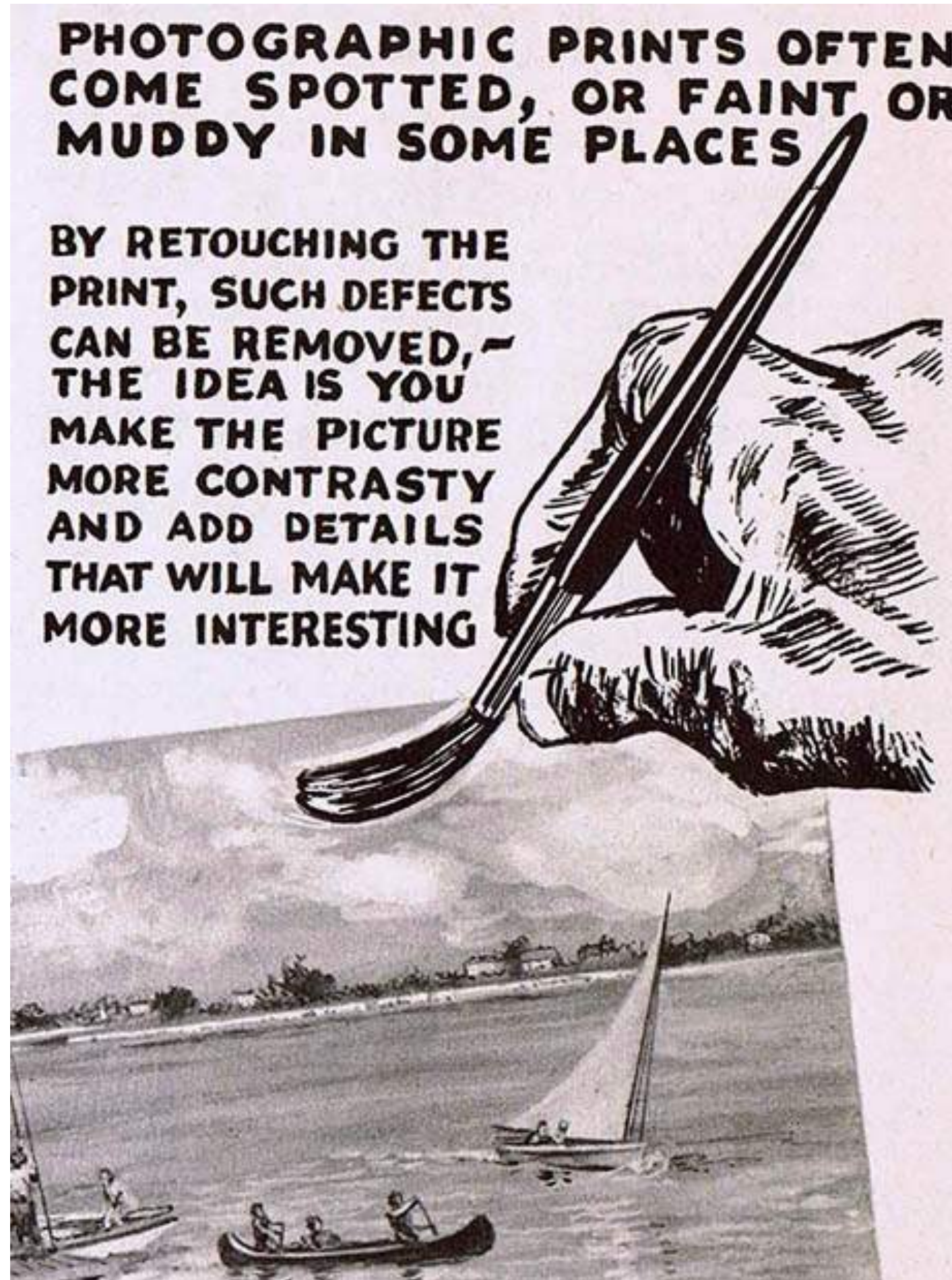
Boggie Music Video

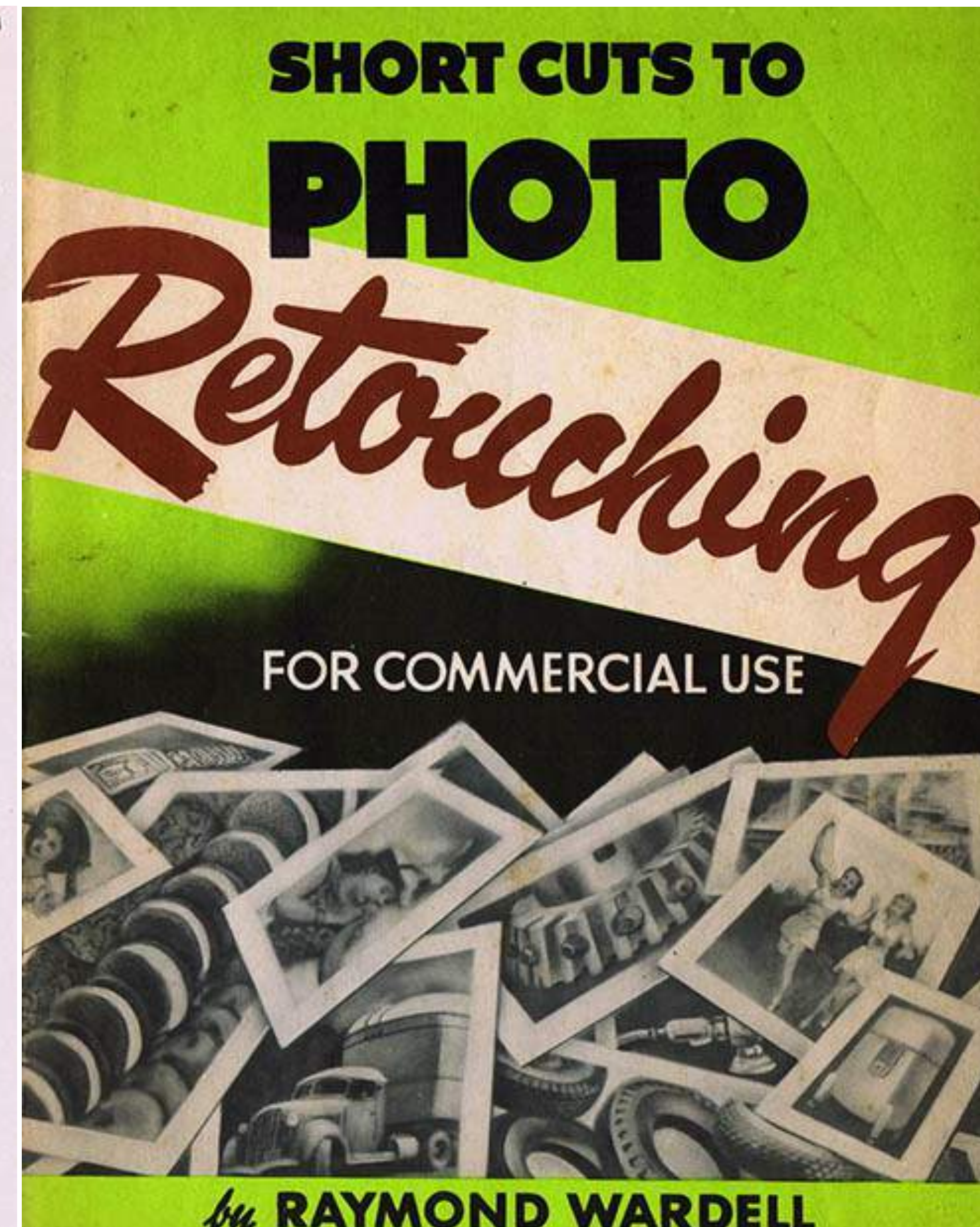
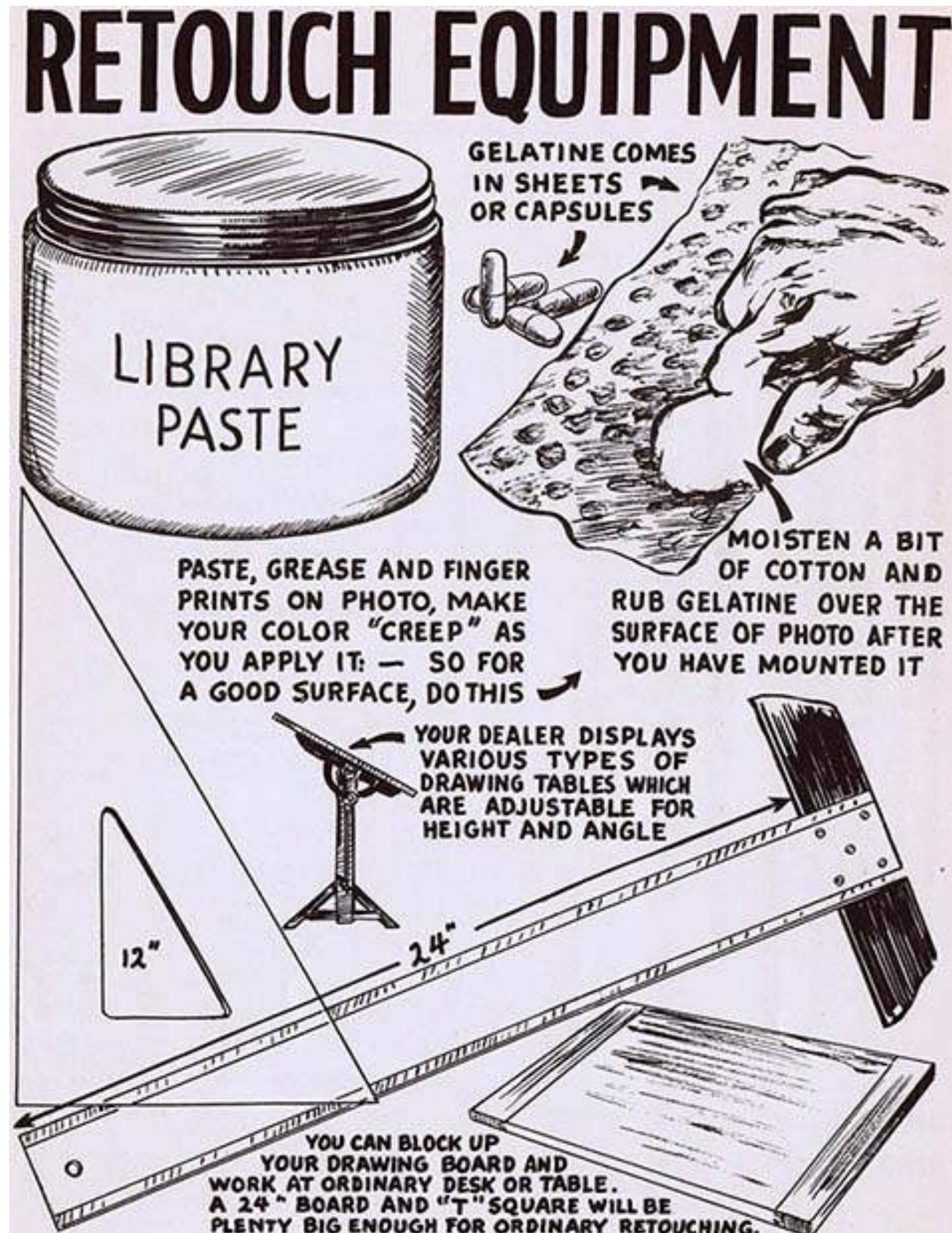
- <http://vimeo.com/83502019>



-
- **Pascal Dangin http://www.newyorker.com/reporting/2008/05/12/080512fa_fact_collins**
 - **My favorite quote: “There is no photographic establishment of any note that does not employ artists at high salaries—we understand not less than £1 a day—in touching, and colouring, and finishing from nature those portraits for which the camera may be said to have laid the foundation,” Lady Elizabeth Eastlake, the art historian and critic, noted in an essay in 1857.**
 - **<http://www.theage.com.au/articles/2003/03/03/1046540121180.html>**
 - **<http://www.time.com/time/fashion/20030908/insider/>**

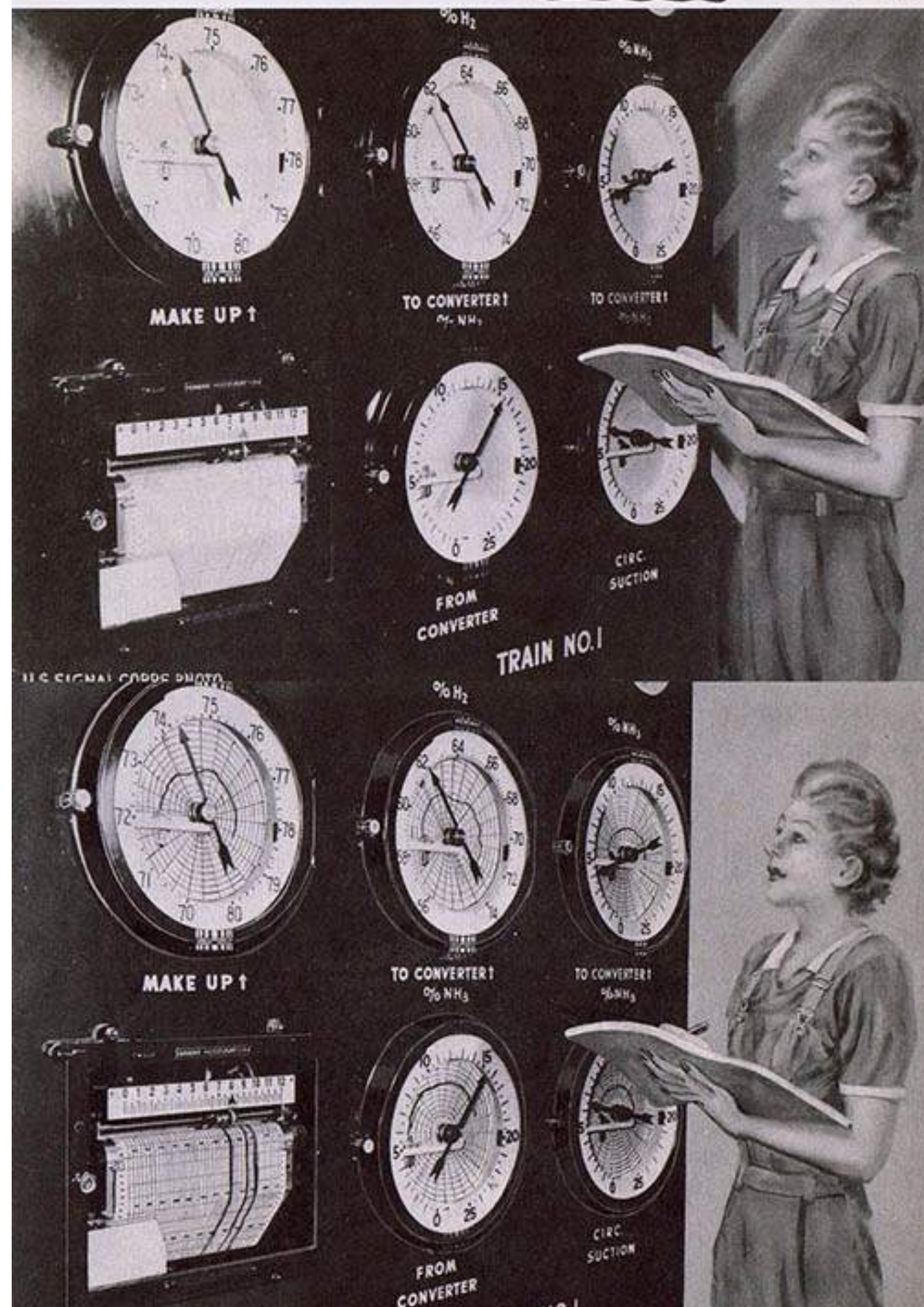
<http://petapixel.com/2013/05/08/how-photographers-photoshopped-their-pictures-back-in-1946/>





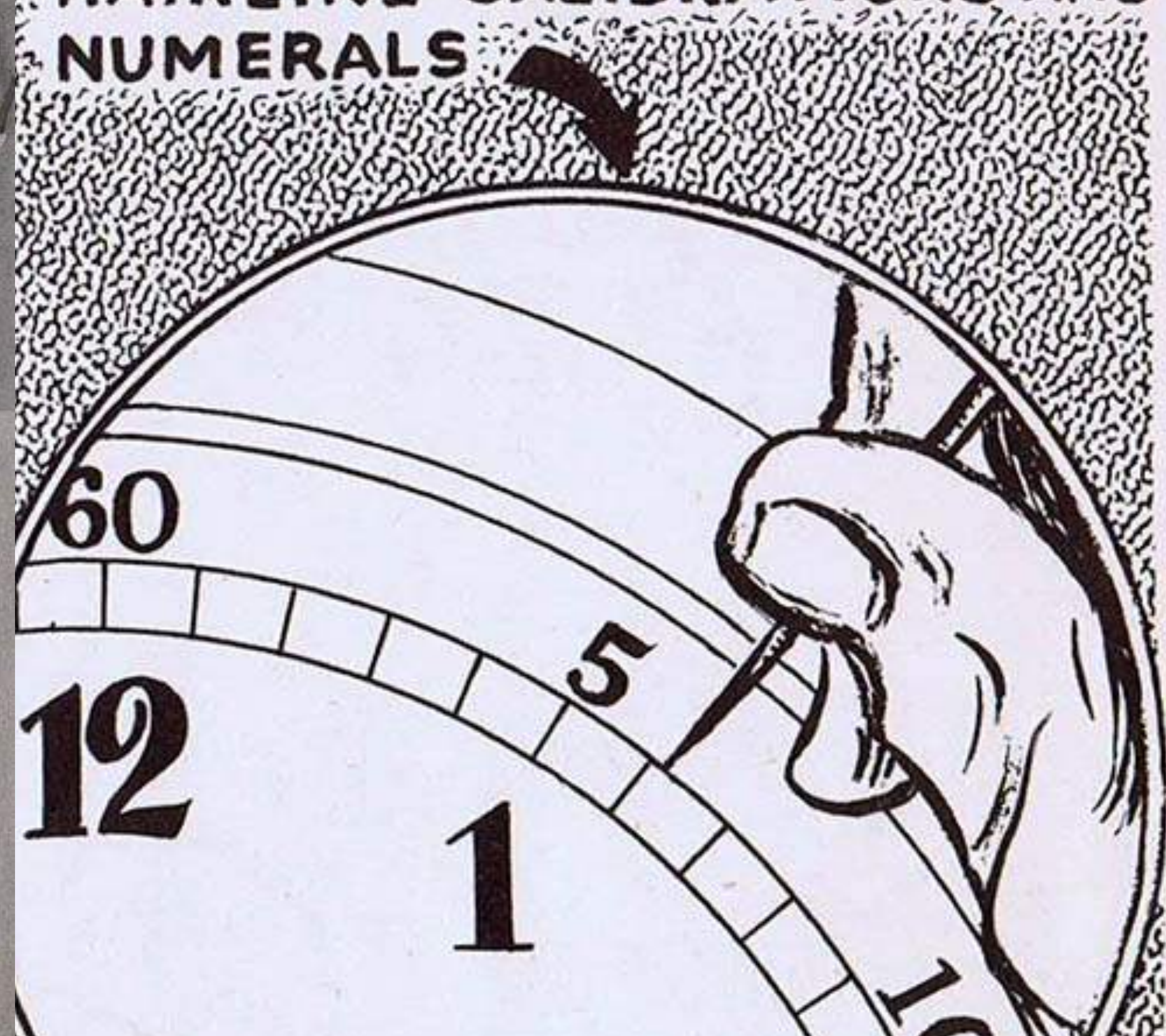
<http://petapixel.com/2013/05/08/how-photographers-photoshopped-their-pictures-back-in-1946/>

MARKS ON DIALS MUST SHOW



HERE'S WHAT YOU SEE

**PART OF PHOTO OF WATCH DIAL
MAGNIFIED AND TIP OF YOUR
BRUSH SNAPPING UP THE
HAIRLINE CALIBRATIONS AND
NUMERALS**



**[http://petapixel.com/
2013/05/08/how-
photographers-
photoshopped-their-
pictures-back-in-1946/](http://petapixel.com/2013/05/08/how-photographers-photoshopped-their-pictures-back-in-1946/)**

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- **<http://www.petapixel.com/2011/07/27/julia-roberts-makeup-ads-banned-in-uk-for-too-much-photoshop/>**
 - **<http://gizmodo.com/5857150/how-to-use-photoshop-to-pop-pimples-change-facial-expressions-and-alter-reality-as-we-know-it>**

Trick #1: diffuser

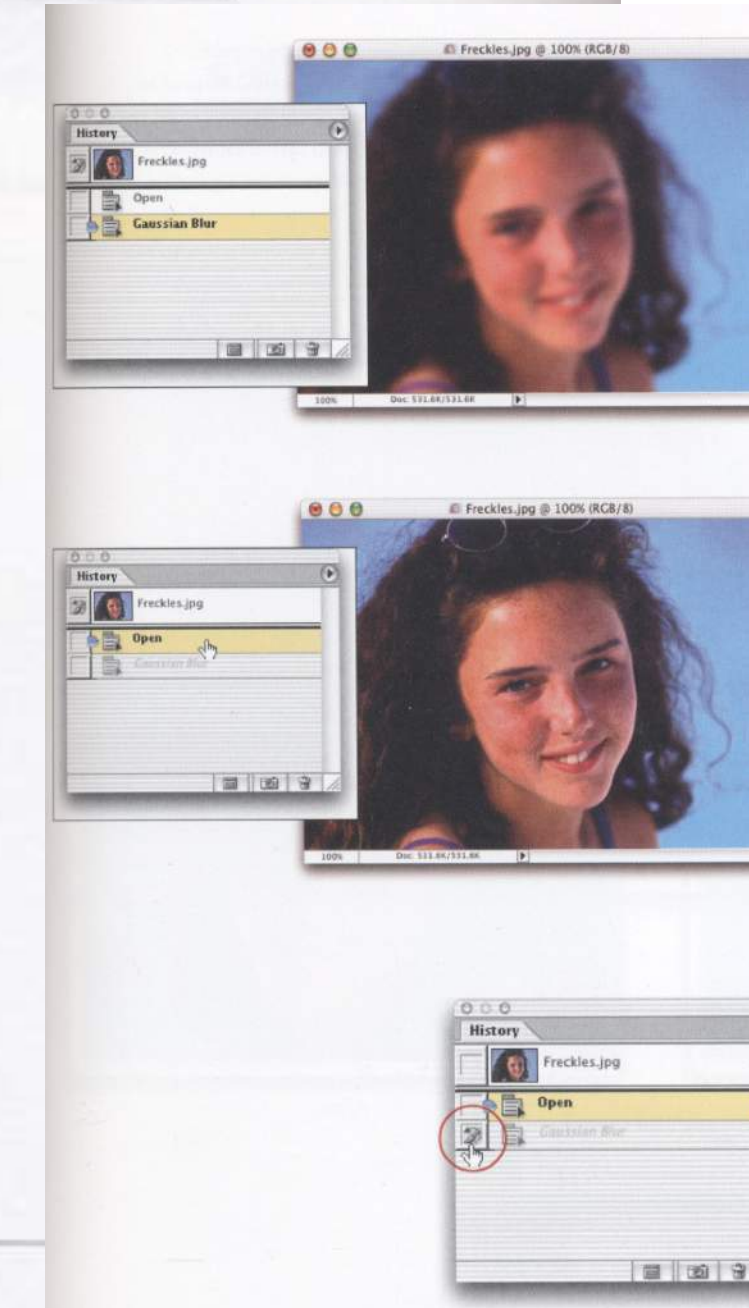
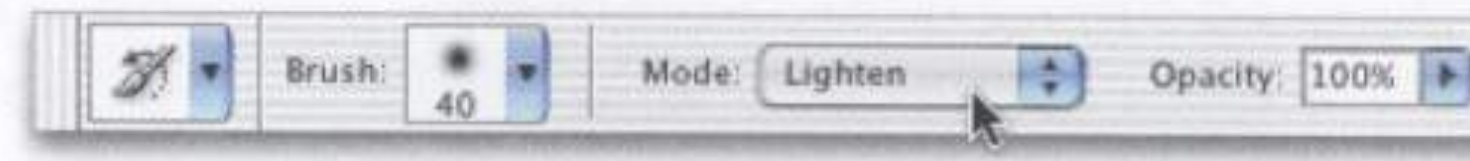
- **Other option: soft focus lens (with increased spherical aberrations)**
- **Digital version: blur or surface blur**

Diffusion

I hate to say “always,” but 98% of the time we diffuse each portrait that is taken. Since we are working with subjects who are at an age when skin clarity can be a problem, we recognize that their complexion can’t handle the clarity of today’s lenses. We use the Glamour Softs by Sailwind (#1). It softens the portrait without losing the critical sharpness in the eyes. I like to use a drop-in filter for easy focusing, especially as I get older.

Step Six:

To keep from simply painting in a blurry version of our photo, go up to the Options bar and change the History Brush's Blend Mode to Lighten. Now when you paint, it affects only the pixels that are darker than the blurred state. Ahhh, do you see where this is going? Now, you can take the History Brush and paint over the acne areas, and as you paint, you'll see them diminish quite a bit (as shown below). If they diminish too much, and the person looks "too clean," press Command-Z (PC: Control-Z) to undo your History Brush strokes, then go up to the Options bar and lower the Opacity of the brush to 50% and try again.



Step Three:

Go under the Window menu and choose History to bring up the History palette. This palette keeps track of the last 20 things you've done in Photoshop. If you look in the list of steps (called "History States"), you should see two States: The first will read "Open" (this is when you opened the document), and the second will read "Gaussian Blur" (this is where you added the blur).

Step Four:

Click on the Open State to return your photo to what it looked like when you originally opened it (as shown here). The History palette also works in conjunction with a tool in the Toolbox called the History Brush. When you paint with it, by default, it paints back to what the photo looked like when you opened it. It's like "Undo on a brush." That can be very handy, but the real power of the History Brush is that you can have it paint from a different state. You'll see what I mean in the next step.

Step Five:

In the History palette, click in the first column next to the State named "Gaussian Blur." If you painted with the History Brush now, it would paint in what the photo looked like after you blurred it (which would do us no good), but we're about to fix that.

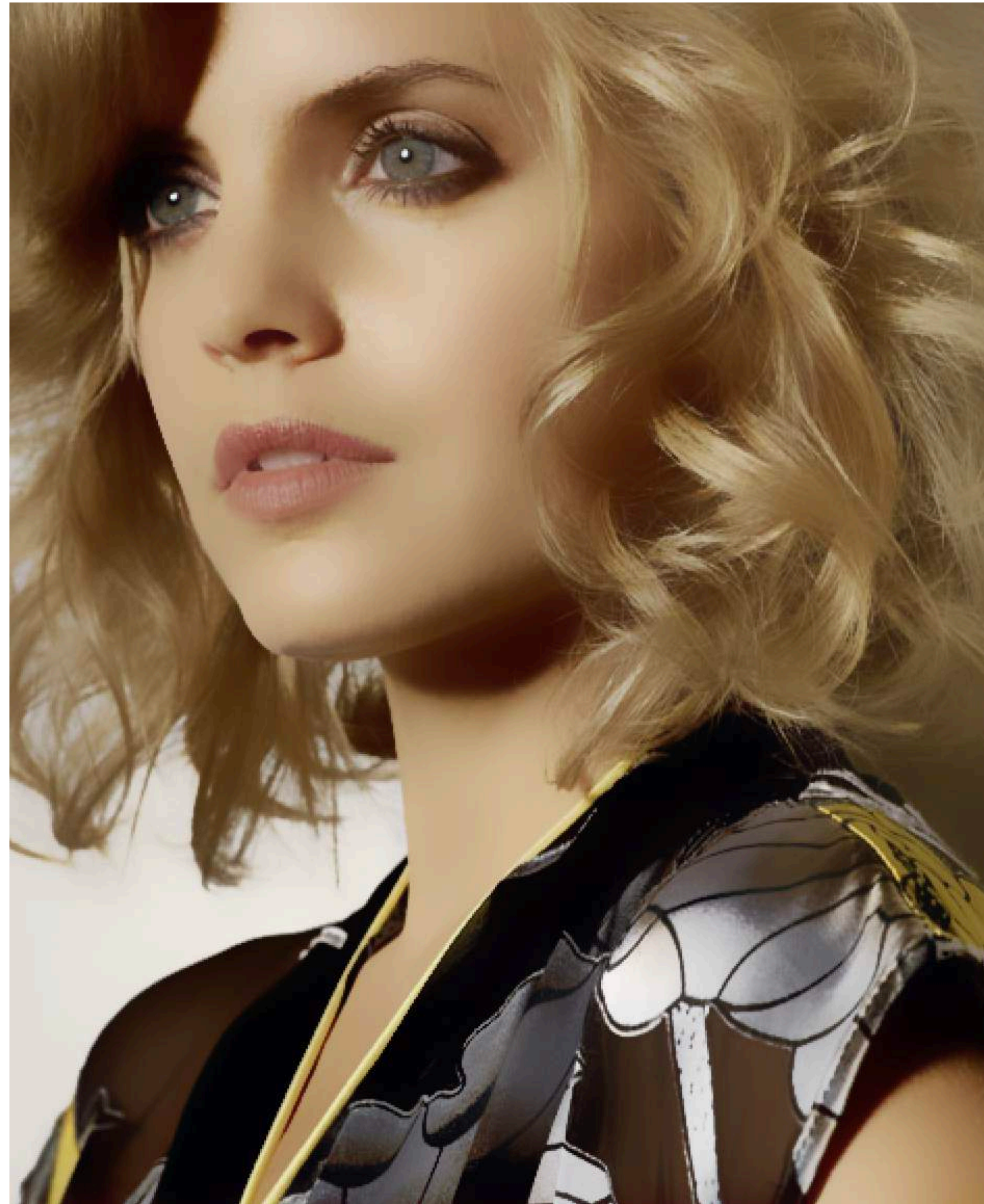
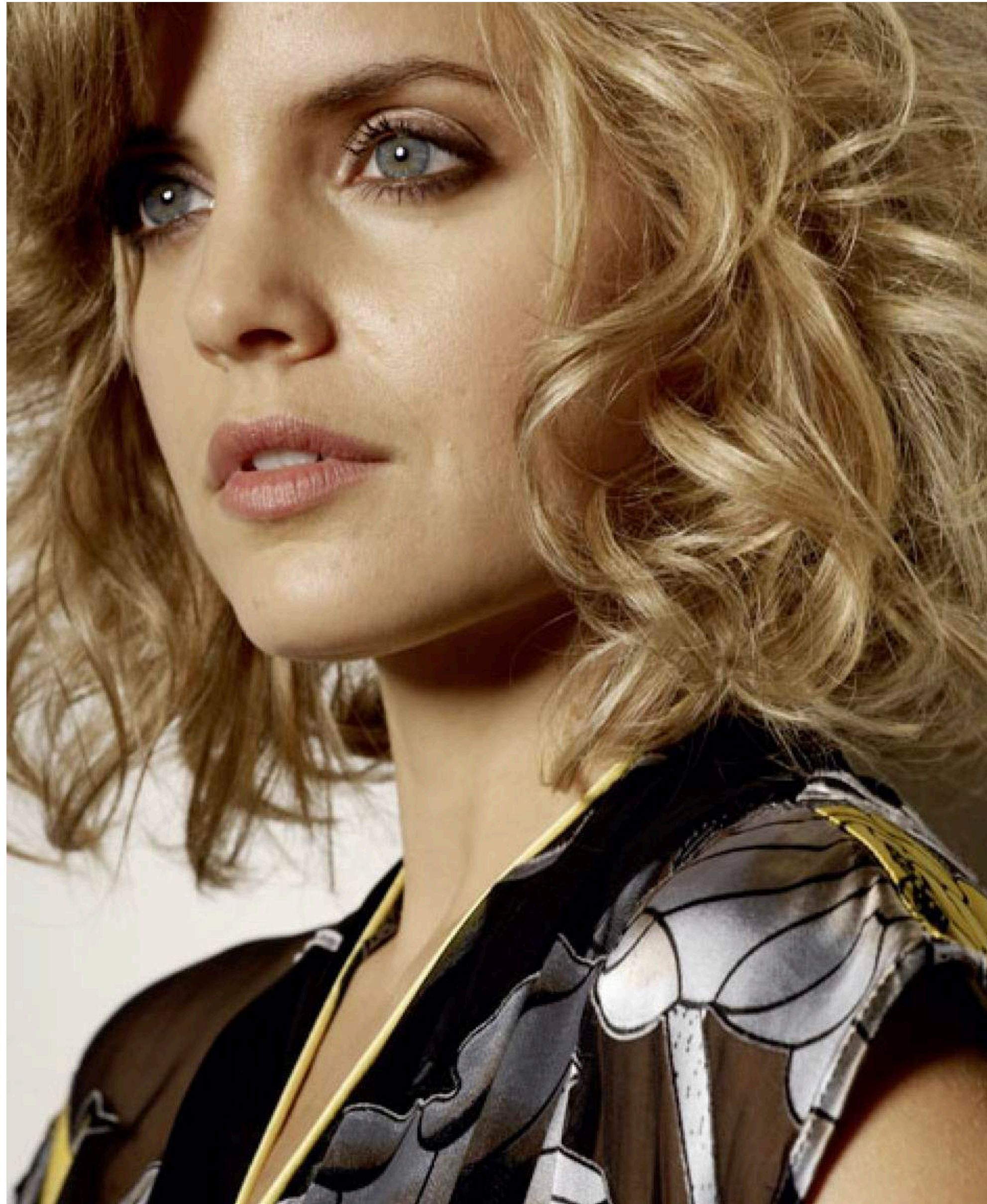


Before.



After.

Bilateral filter, surface blur



**Where does denoising stop, where
does skin retouching start?**

iPhoneX beautygate

- <https://www.businessinsider.com/beautygate-iphone-xs-camera-appears-to-apply-beauty-mode-to-selfies-2018-9> <https://www.imore.com/beautygate>



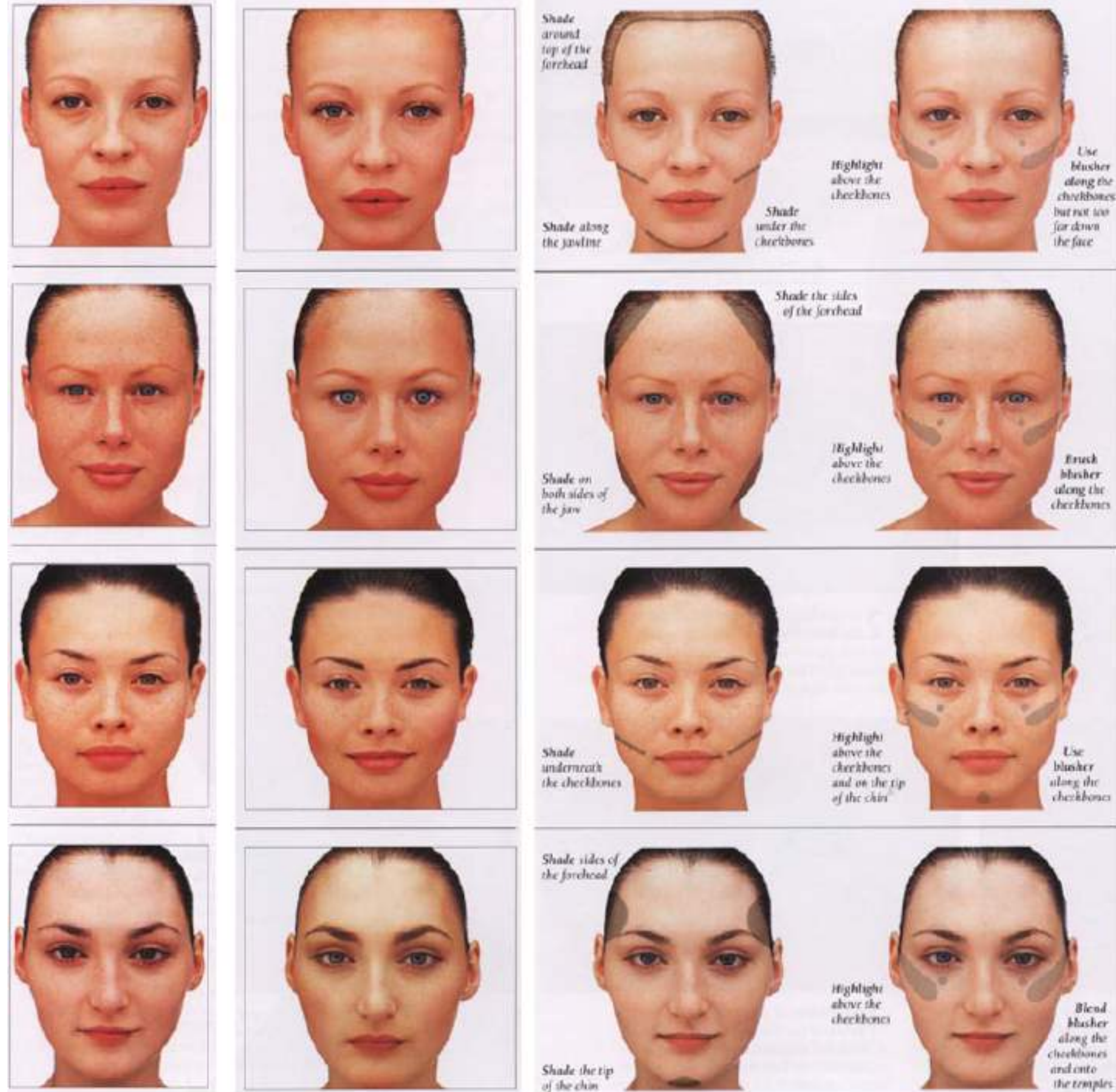
Shading and highlighting



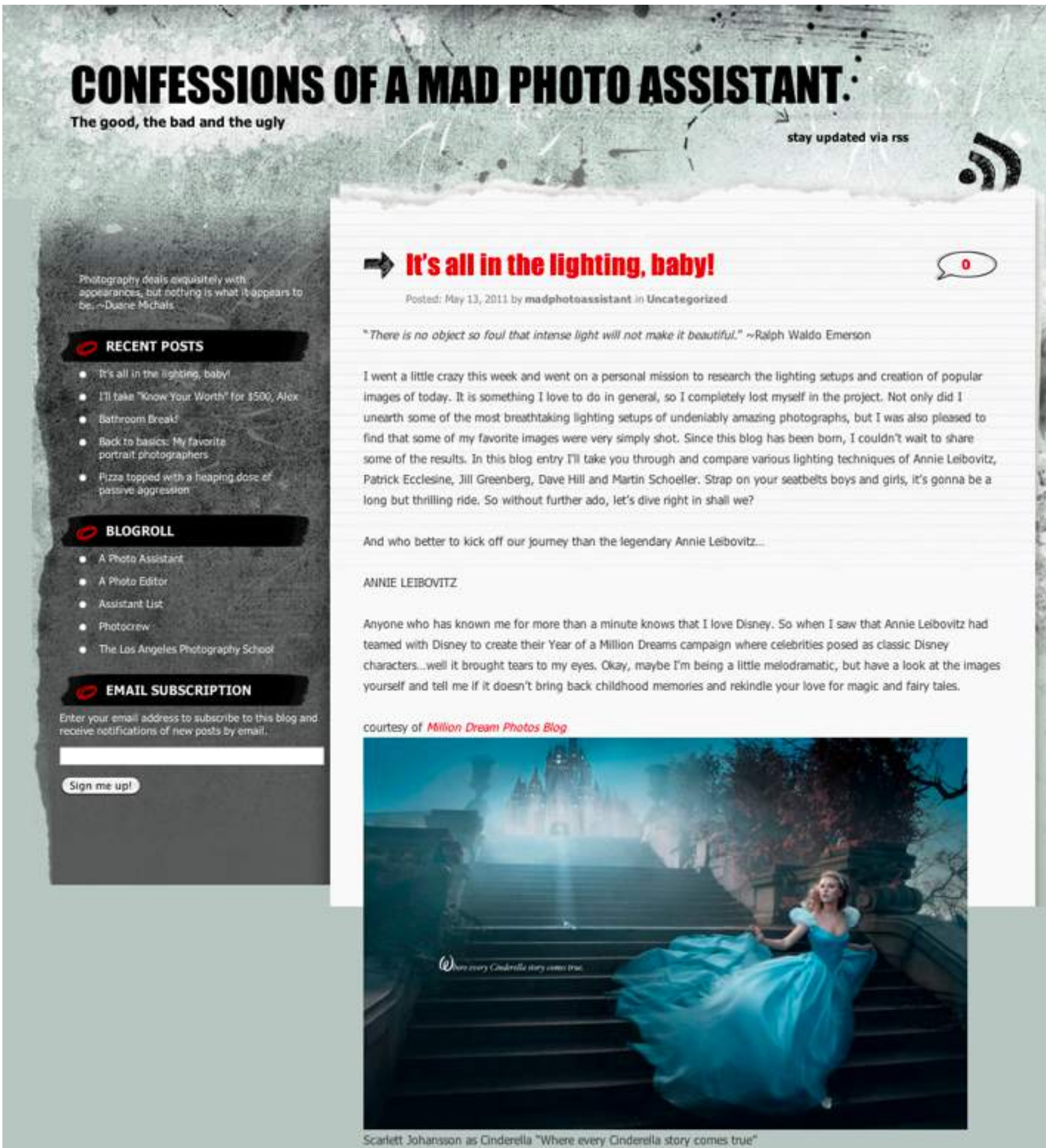
Snapshot-Perspective-Speed, aperture-Filter-Lighting-Processing & Print-**Make up**-Retouching

Corrective Make Up

- Depending on the shape of the face



- <http://madphotoassistant.wordpress.com/2011/05/13/lighting-title/>

- 

CONFESSIONS OF A MAD PHOTO ASSISTANT:
The good, the bad and the ugly

stay updated via rss

Photography deals exquisitely with appearances, but nothing is what it appears to be. ~Diane Michals

RECENT POSTS

- It's all in the lighting, baby!
- I'll take "Know Your Worth" for \$500, Alex
- Bathroom Break!
- Back to basics: My favorite portrait photographers
- Pizza topped with a heaping dose of passive aggression

BLOGROLL

- A Photo Assistant
- A Photo Editor
- Assistant List
- Photocrew
- The Los Angeles Photography School

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Sign me up!

It's all in the lighting, baby!

Posted: May 13, 2011 by madphotoassistant in Uncategorized

"There is no object so foul that intense light will not make it beautiful." ~Ralph Waldo Emerson


I went a little crazy this week and went on a personal mission to research the lighting setups and creation of popular images of today. It is something I love to do in general, so I completely lost myself in the project. Not only did I unearth some of the most breathtaking lighting setups of undeniably amazing photographs, but I was also pleased to find that some of my favorite images were very simply shot. Since this blog has been born, I couldn't wait to share some of the results. In this blog entry I'll take you through and compare various lighting techniques of Annie Leibovitz, Patrick Ecclesine, Jill Greenberg, Dave Hill and Martin Schoeller. Strap on your seatbelts boys and girls, it's gonna be a long but thrilling ride. So without further ado, let's dive right in shall we?

And who better to kick off our journey than the legendary Annie Leibovitz...

ANNIE LEIBOVITZ

Anyone who has known me for more than a minute knows that I love Disney. So when I saw that Annie Leibovitz had teamed with Disney to create their Year of a Million Dreams campaign where celebrities posed as classic Disney characters...well it brought tears to my eyes. Okay, maybe I'm being a little melodramatic, but have a look at the images yourself and tell me if it doesn't bring back childhood memories and rekindle your love for magic and fairy tales.

courtesy of [Million Dream Photos Blog](#)



Where every Cinderella story comes true

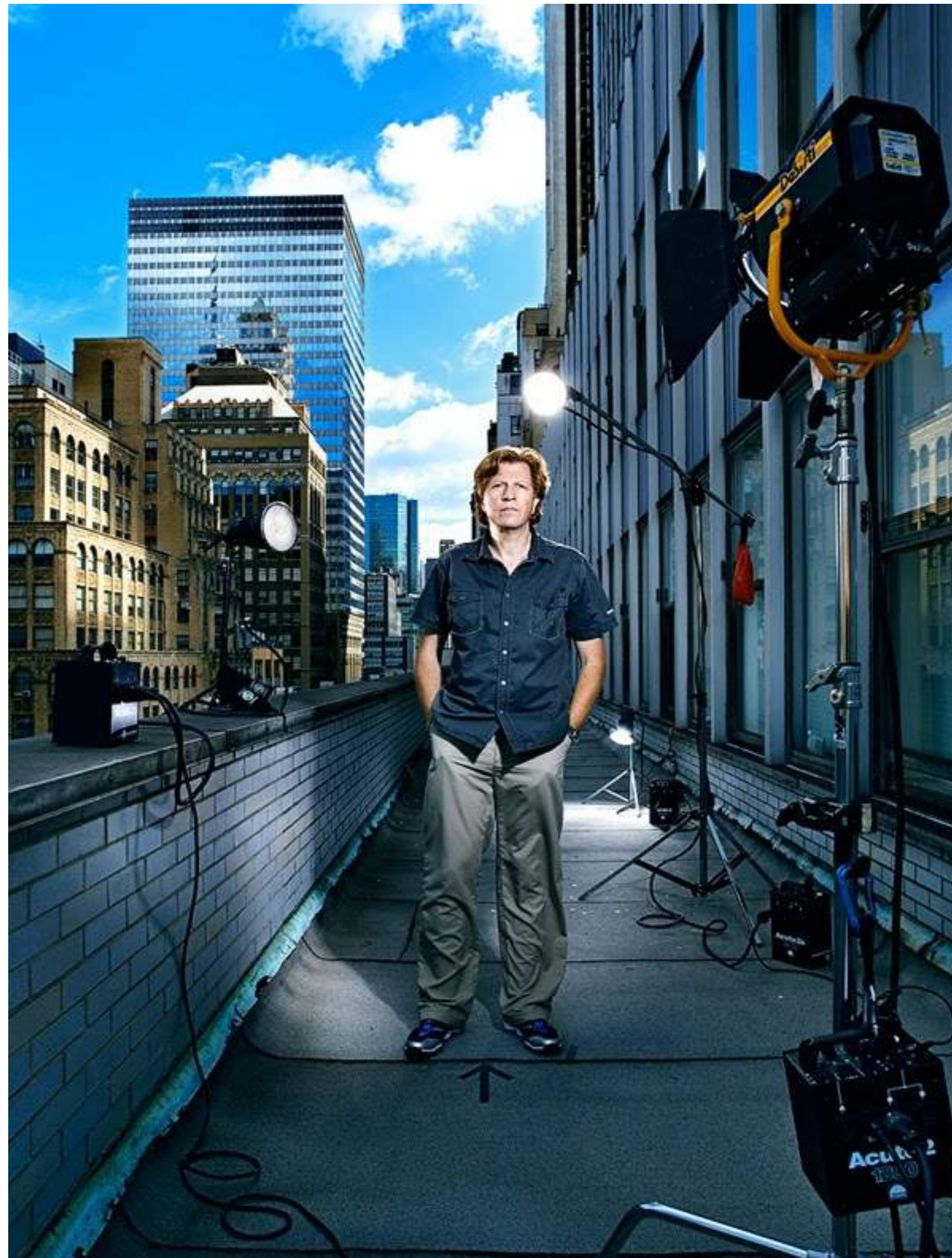
Scarlett Johansson as Cinderella "Where every Cinderella story comes true"

- <http://www.petapixel.com/2011/09/05/human-light-suit-a-one-man-band-style-mobile-photo-studio/>

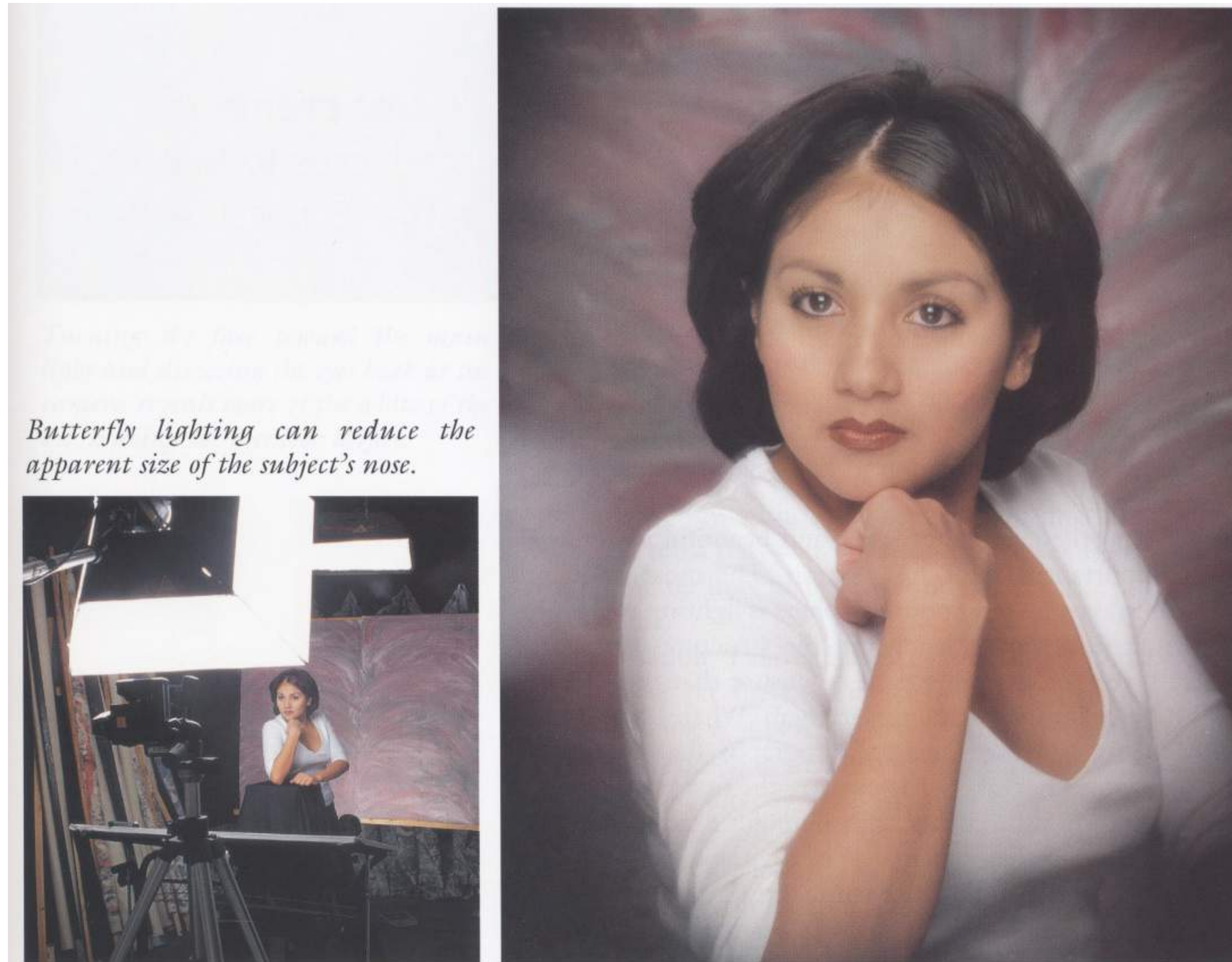
-



- <http://strobist.blogspot.com/2010/05/brad-trent-on-fake-reality-of-portraits.html>



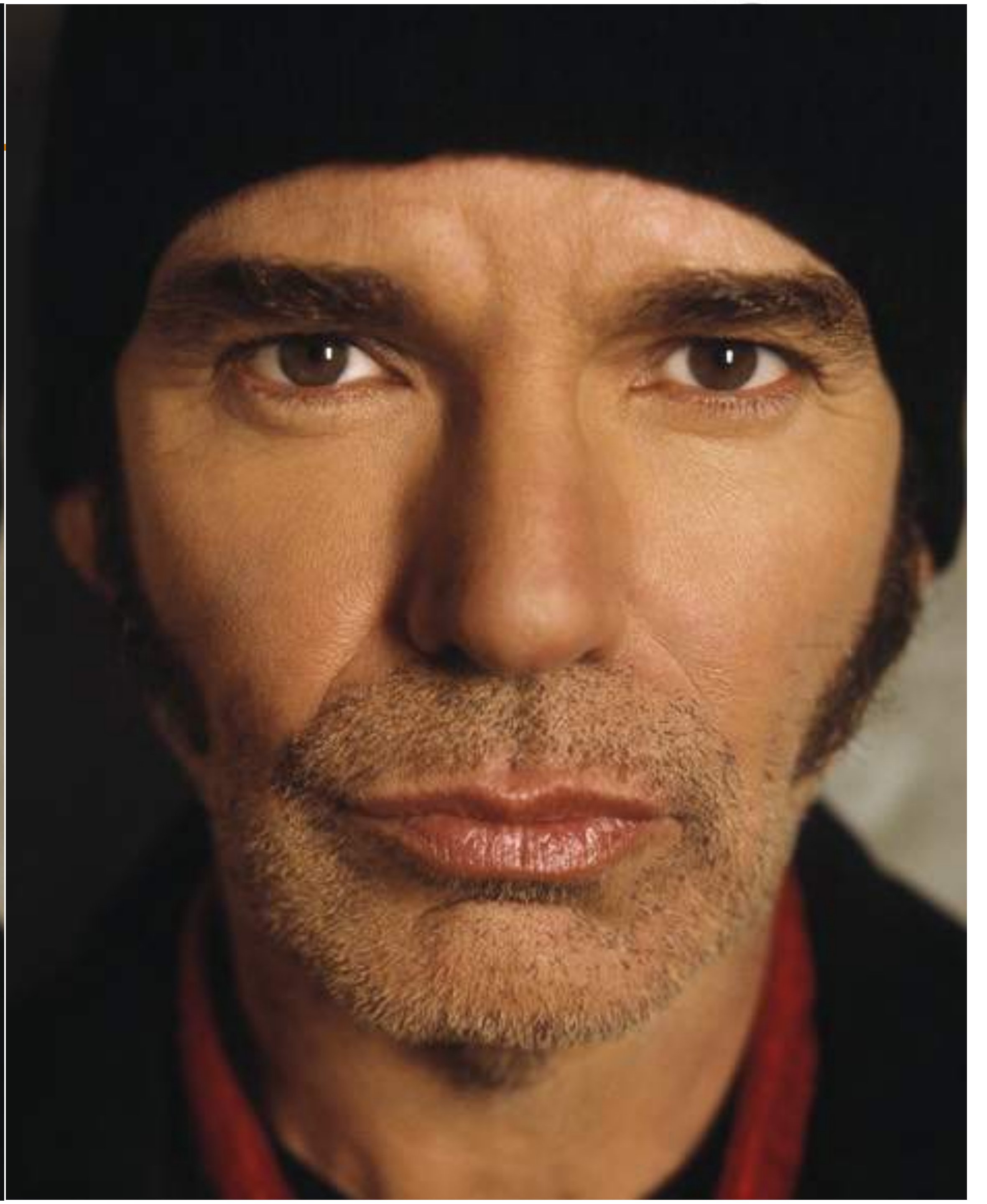
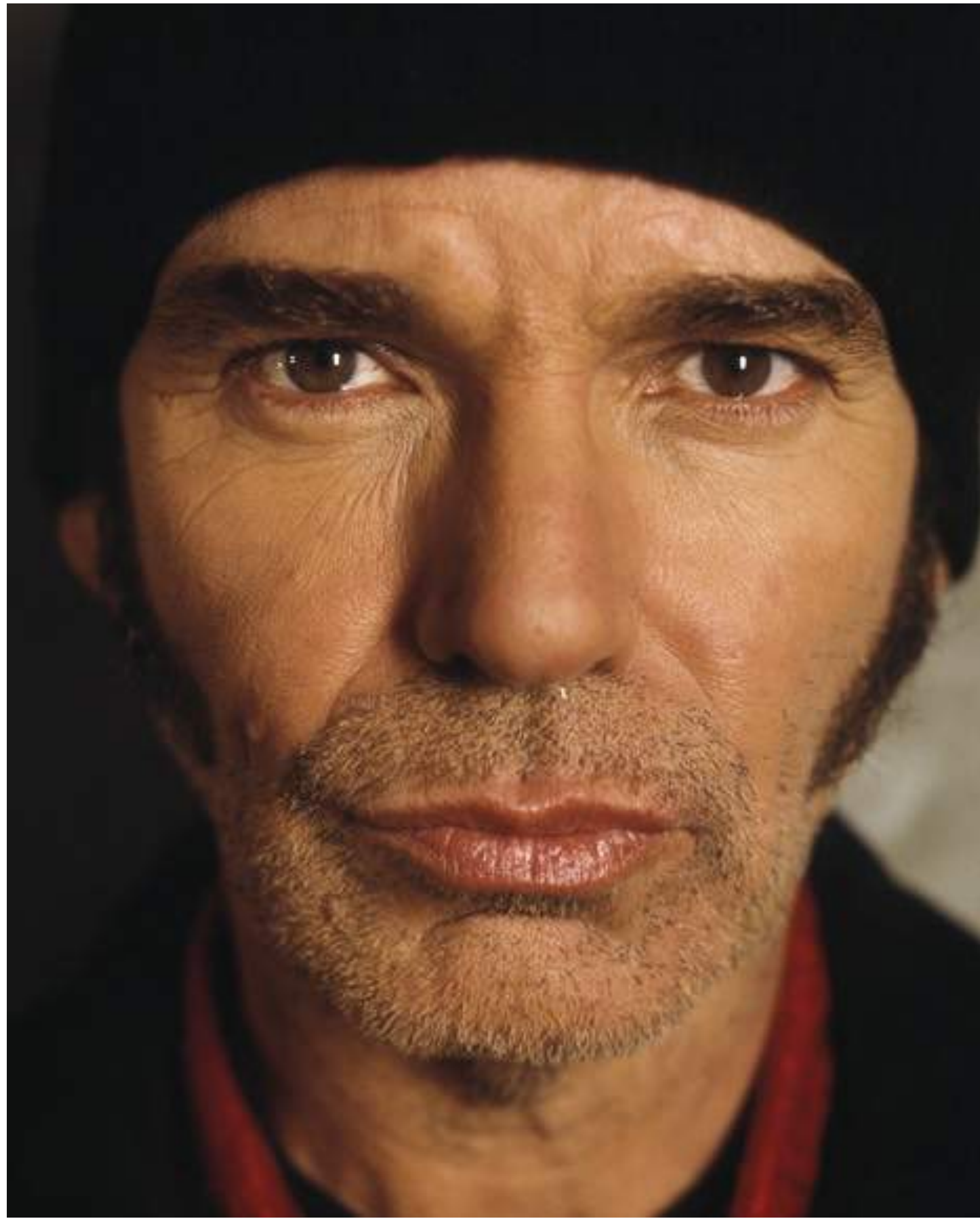
Lighting & nose



From Corrective Lighting and Posing

Hardcore Photoshop for portrait











Fake fake

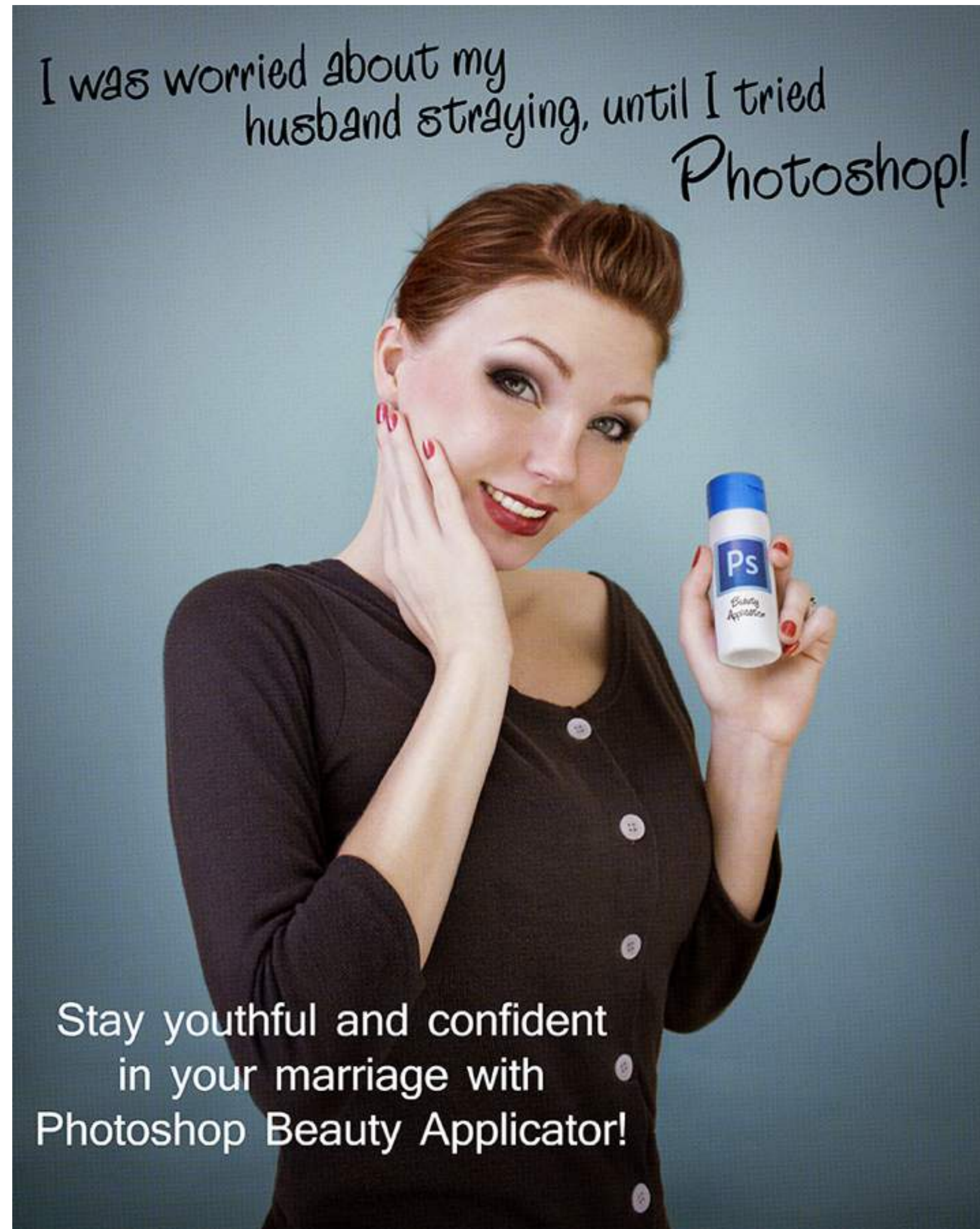
- <https://www.usatoday.com/story/life/people/2015/03/02/cindy-crawford-photo-marie-claire-fake/24249045/>
- Left photo is fake, not actual original



Anna Hill pokes fun at Photoshop



- <http://nebulaedecay.com/digi/>



Anna Hill pokes fun at Photoshop



- <http://nebulaedecay.com/digi/>



Anna Hill pokes fun at Photoshop



- <http://nebulaedecay.com/digi/>



- <http://petapixel.com/2013/12/19/south-park-takes-photoshop-season-finale-episode/>





© Phil Pool

BEFORE

figure 9.47



AFTER

figure 9.48



Step Three:

Press the Left/Right Bracket keys on your keyboard to adjust the brush size until it's about the size of the person's cheek. Place the brush near the corner of the mouth (as shown here), click and "tug" slightly up. This tugging of the cheek makes the corner of the mouth turn up, creating a smile.



Step Four:

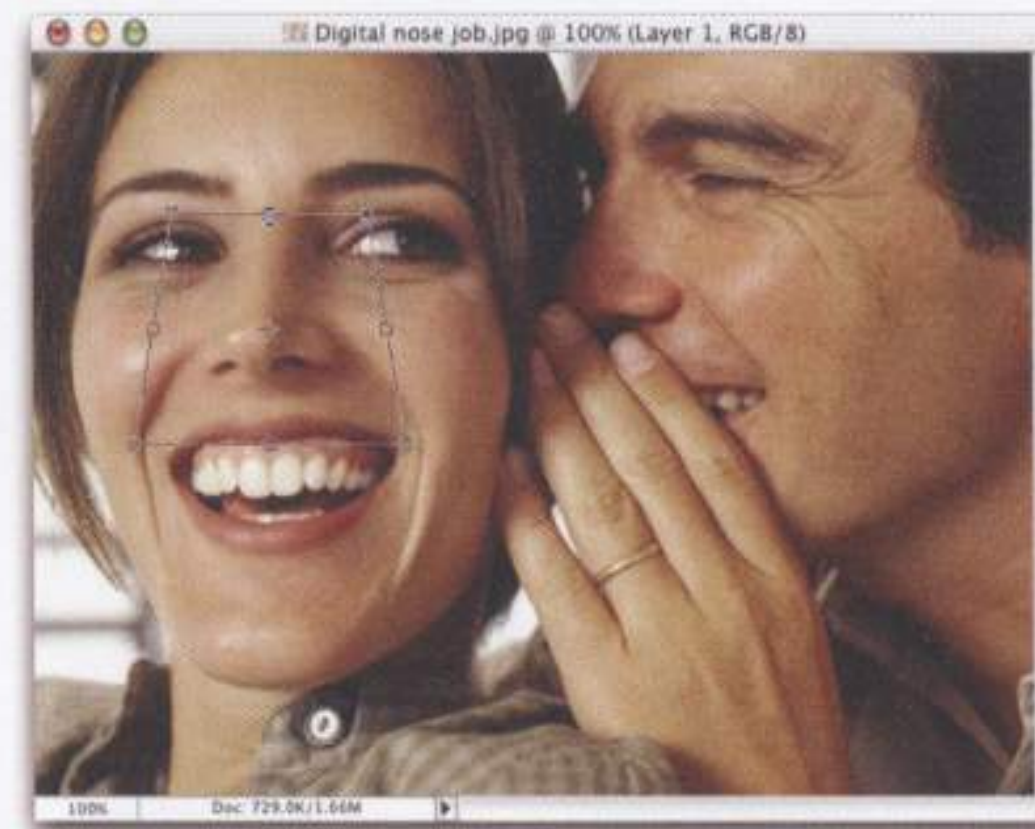
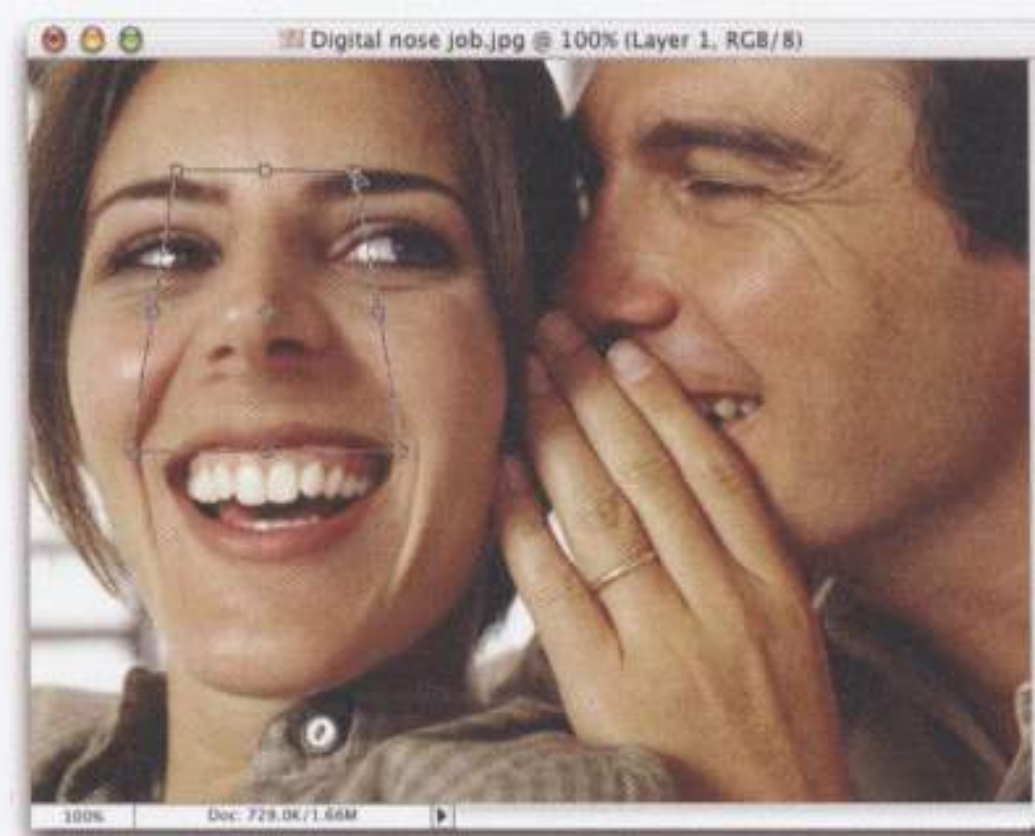
Repeat the "tug" on the opposite side of the mouth, using the already tugged side as a visual guide as to how far to tug. Be careful not to tug too far, or you'll turn your subject into the Joker from *Batman Returns*. Click OK in Liquify to apply the change, and the retouch is applied to your photo (as shown).



Before.



After.

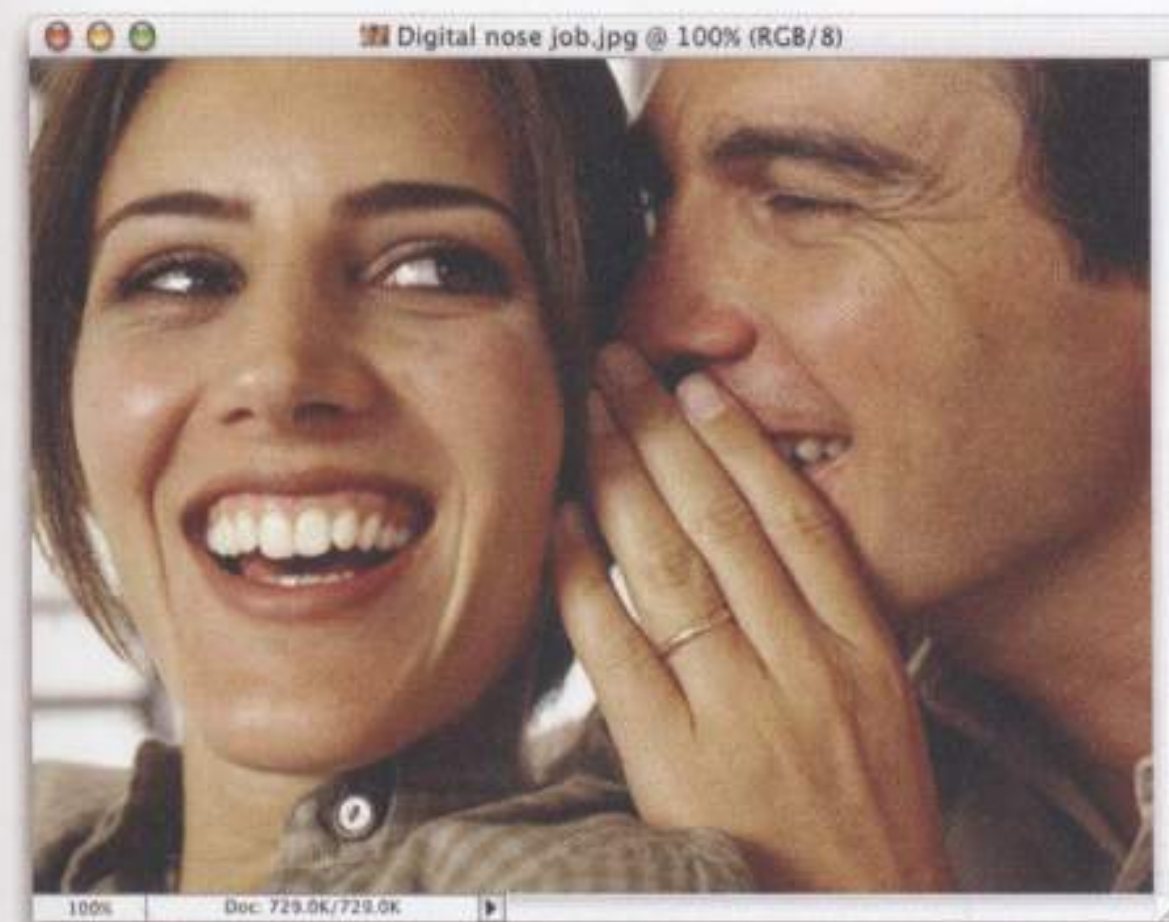


Step Four:

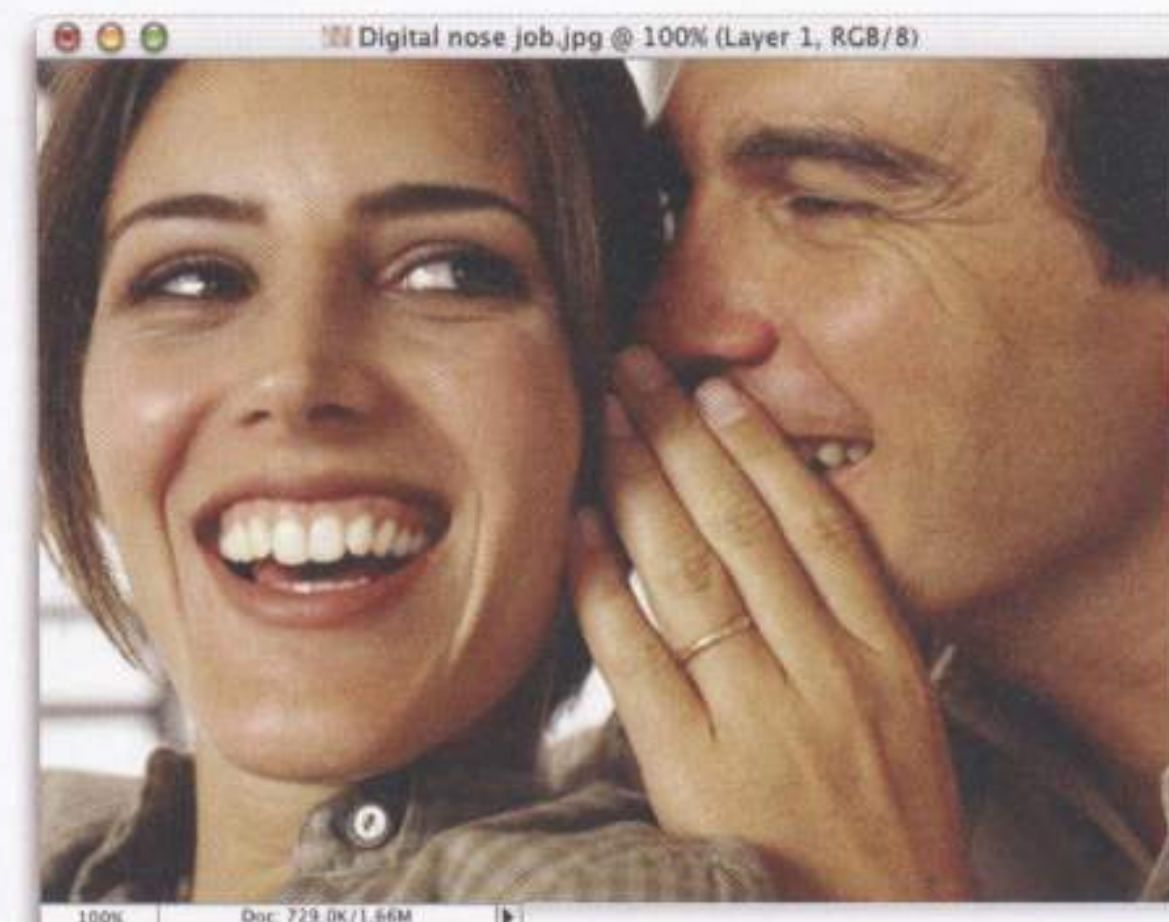
Press Command-T (PC: Control-T) to bring up the Free Transform bounding box. Hold Shift-Option-Command (PC: Shift-Alt-Control); then, grab the upper-right corner point of the bounding box and drag inward to add a perspective effect to the nose. Doing this gives the person a pug nose, but you fix that in the next step.

Step Five:

To get rid of the "pug-nose" effect, release all the keys, then grab the top-center point (as shown) and drag straight downward to make the nose look natural again, but now it's smaller. When the new size looks about right, press Return (PC: Enter) to lock in your changes. If any of the old nose peeks out from behind the new nose, click on the Background layer and use the Clone Stamp tool to clone away those areas: Sample an area next to the nose, and then paint (clone) right over it. Below, see the difference our 30-second retouch made in the image.



Before.



After.

Hardcore Photoshop for portrait



figure 9.35



figure 9.36



figure 9.37

Selecting the entire left side of the image avoids potential artifacts.



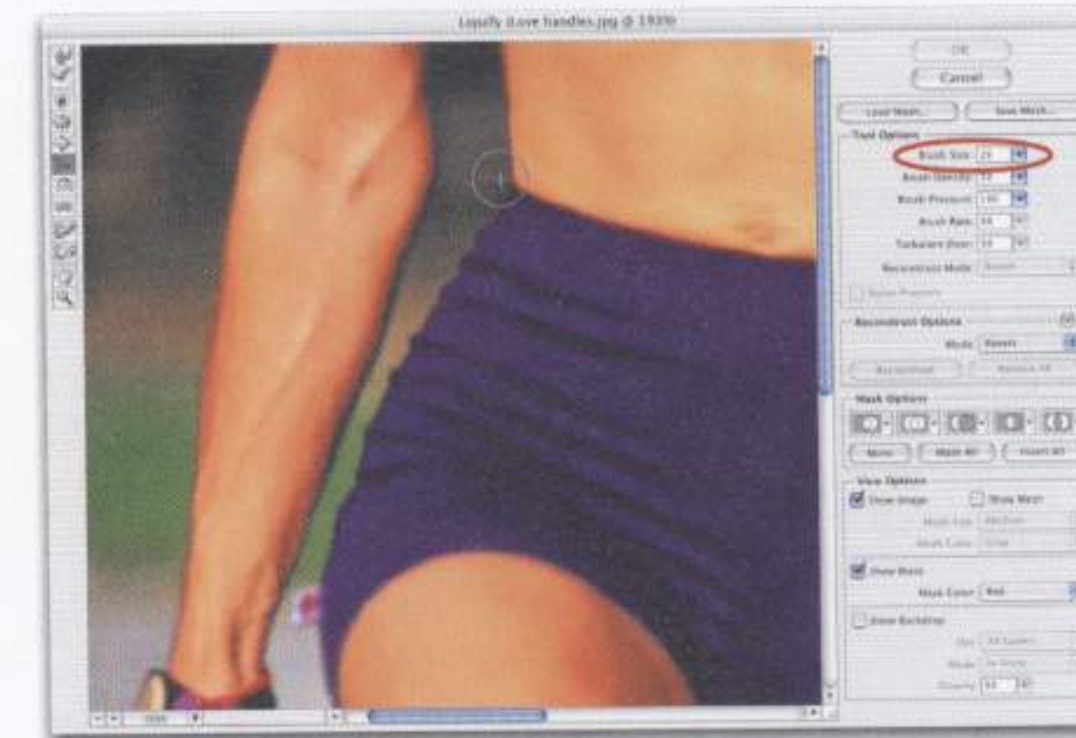
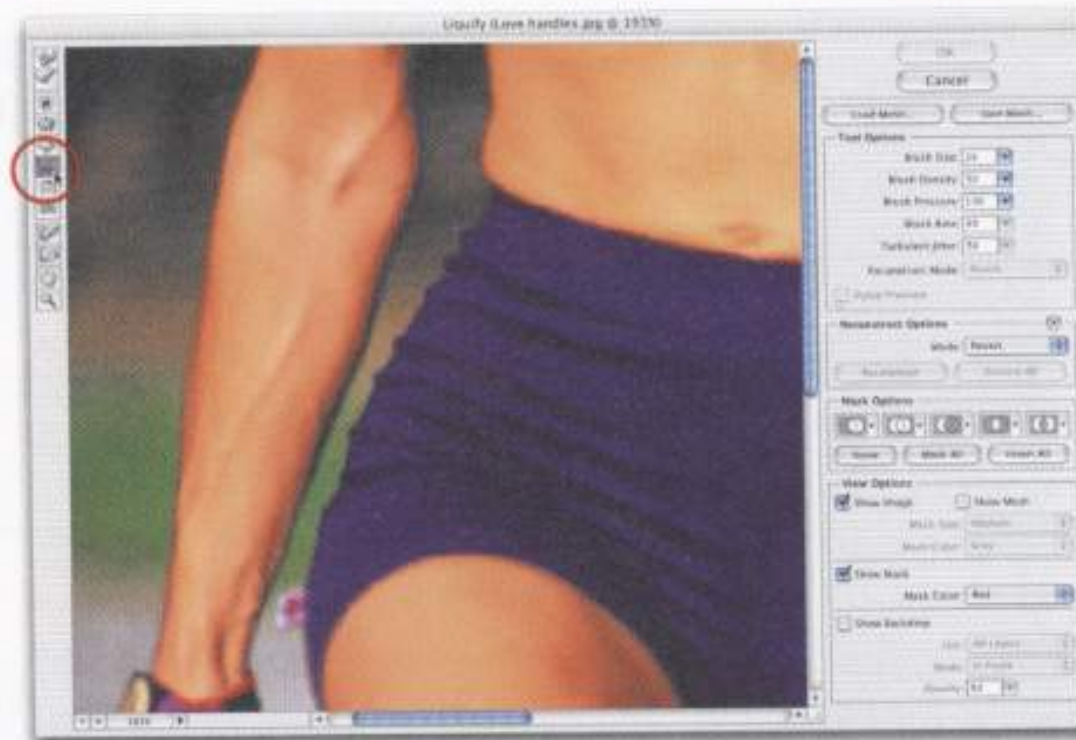
figure 9.38

Dragging a Free Transform handle to narrow the selected area.



figure 9.39

The Liquify filter's Warp tool pushes pixels forward as you drag.

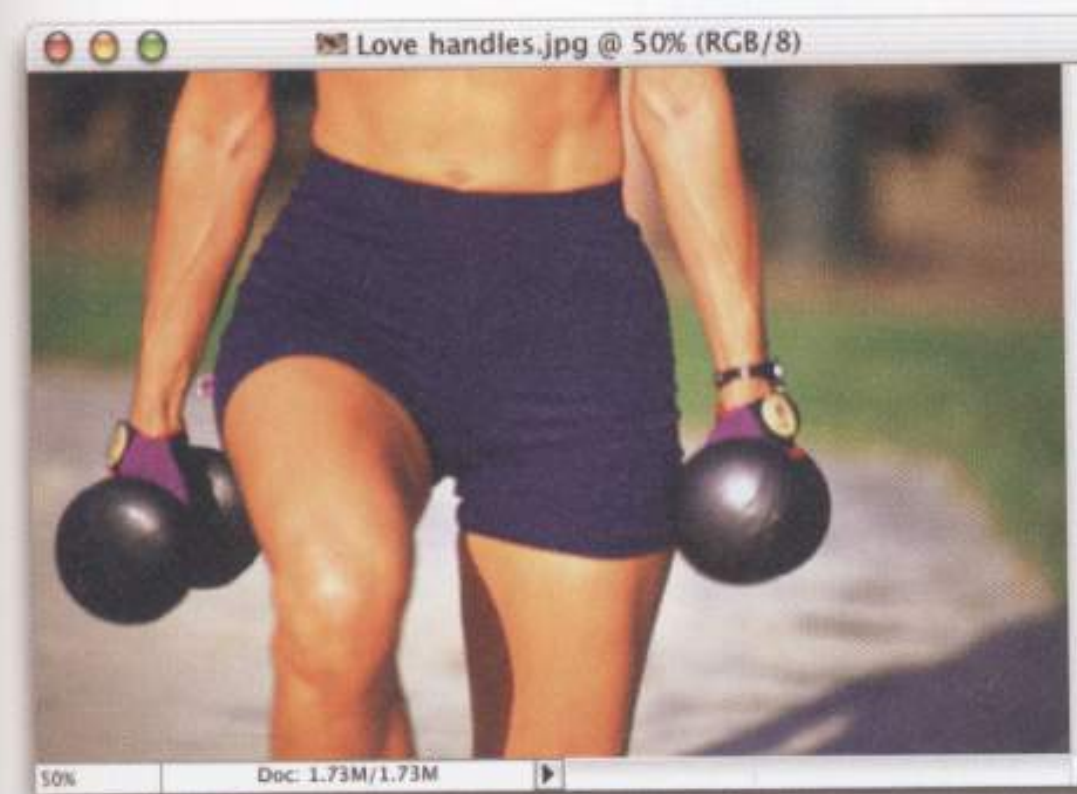


Step Three:

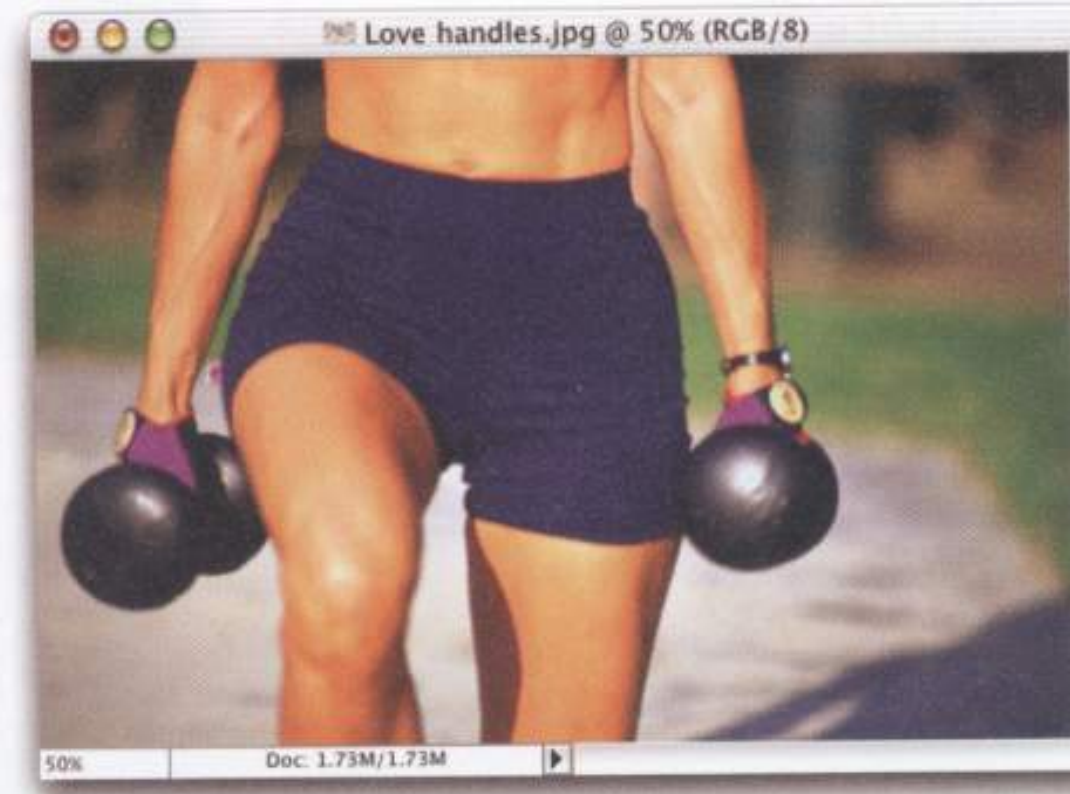
Get the Push Left tool from the Toolbar (as shown here). It was called the Shift Pixels tool in Photoshop 6 and 7, but Adobe realized that you were getting used to the name, so they changed it, just to keep you off balance.

Step Four:

Choose a relatively small brush size (like the one shown here) using the Brush Size field near the top-right of the Liquify dialog. With it, paint a downward stroke starting just above and outside the love handle and continuing downward. The pixels shift back in toward the body, removing the love handle as you paint. (Note: If you need to remove love handles on the left side of the body, paint upward rather than downward. Why? That's just the way it works.) When you click OK, the love handle repair is complete.



Before.



After.

See also http://www.youtube.com/watch?v=hsiQptl_Y9E


Touch-up: stretc



Funny examples

- Google “photoshop fail”
- https://www.boredpanda.com/worst-photoshop-fails/?utm_source=google&utm_medium=organic&utm_campaign=organic
- https://www.boredpanda.com/worst-photoshop-mistakes/?utm_source=google&utm_medium=organic&utm_campaign=organic
-

PHOTO
RETOUCHERS
GET



WHEN THEY'RE
HUNGRY



Yearbook

- <https://www.nbcnews.com/news/us-news/altered-yearbook-photos-utah-high-school-spark-controversy-n118496>



Not just body

seventeen magazine's **BODY PEACE TREATY**

We vow to...

- Help make your life amazing! You have **big dreams** and we want you to achieve every single one of them!
- Never change girls' body or face shapes. (Never have, never will.)
- Celebrate **every kind of beauty** in our pages. Without a range of body types, skin tones, heights, and hair textures, the magazine—and the world—would be boring!
- Always feature real girls and models who are healthy. Regardless of clothing size, being healthy is about honoring your natural shape.
- Be totally up-front about what goes into our photo shoots. You can go **behind the scenes** on our Tumblr (seventeen.tumblr.com) and see the whole shebang!
- Help you make the **best choices** for your body—food that fuels you, exercise that energizes you—so you can feel your absolute best each day.
- Give you the confidence to walk into any room and **own it**. Say bye-bye to those nagging insecurities that you're not good enough or pretty enough—they're holding you back from being awesome in the world!
- **Listen carefully to you.** If something in the magazine confuses you or makes you feel bad, we want hear about it. You can e-mail us anytime at mail@seventeen.com or reach out to me directly at ann@seventeen.com.

XOXO
-A.

what really changes!



Here's a peek at the minor tweaks we made to a fashion picture of Magdalena, 21. A few messy details—cleaned up. Her gorgeous smile—totally authentic!

ANN: PERRY MAGUIAN. FASHION: STEPHANIE MCNIEL

Fairness, whiteness

- https://www.vice.com/en_us/article/qkqwxp/that-viral-faceapp-is-making-everyone-look-whiter?fbclid=IwAR152sG0Gb2aYWC-V6zOD_XXuAEN_VnkGcOLjk7ktkNIJT36Fh-MYxVQS3A



- Do developers believe whiter is better ? Or just a case of auto-exposure only calibrated for white skin. Not great in either case

Samsung beauty face



Data-Driven Enhancement of Facial Attractiveness

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Academic College of Tel-Aviv-Yaffo

Dani Lischinski
The Hebrew University

Abstract

When human raters are presented with a collection of shapes and asked to rank them according to their aesthetic appeal, the results often indicate that there is a statistical consensus among the raters. Yet it might be difficult to define a succinct set of rules that capture the aesthetic preferences of the raters. In this work, we explore a data-driven approach to aesthetic enhancement of such shapes. Specifically, we focus on the challenging problem of enhancing the aesthetic appeal (or the *attractiveness*) of human faces in frontal photographs (portraits), while maintaining close similarity with the original.

The key component in our approach is an automatic facial attractiveness engine trained on datasets of faces with accompanying facial attractiveness ratings collected from groups of human raters. Given a new face, we extract a set of distances between a variety of facial feature locations, which define a point in a high-dimensional “face space”. We then search the face space for a nearby point with a higher predicted attractiveness rating. Once such a point is found, the corresponding facial distances are embedded in the plane and serve as a target to define a 2D warp field which maps the original facial features to their adjusted locations. The effectiveness of our technique was experimentally validated by independent rating experiments, which indicate that it is indeed capable of increasing the facial attractiveness of most portraits that we have experimented with.

Keywords: facial attractiveness, machine learning, optimization, warping

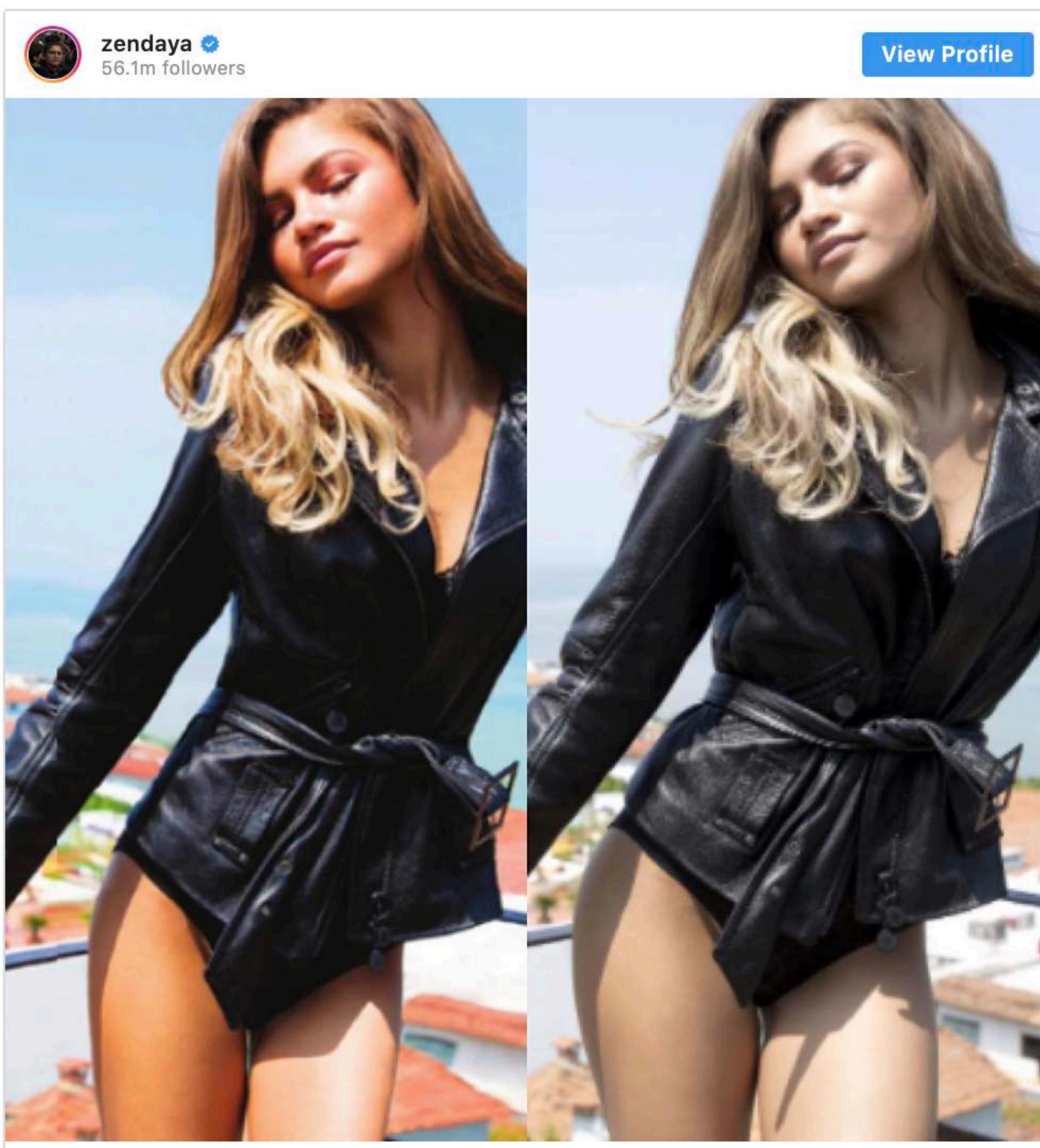
1 Introduction



Figure 1: Input facial images (left) and the adjusted images generated by our method (right). The changes are subtle, yet their impact is significant.

Pressures both for and against retouching

- From models/actors
- From Editors
- Public



[View More on Instagram](#)



855,158 likes

zendaya

Had a new shoot come out today and was shocked when I found my 19 year old hips and torso quite manipulated. These are the things that make women self conscious, that create the unrealistic ideals of beauty that we have. Anyone who knows who I am knows I stand for honest and pure self love. So I took it upon myself to release the real pic (right side) and I love it 🥰💕 Thank you [@modelistemagazine](#) for pulling down the images and fixing this retouch issue.

[view all 23,677 comments](#)

Add a comment...



- Lady Gaga spoke out against her Glamour cover photo because she felt her “skin looked too perfect” and her “hair looked too soft.”
- <https://www.pixelz.com/blog/photoshop-models-laws/>
- See also Beyonce H&M

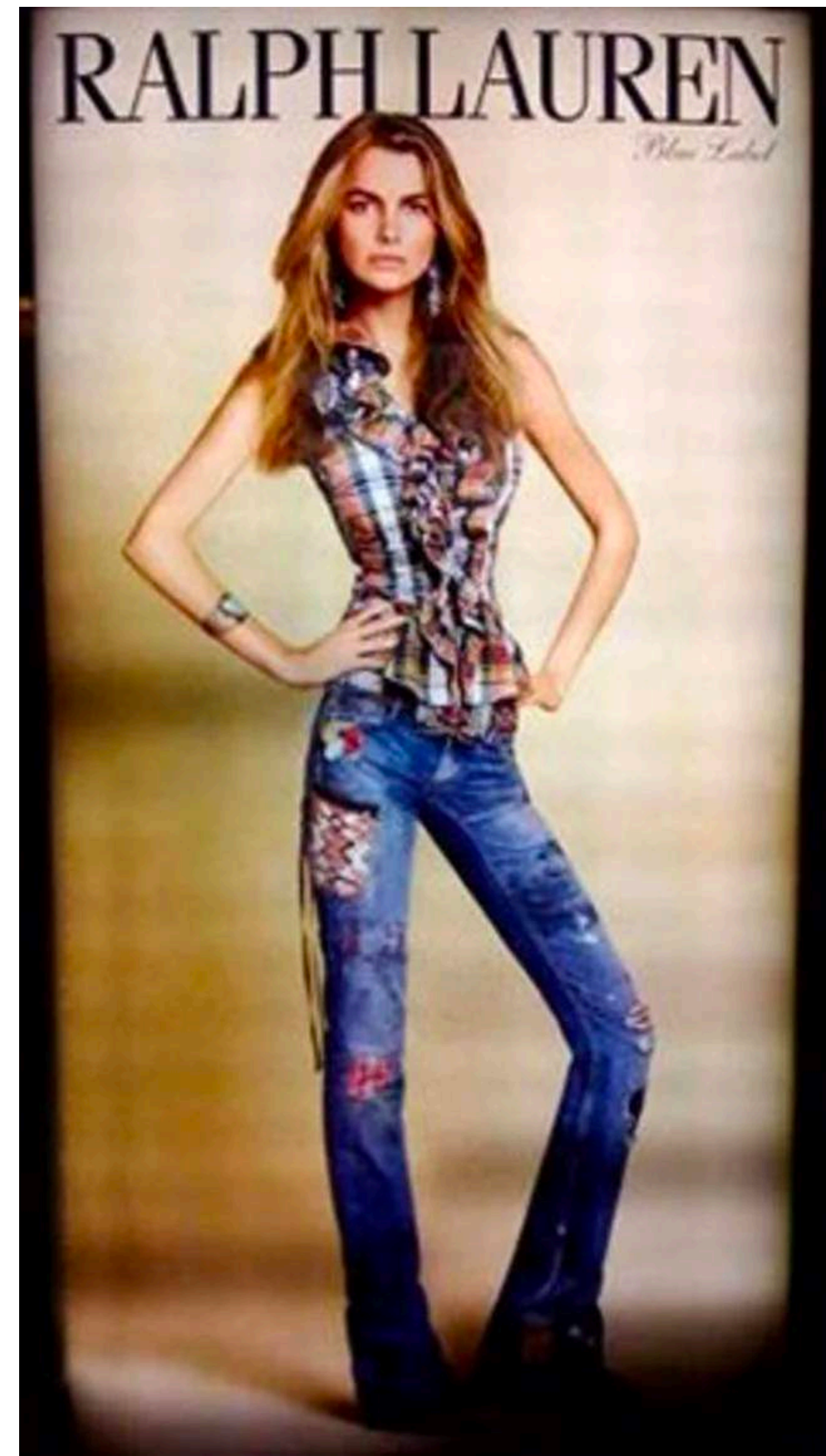


Keira Knightley



Public pressure

- Ralph Lauren publicly apologized



Looking ahead

Fredo Durand
MIT EECS & CSAIL

Main issues

- Fake news, propaganda
- Fake beauty
- Fake porn
- Fairness

Other issues

- Photoshop as an excuse
- Sexting & Revenge porn
 - in general too easy to take/search pictures that we will regret
- Censorship and free speech
 - Should objectionable content be (automatically) removed by publishers?
- Selective editing and captioning
- Mass surveillance, Bodycams
- Bad law enforcement (image) forensics

Context matters

- Law
- Photojournalism
- Ads
- Fine art
- NSFW

What to do? As a citizen? As a photographer? As a programmer?

- Social Norms not to do it
- Detection tools
- Refuse to develop tools
- Refuse to believe photos, educate
- Laws forbidding retouching

To develop/release or not to

- OpenAI decided not to release their text model
https://openai.com/blog/better-language-models/?fbclid=IwAR3tMwho8XGUrPwGZJXqR5Gwdd2WViO5PzPQ8AquSmqsFeKkO21h2tIA_rE
- We can also imagine the application of these models for malicious purposes, including the following (or other applications we can't yet anticipate):
 - Generate misleading news articles
 - Impersonate others online
 - Automate the production of abusive or faked content to post on social media
 - Automate the production of spam/phishing content
- These findings, combined with earlier results on synthetic imagery, audio, and video, imply that technologies are reducing the cost of generating fake content and waging disinformation campaigns. The public at large will need to become more skeptical of text they find online, just as the “deep fakes” phenomenon calls for more skepticism about images[3]
- Politicians may want to consider introducing penalties for the misuse of such systems, as some have proposed for deep fakes.
- .
- Also some have questioned whether deep fake code should have been released

Some issues are subtle and face programmers/camera makers

- Denoising vs skin retouching
- White balance vs whitening
- Exposure vs whitewashing
- Excessive Tone mapping
- Wide angle distortion correction vs. beautification

A perceptual metric for photo retouching

- <https://www.pnas.org/content/108/50/19907>
- Eric Kee and Hany Farid
- Spatial and color manipulation

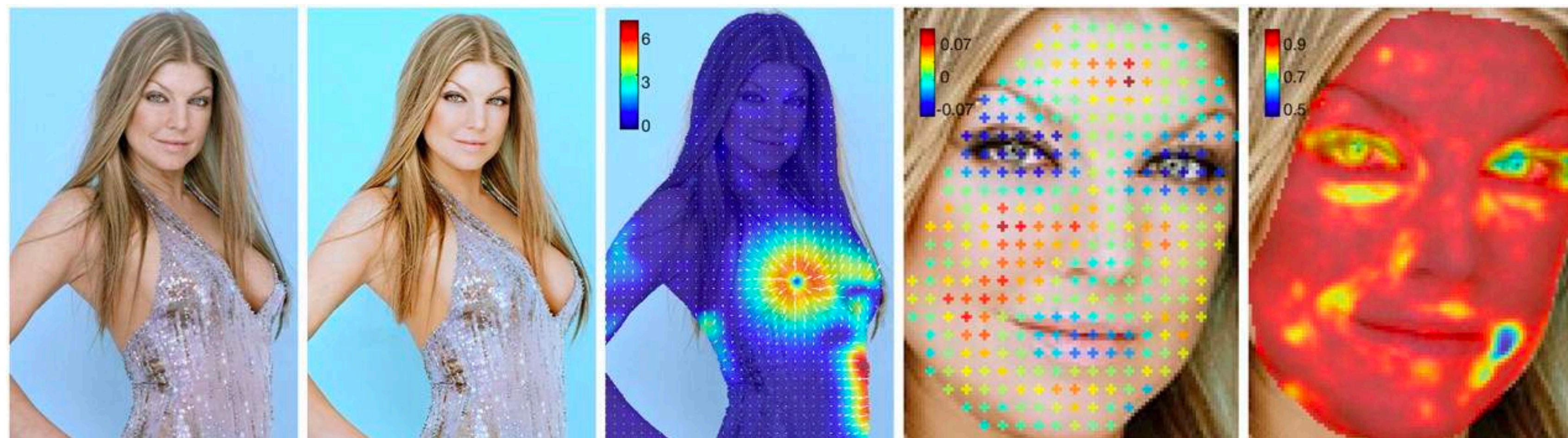


Photo forensics

- <https://www.cs.dartmouth.edu/farid/>
- Detect alterations
 - e.g. clone brush, inconsistent lighting, inconsistent noise



“Watermarking”

- Can we tag and certify photos?

Law

- <https://www.pixelz.com/blog/photoshop-models-laws/>
- US: FTC and truth in advertising
- Photoshop Law in Israel which requires models to be 18.5 BMI and for advertisers to label retouched images
- France, a law that went into effect in October of 2017 requires a "photographie retouchée" label on photos that have been digitally altered to make a model's silhouette narrower or wider; it also requires an every other year health exam for models, to medically certify they are healthy enough to work.

Norms, Guidelines

- https://arxiv.org/pdf/1308.5237.pdf?fbclid=IwAR22kE9H_zm4-mO_Zzjolj9YJ-D2RVQ4gEIUoYtEvtuBtF-gxzU6VjcELO4
- [https://www.ap.org/about/news-values-and-principles/telling-the-story/visuals?
fbclid=IwAR2Oe2ixgWz27LB5zw1GWQTXNzYEz5dnQYFMLWWB8iBWK9_Z4fITVB81M1M](https://www.ap.org/about/news-values-and-principles/telling-the-story/visuals?fbclid=IwAR2Oe2ixgWz27LB5zw1GWQTXNzYEz5dnQYFMLWWB8iBWK9_Z4fITVB81M1M)
- <https://petapixel.com/2017/09/26/getty-images-bans-photos-containing-photoshopped-weight/>
- <https://nppa.org/code-ethics> (National Press Photographers Association)

AP Code of Ethics

- <https://www.csus.edu/indiv/g/goffs/135%20photojournalism/associated%20press%20ethics%20code.pdf>
- AP pictures must always tell the truth. We do not alter or digitally manipulate the content of a photograph in any way.
- The content of a photograph must not be altered in Photoshop or by any other means. No element should be digitally added to or subtracted from any photograph. The faces or identities of individuals must not be obscured by Photoshop or any other editing tool. Only retouching or the use of the cloning tool to eliminate dust on camera sensors and scratches on scanned negatives or scanned prints are acceptable.
- Minor adjustments in Photoshop are acceptable. These include cropping, dodging and burning, conversion into grayscale, and normal toning and color adjustments that should be limited to those minimally necessary for clear and accurate reproduction (analogous to the burning and dodging previously used in darkroom processing of images) and that restore the authentic nature of the photograph. Changes in density, contrast, color and saturation levels that substantially alter the original scene are not acceptable. Backgrounds should not be digitally blurred or eliminated by burning down or by aggressive toning. The removal of “red eye” from photographs is not permissible.
- When an employee has questions about the use of such methods or the AP’s requirements and limitations on photo editing, he or she should contact a senior photo editor prior to the transmission of any image.
- On those occasions when we transmit images that have been provided and altered by a source — the faces obscured, for example — the caption must clearly explain it. Transmitting such images must be approved by a senior photo editor.
- Except as described herein, we do not stage, pose or re-enact events. When we shoot video, environmental portraits, or photograph subjects in a studio care should be taken to avoid, misleading viewers to believe that the moment was spontaneously captured in the course of gathering the news. In the cases of portraits, fashion or home design illustrations, any intervention should be revealed in the caption and special instructions box so it can’t be mistaken as an attempt to deceive.

National Press Photographers Association

- Be accurate and comprehensive in the representation of subjects.
- Resist being manipulated by staged photo opportunities.
- Be complete and provide context when photographing or recording subjects. Avoid stereotyping individuals and groups. Recognize and work to avoid presenting one's own biases in the work.
- Treat all subjects with respect and dignity. Give special consideration to vulnerable subjects and compassion to victims of crime or tragedy. Intrude on private moments of grief only when the public has an overriding and justifiable need to see.
- While photographing subjects do not intentionally contribute to, alter, or seek to alter or influence events.
- Editing should maintain the integrity of the photographic images' content and context. Do not manipulate images or add or alter sound in any way that can mislead viewers or misrepresent subjects.
- Do not pay sources or subjects or reward them materially for information or participation.
- Do not accept gifts, favors, or compensation from those who might seek to influence coverage.
- Do not intentionally sabotage the efforts of other journalists.
- Do not engage in harassing behavior of colleagues, subordinates or subjects and maintain the highest standards of behavior in all professional interactions.

National Geographic <https://yourshot.nationalgeographic.com/photo-guidelines/>

- Caption
 - We insist on truth in captioning and expect full disclosure in the story behind the photo. The description should be complete and accurate. Not only does this establish trust and lend greater credibility to your photo, but it also increases the engagement of the viewer.
- Burning And Dodging
 - Brightening or darkening specific areas in an image is allowed but should be kept to a minimum and not done to the point where it is obvious. Your goal in using digital darkroom techniques should only be to adjust the dynamic tonal range and color balance of an image so that it more closely resembles what you saw and communicates the mood of the scene.
- Cropping
 - Cropping is allowed, but composing the image in-camera is always ideal.
- Cloning
 - Cloning is not allowed. Cloning is the process of adding to or subtracting elements from a photograph. An example would be removing a pole from behind a person's head in a portrait, adding people to a crowd, or mirroring repetitive objects.
- Drones
 - Photographs taken with drones have to be in full compliance with state and federal laws, including specifically aviation laws.
- Black And White Photography
 - Converting your color photos to black and white is acceptable.
- Stitched Panoramas
 - These are allowed only if the segments were all made within the same time frame. Don't create panoramas with sections made at significantly different times. Do not change focal length while creating a stitched image. Do not stretch the meaning of panorama to include elements that weren't in the scene as you saw it. If your photo is a stitched or stacked image, please indicate so in the caption.
- Composite
 - Composites are allowed on Your Shot. To be eligible for publication in National Geographic magazine, the images must be combined parts made at the same time. Don't submit final images where the foreground was shot at noon and the sky at sunset. We the editors do encourage creativity with your photography, as certain select assignments may allow images that are composites taken from different times. Please review what the editor of an assignment will allow or not allow to be submitted. You can read our blog post that goes into more detail on the subject.
- High Dynamic Range (Hdr)
 - These images are allowed on Your Shot. If your photo is an HDR image, please indicate this in the caption.
- Filters
 - We allow filters, including presets, on photographs. We ask that you please include a description of how the style was achieved and which filter or technique was used. Use discretion, however, as over-processed images are not ones that could make it into print publication.
- Raw Files
 - To be eligible for print publication photographers must have a RAW file on hand to be turned over to our editors.
- Watermarks
 - Your Shot always credits the creator of a photo whenever and wherever it appears on the National Geographic site, along with providing a link to their Your Shot profile. Because of this, there's no need to watermark your photo. A small and subtle watermark is allowed but not encouraged—we want to see your photograph without any distractions.
- Inappropriate Content
 - Any content that violates the National Geographic Terms of Service will be removed from the site. This includes inappropriate, pornographic or offensive, or otherwise objectionable content, hate speech, and copyright violations. Your assistance in notifying us of photos or profiles that may violate the Terms of Service is appreciated.

World press photo

- <https://www.worldpressphoto.org/programs/contests/photo-contest/verification-process/what-counts-as-manipulation/28615>
- 1. The first thing that counts as manipulation is staging or re-enacting events.
- 2. The second thing that counts as manipulation is adding or removing content from the image.
 - It is important to note that processing by itself is not manipulation. Because of this, entry rule 11 states “adjustments of color or conversion to grayscale that do not alter content are permitted.”
 - There are two types of color adjustment that count as manipulation:
 - Changes in color may not result in significant changes in hue, to such an extent that the processed colors diverge from the original colors.
 - Changes in density, contrast, color and/or saturation levels that significantly alter content by obscuring or eliminating elements in the picture are not permitted. The jury determines which changes are significant, following the video guidance (below) on what counts as manipulation.
 - Altering the content of a picture by “adding, rearranging, reversing, distorting or removing people and/or objects from within the frame” is manipulation and makes an entry ineligible for the final round.
 - It is not acceptable to remove things such as:
 - physical marks on body
 - small objects in the picture
 - reflected light spots
 - shadows
 - extraneous items on picture’s border that could not be removed by crop
 - It is not acceptable to add things. This includes, but is not limited, to:
 - cloning in highlights, enhancing body, or costume size
 - painting in object details
 - photo montage
 - replicating material on the border of a picture to make a neat crop possible.

- <http://photo-journalisme.org/en/ethics/>

Original image



What you shouldn't do



Do not add, remove, rearrange or flip things or people in the image.

- <http://photo-journalisme.org/en/ethics/>
-

Original image



What you shouldn't do



Do not modify colors.

- <http://photo-journalisme.org/en/ethics/>

Original image



What you shouldn't do



Do not crop a picture by deleting elements.

- <http://photo-journalisme.org/en/ethics/>

Original image



What you shouldn't do



Do not heighten the density, contrast or saturation for the purpose of removing elements or people, or over-dramatize a situation.

seventeen magazine's BODY PEACE TREATY

We vow to...

- Help make your life amazing! You have **big dreams** and we want you to achieve every single one of them!
- Never change girls' body or face shapes. (Never have, never will.)
- Celebrate **every kind of beauty** in our pages. Without a range of body types, skin tones, heights, and hair textures, the magazine—and the world—would be boring!
- Always feature real girls and models who are healthy. Regardless of clothing size, being healthy is about honoring your natural shape.
- Be totally up-front about what goes into our photo shoots. You can go **behind the scenes** on our Tumblr (seventeen.tumblr.com) and see the whole shebang!
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- **Listen carefully to you.** If something in the magazine confuses you or makes you feel bad, we want hear about it. You can e-mail us anytime at mail@seventeen.com or reach out to me directly at ann@seventeen.com.

XOXO
-A.

what really changes!



@ANNSHOKET Tweet me anytime!

Surprisingly not so bad

- Why is it that we don't see more nefarious use of photo manipulation?
 - Social norms?
 - Fear of getting caught?
 - Not even needed?
- See also <https://www.theverge.com/2019/3/5/18251736/deepfake-propaganda-misinformation-troll-video-hoax>

Keep things in perspective

- Remember fake captions, selective editing

Law enforcement

- <https://www.theverge.com/2019/5/16/18627548/nypd-facial-recognition-altered-faces-privacy>



References

- <https://www.theverge.com/2019/3/5/18251736/deepfake-propaganda-misinformation-troll-video-hoax?fbclid=IwAR1p-jXNkOXg3WQF42JQgTXIbEYvIFMC975yHyjnPwsgDV7d8EKOn36bs4I>
- https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3213954&fbclid=IwAR2r4haS35bazEjuXMe65chiGvLA2JJ52CYUfvia3w7AIYI2wXCPBcbCqNc
- <https://www.manrepeller.com/2018/08/the-ethics-of-photoshop-and-retouching.html>
- <http://www.bbc.com/future/story/20170629-the-hidden-signs-that-can-reveal-if-a-photo-is-fake>
- <https://www.nytimes.com/2012/07/21/arts/magazine-editors-and-photographers-on-retouching-photos.html>
- <https://www.pixelz.com/blog/photoshop-models-laws/>
- <https://lens.blogs.nytimes.com/2015/02/17/world-press-photo-manipulation-ethics-of-digital-photojournalism/>
- <https://www.digitalethics.org/essays/faking-photos-ethics-photo-manipulation>
- <https://petapixel.com/2017/04/03/the-ethics-of-photojournalism/>
- <https://streetbounty.com/the-three-dimensions-of-photojournalism/>
- <http://web.mit.edu/drb/Public/PhotoThesis/>
- <https://www.popphoto.com/american-photo/processing-news-retouching-photojournalism#page-7>
- <https://medium.com/vantage/7-with-vii-ethics-in-photojournalism-7773d03a0aa4>
- <http://photo-journalisme.org/en/ethics/>
- <http://www.mediahelpingmedia.org/training-resources/editorial-ethics/527-editorial-ethics-for-photojournalists>
- https://en.wikipedia.org/wiki/On_Photography

Lesson plans, student activities

- <http://people.vcu.edu/~ogiere/genderartmedia/lesson4.html>
- <https://www.commonsense.org/education/lesson/retouching-reality-9-12>
- <http://www.artsandjustice.org/photoshop-ethics-body-image/>
- <http://people.vcu.edu/~ogiere/genderartmedia/lesson4.html>
- <https://www.schooljournalism.org/photo-editing-and-photo-ethics/>
-

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- Abe Davis
-