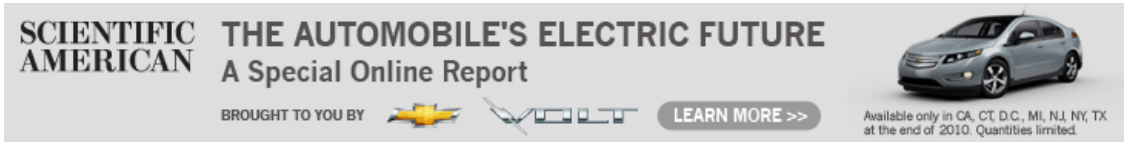

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By Christine Ottery | Jan 17, 2011 12:00 PM | 1

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Is it best to make like Lady GaGa or go barefaced? Christine Ottery talks to evolutionary biologist Mark Changizi about makeup.

She layered up the base with concealer and powder, and applied ten other products to make her eyes pop and her limps plump. Watching one of my best friends put on a mask of make up on for a date, I suddenly felt sad, despite my own love of a slick of red lipstick or a sweep of peachy blush.

It seems virtuous, somehow more honest and brave, not to wear any makeup. For example, an acquaintance proudly stated in her online dating profile that she was wearing no make up in her shots. What, barenaked skin!

Meanwhile, I had been reading The Vision Revolution, evolutionary cognitive theorist Mark Changizi's latest book. In it, Changizi puts forward his thesis that our colour vision as humans has evolutionary roots in a mutation of the cones in the retina that proved advantageous to humans over 500 generations ago by allowing us to distinguish the subtle changes in haemoglobin in someone's face. "It is really hard to see how this morphology is a coincidence," said Changizi when I spoke to him on the phone.

If you think about it we would all notice on some level if someone we were with flushed bright beetroot from embarrassment or anger, was yellow or green from illness or shock, or blue from cold or choking. The colour of the skin therefore allows us – via the concentration levels of haemoglobin and its oxidation levels – to find out vital information about health or subtle emotional indicators. It's like faces are TV screen displaying colours that we can read, Changizi postulates, meaning that we could be unconsciously more empathetic than we realise.

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Another argument that Changizi uses to construct his theory is that skin colour is really hard to describe. It varies greatly, which has provoked debate about whether the word 'nude' is racist among the fashion pack. Changizi reckons our difficulties in naming the colour of our skin - try and label yours satisfactorily - has to do with the fact that we rarely notice skin as a colour in images or situations because it is an optical baseline. He thinks this is useful so we can see "deviations from the baseline", in the same way we don't taste our own saliva but can taste the things we put in our mouth. "It is as if special skin spectacles have been sewn over our eyes," he writes.

Another part of Changizi's theory is that us humans have evolved to be mostly naked, with dense fur only occurring where it isn't important to anticipating different states your fellow humans are in: on the top of the head, under the arms and between the legs. When you compare us to the primates to which we are related, this theory seems to follow through; apes with less skin on display tend to have more monochromatic vision while apes with more skin on display on their faces tend to have colour vision, or only the females have colour vision.

There is a kind of elegance to Changizi's theory in the way that it tethers several mysterious loose ends. This is true especially compared to its nearest evolutionary theory competitor that we can see colour to identify fruit and leaves to eat, which raises the question: If primates who see in colour eat specific coloured things, shouldn't there be a variety of vision types (as some animals do) instead of colour vision to match their staple diet?

Although I tend to take evolutionary biology theories with a pinch of salt due to a shift in neuroscientific thinking towards neuroplasticity, Changizi's skin theory of colour sight sent my brain buzzing off in lots of different directions. I wondered: Is wearing makeup a disadvantage or advantage to our social skills? Are we shutting people out from detecting our feelings by simulating our health or arousal by painting our faces in rosy tints? What role does culture have to play in all of this?

It's probably not as simple as saying that wearing makeup is damaging to our social interactions. Changizi told me:

> "This is speculation but one counter-argument is that you quickly adapt to the blush as a baseline state. Some women have a flush on their faces and once one realizes that, your brain doesn't attribute it to a change in state.
> But if you just meet someone in a bar they might feel as if you're blushing at them in a good way, drawing them in, like fishing. In fact it could hurt you [the makeup wearer] later in that they are unable to see the true modulation of your skin – for example if they are making you laugh you are now unable to show that."

Consider, however, that the popular girls in high school might wear makeup from a younger age and that sunglasses appear cooler the darker they are. If you think about it from an evolutionary point of view, it's very strange that we would want to make ourselves look bug-like with large sunglasses frames, Changizi says. Covering up your true reactions appears to make you cooler – as it always did. "Generally speaking, fashion implicitly knows things no cognitive scientist has figured out yet, and has stumbled on truths," he adds. But all this is hypothetical and needs more research.

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Some men wear makeup too, as do performers, people in front of the camera and clowns. But for everyday women, the ones who are targeted from all angles by the media to look almost impossibly glamorous, I personally think the message from this is optimistic. We are in control of how much we makeup wear, so we can choose to be pokerfaced or expressive in different situations. You might want to wear base in the boardroom to hide any blushes, but wear less makeup on a date, when you want your skin modulations to be natural and responsive.

** Biology Letters, Bare skin, blood and the evolution of primate colour vision Mark A Changizi, Qiong Zhang and Shinsuke Shimojo, *Biol. Lett*. 22 June 2006 vol. 2 no. 2 217-221 doi: 10.1098/rsbl.2006.0440

About the author: Christine Ottery is a freelance science writer who writes on for the Guardian, TheEcologist.co.uk, SciDev.net and Wired Magazine. She recently graduated from a MA Science Journalism at City University London, UK. She blogs at Open Minds and Parachutes and tweets at @christineottery. In her spare time she can be found dancing around the kitchen with her boyfriend, who she's just moved in with.

The views expressed are those of the author and are not necessarily those of Scientific American.

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1. ravenrose
01:24 PM 1/17/11

Are you factoring in the major reason women wear makeup, in my opinion, which is to look younger? I recall reading recently that the greater the color variations on the face, the older a person appears. Of course, some of those color variations would be the shadows cast by wrinkles, but in general skin tone becomes less even with age.

The main elements of makeup emulate the face of a healthy, sexually fertile young woman. Covering skin color variations is just as key to looking young as covering hair color variations, i.e. gray.

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