



21ST NOVEMBER 2019

HISTORY OF THE EYE

PROFESSOR JOANNA BOURKE

Cicero (106-43 B.C.): “Nature has given us eyes to declare our internal emotions”.

Paulo Coelho (1947-): “The eyes are the mirror of the soul and reflect everything that seems to be hidden; and like a mirror, they also reflect the person looking into them.”

From ancient times to popular self-help books today, eyes have been viewed as “windows to the soul”. In the West, eye metaphors abound: the eye of a storm, eye of a needle; eyes as a mirror or arrow; we see the light, have insight or an eye for something; when things seem a-wry, efficient people eye the opposition and see that it gets done.

Eyes are profoundly mythological, metaphorical, historical. We only have to think of the divine eyes of the Egyptians; the Greek evil eye; the Hindu God of Destructive, Shiva, who has a terrifying third eye in his forehead “whose glance renders the world to cinders”. We close our eyes when faced with something horrifying or frightening, in the hope that, by not seeing, it does not exist. Young infants laugh loudly when playing “peek-a-boo”, a game intertwining seeing/not-seeing with the realities of self/other. A person who dies has her eyes closed, so that she can “sleep in peace”. Indeed, a corpse that seems to “return the gaze” is a profoundly uncanny experience for mourners at a funeral.

Eyes also cry. Tears fulfil a physiological function: they moisten the cornea and are bacteriostatic. Tears are necessary to vision. They smooth out the wrinkled, uneven surface of the cornea.

Not all tears are the same. There are three kinds, each of which contain subtly different proteins, oils, chemicals, and hormones. Basal tears lubricate our eyeballs. They produce from 5 to 10 ounces of fluid a day, which either evaporate or are drained through the puncta. Reflex tears protect the eyes. We cry when suffering from conjunctivitis or when slicing onions (I am reminded of the end of Huckleberry Finn, where Tom Sawyer gets Jim to cut an onion so that he can water the plant in his prison cell). Psychic tears are emotional responses to the world. We cry when sad, happy, nostalgia, or in pain. “Tear-jerking” films gross billions of dollars every year.

Humans are not born with fully developed tear ducts. Most babies start crying tears around two weeks of age, but some can take up to two months to well-up. Babies can cry between two and 18 hours a day. Their crying peaks at between six and ten weeks. By the age of two, parents would have endured an average of 4,000 crying sessions. In contrast, the average adult cries around three or four times a month. Our lacrimal glands shrink as we age, so that by the age of 65 a person is no longer producing forty per cent of the tears that they were only a few decades earlier. This means that their eyes become irritated, thus producing reflex tears. As literary critic Tom Lutz witty put it, watery eyes are “ironically... a symptom of chronic dry eye”.

While an infant’s tears are interpreted as a kind of language (“breast, now!”), adult tears often have a psychic function. In popular culture, weeping is believed to be a healthy way to release tension; psychoanalysts warn against the dangers of repression; and some psychosomatic practitioners even claim that failing to weep might result in ulcers or headaches. Tears can be baffling. As Alfred Tennyson put it in “The Princess” (1847):

*Tears, idle tears, I know not what they mean,
Tears from the depth of some divine despair*



*Rise in the heart, and gather to the eyes,
In looking on the happy Autumn-fields,
And thinking of the days that are no more.*

Eyes also age. As a person enters their “middle years”, the skin of lower eyelids sags, creases appear, fat accumulates, creating “bags” under the eyes. Upper eyelids may also droop, making the eyes of older people look less “open” and “alert”. Their eyebrows may thin or grow bushy; hairs stick out at unruly angles.

But the chief message of eyes is emotional. People infer how other people are feeling by staring deeply into their eyes. We don't need the cognitive neurosciences to convince us of the power of facial evaluations. Western peoples, for example, judge men with thick eyebrows to be dominant; women with large eyes, innocent; people of either sex who blink too much, dishonest.

These facial evaluations are cultural. In Victorian Britain, people believed in optography: that is, the belief that the retina retains an image of the last thing it saw. This is why so many Victorian murder-mysteries focus on what was reflected in the eyeballs of a assassinated person. Common ideas that tears fall from women's eyes more frequently than from male ones turn out to be culturally variable. We all know of King Lear's frustrated cry that “let not women's weapons, water-drops, stain my man's cheek”. Humoural medicine also maintained that women cry more than men because their bodies were “moister”. But it is important not to exaggerate the gendering of tears. After all, at various times, men were expected to weep. As Peter Shaw maintained in Man. A Paper for the Ennobling of the Species (1755), “Moral weeping is the sign of so noble a passion, that it may be questioned whether those are properly men, who never weep upon any occasion. They may pretend to be as heroic as they please, and pride themselves in a stoical insensibility; but this will never pass for virtue with the true judges of human nature.”

Stoicism in British men only emerged from the nineteenth century, in response to changing economic and business contents. But men did not simply stop crying in public, as anyone who has listened to Roy Acuff or Johnnie Ray singing knows.

There are other culturally specific meanings given to eyes. In the West, honesty is reflected in “looking in the eye”; an act that is rude in Japan, for example, and amongst Australian and Canadian First peoples. Indeed, eyes have, therefore, been genocidal: the failure of Aboriginal peoples to make eye contact was proof of their shiftiness.

In British cultures, Victorians considered the body to be the location of the human essence. Eyes played a dominant role in their assessments. One of the most prominent proponents was Sir Charles Bell, whose “The Anatomy and Philosophy of the Expression as Connected with the Fine Arts” (1806) was the most influential exploration of anatomy and the emotions in the first half of the nineteenth century and was much more widely read than Charles Darwin's “Expressions of the Emotions in Man and Animals” would be later in the century.

Bell's argument was elegant and transcendental. He argued that human eyes had been designed to be “indicative of the higher and holier emotions” that “distinguish man from brutes”. He contended that “when pious thoughts prevail, man should turn his eyes from things earthly to the purer objects above. But there is a reason for this.... When subject to particular influences, the natural position of the eyeball is to be directed upwards. In sleep, languor and depression, or when affected with strong emotions, the eyes naturally and insensibly roll upwards. The action is not a voluntary one; it is irresistible. Hence, in reverence, in devotion, in agony of mind, in all sentiments of pity, in bodily pain with fear of death, the eyes assume that position.”

In other words, Bell argued that human eyes had been designed to be “indicative of the higher and holier emotions” that “distinguish man from brutes”. Thus, when people were “wrapt in devotional feelings”, their eyes instinctively looked upwards to the heavens “by an action neither taught nor acquired”. Bell admitted that “the savage” and the “idolatrous Negro” might not believe in God, but even they raised their eyes “to the canopy of the sky” when “praying for rice and yams”. Anatomy bore a divine stamp



Bell's reflections were profoundly influential – not least, in the development in Victorian Britain of the science of physiognomy. Of course, this had a long history, dated back to Aristotle in classical times and to Charles Le Brun in the seventeenth century, but reached its high point in Victorian times.

Victorians were obsessed with the question: how can you truly know “the Other”? Rapid urbanization and industrialization meant that people had to find a way to rapidly assess the character of a large number of strangers. This was the promise of physiognomy. An early definition of physiognomy – as given in ‘The Encyclopedia Britannia’ (1810) – says that it is “a word formed from the Greek for nature, and I know”. It is “the knowledge of the internal properties of any corporeal existence from the external appearances”. In the words of artist Lady Elizabeth Rigby Eastlake, “The face is not only the appointed badge of distinction and proof of identity, but it is the sole proof which is instantaneous – an evidence not collected by effort, study, or time, but obtained and apprehended in a moment; and that, as often as not, an unprepared moment.”

Reassuringly, argued one adherent, “No man appears other than he is”: facial expressions were a “natural sign language”. To truly know another person, and (crucially) to know how they should be treated, a person had only to look deeply into the eyes of the Other.

So, what message did corneas, pupils, irises, eyebrows, eyelids, and eyelashes convey? Sir James Paget (1814-1899), one of the founders of scientific medical pathology, taught that “It is not rare to see one eyeball somewhat higher than the other: – if the difference be very slight, it is likely to make a thinking, considerate man, who looks at every side of the matter. When the eyes sink a little towards their inner angles, they denote warmth of mind directed to realities; when they rise towards them, they denote a similar mind directed to the supersensuous and ideal.”

Johann Caspar Lavater, the most prominent champion of the science of physiognomy, concurred. Eyes and eyebrows that were “strong, open, liberal, and steadfast” promised similar traits in “the man”; in contrast, people were right to be wary of men with “thick, black, strong eyebrows, which decline downwards, and appear to lie close upon the eye, shading deep large eyes”. Hundreds of cheap tracts and books provided anxious readers with advice on how to correctly “read” eyes. For example, in ‘Physiognomy Made Easy. Character As Expressed in the Human Countenance’, readers were informed that:

“Angular line of eyebrow, outwards” showed “Resistance: acting morally in resisting temptation”;
“Downward direction of inner line of eyebrow” signalled “evasion”; “Oblique setting, and closeness of the eyes” was “Deceptive”; “Fulness of muscles under the eyes” was “secretiveness”; and “Wrinkled upwards between the eyebrows” was “justice”.

Such views were still being expressed in the 1920s. The sculpture, author, and leading phrenologist L. Hamilton McCormick, for example, published ‘Characterology: An Exact Science’ in 1920. He insisted that there was “A language of eyes which, although voiceless and wordless, is universally understood and is more to be relied upon than speech, for by an unguarded glance truth may be revealed even when the tongue lieth. People converse with their eyes as fluently as with their lips, and thought thus expressed is at times so emphatic that a single look has been known to destroy friendship. One glance like a flash of lightning may reveal hatred that is smouldering within the breast.”

Like most physiognomists, McCormick drew analogies with non-human animals. A prisoner whose “eyes were like coals of fire” had “stored the fury of a tiger”. Others had eyes that were “cattish” or like a serpent who “wills his prey to come to him and it cannot resist”.

The advantage of such schemas was that the eyes never deceived. As one physiognomist put it, “the eyes are the chosen abode of the soul.... When our stock of expressions are exhausted, we have recourse to the silent



eloquence of the eyes, which, freed from the shackles of grammatical rules, express with one look, what numerous and complicated sentences would have failed to unfold.... They never can betray truth.”

It was an assumption that has been embraced in more recent decades, with the revival of interest in evolutionary psychology. The most prominent advocate is psychologist Paul Ekman, who is famous for his work on the facial evaluation of the emotions. His Facial Action Coding System (FACS), developed in the 1970s and 1980s, allows any facial expression to be described in terms of the 46 unique actions the face is capable of making. He claims that these facial expressions are universal: people in all parts of the world can look into the face of another person and “know” how they are feeling. Of course, some people are instinctively better at doing this than others; but most people can be taught to “read” other people’s emotions by studying the movements of their faces.

Eyes are central to Ekman’s Facial Action Coding System. For example, his research contends that the core expressions of pain involves brow lowering, eye closure, orbit tightening (that is, narrowing of the eyelids and raising the cheeks), and levator contraction (that is, rising the upper lip and perhaps wrinkling at the side of the nose).

Drawing inspiration from Ekman, other researchers conclude that the eyes of mice tell us about their feeling-states. The “Rat Grimace Scale” is the standard way experimental scientists assess pain in rats. Suffering rats show nose and cheek bulge, ears pulled apart and back, and a narrowing of the eye area, with a tightly closed eyelid. Eyes are the windows to the soul or, in the case of rats, the fish sole!

Of course, Ekman’s FACS focusses only on human emotions. His schema was quickly employed in a policing fashion to ferret out human liars and malingerers who were seeking to deceive physicians, pension authorities, or insurance companies. Since FACS-coders claimed that particular facial expressions were an indisputable “index of pain”, the system was employed to adjudicate on the reality of verbal declarations of pain. An article entitled “Detecting Deception in Pain Expressions” (2002), published in the official journal of the International Association for the Study of Pain, observed that clinicians tended to “assign greater weight to non-verbal expressions [of pain] than to patients’ self-report”. This could be problematic, since patients could “successfully alter their pain expressions”. There was a way to deal with this dilemma, however: physicians and other people assessing pain simply needed to pay attention to “markers of deception” (by which they meant “leakages of the genuine expression” of pain), which could provide evidence that a person was lying. These “leakages” typically occurred around the eyes because people had less control over eye- musculature. The authors also noted that people lying about pain tended to include “atypical facial actions”, such as raising their brow. This was due to the fact that “the poser” was “not consciously aware of what a genuine expression looks like” or was the result of other emotions coming into play when a person was acting duplicitously. It was not surprising, therefore, that a raised brow was often reflected in the malingerer’s face since this movement was “typically associated with a startle response or the experience of fear”. The raised brow was an example of what such researchers called “insertion errors”, that is, deliberate facial actions that were absent in spontaneous expression. Other indications that a person was lying about her pain included omission errors (or the absence of a facial movement that was generally present in spontaneous ones) and mistakes being made in temporal components of facial expressions (such as the time it took for a muscle to respond, its duration, and its coordination with other facial movements). Facial expressions were no longer the “gold standard” in judging veracity as earlier commentators like Bell, Darwin, and Lavater had assumed, but the debased currency with which deception could be judged in the clinic, law court, and insurance office.

The policing uses of facial coding systems expanded immeasurably after 9/11. Ekman’s facial coding system was adopted by the US Transportation Security Administration (which is part of Homeland Security), primarily for to detect terrorists, illegal immigrants, and other “undesirables” coming through US airports. The TSA were particularly impressed by Ekman’s claim to be able to identify micro-expressions, that is, involuntary “leakages” of expressions of fear or anger that appear on people’s faces for microseconds despite attempts to disguise them. In other words, attempts by potential terrorists to conceal anger, nervousness, or fear when approaching security officials at airports could be exposed by officers trained to be sensitive to micro-



expressions. Ekman had discovered the existence of micro-expressions through frame-by-frame analysis of video footage. But examining video footage is time consuming and typically takes place after suspicions had already been raised (or, even worse, once the terrorist has already acted). Ekman, however, maintained that he could train officers via METT (Micro-Expression Training Tool) to pick up these micro-expressions. The human eye could be taught to replicate video-vision, “seeing” at 1/25th of a second: officers could have machine vision. In the words of researchers exploring such processes on behalf of RAND, the organisation providing research and development to the United States Armed Forces, “While changes in heart rate or blood pressure are driven by many non- emotional physiological demands and may show similar changes across different emotional states, the facial expression of emotion is a biological system specifically for communicating emotional or motivational states. It is thus “closer” to actual motivational state and intent than peripheral physiological signals.”

Ekman’s belief in the power of looking into the eyes of another and detecting “true” emotions and motivations was not the only technology eagerly grasped by security forces after 9/11. Ioannis Pavlidis (a computer scientist from the University of Houston) and James Levine (an endocrinologist working from the Mayo Clinic) developed what they call periorbital thermography. This was based on the physiological principle that, when people are consciously lying, they feel stress, which causes rapid eye movement. This increases blood flow to the area around the eyes and the subsequent raising of temperatures could be reliably captured on thermographic cameras. Like Ekman’s METT, their system had the advantage of being used without the human-target’s knowledge. Mental representations were no longer a “private domain” but were able to be exposed to the prying eyes of security services.

But what if the eyes did lie? What if eyes were not an accurate reflection of the inner self? From the late nineteenth century and lasting to the present, the eyes – its contours; symmetry; ridges, creases and crinkles – could be changed. Cosmetic surgery was premised on the assumption that the external representation of the self was somehow distorted: surgery was required to ensure that there was a correct match between a person’s exterior and her interior. As one cosmetic surgeon quipped, facial surgery “can turn an eyesore into an eye-ful. It can turn someone’s glance into a gaze”.

Cosmetic surgery on eyes was highly “raced”. Looked at globally, the most common form of cosmetic surgery set out to transform faces into a White, European, classical ideal. In Asian countries, the most common procedure is “double-eyelid” surgery, in a fold of skin is excised from the upper eyelids to create a crease above each eye. In one 2004 survey, involving 1,565 female college students in Korea, one-quarter had undergone Asian eyelid surgery. Some of the operations are performed on new-born infants. Parents would give a present of eye surgery to their daughters as a reward for good grades at school. The surgery is highly gendered. In one study of over 6,000 patients, 94 per cent were women. The surgery is not without risks, including scarring, dry eye syndrome, “lid lag”, inability to close eyes, irritation, blurry visions, eye asymmetry, and sunken eyes.

What was the rationale for such a delicate surgical procedure? Although between one third and a half of people in Asia have a naturally occurring eyelid crease, it is generally said that the highly-sought-after crease is “European”. In other words, the surgery is part of a long history of racism. The racist insult of being “slant-eyed” has persisted since the earliest days of Asian immigration to America to work in the gold fields. It peaked again during the Second World War with the internment of anyone who “looked Japanese” and continues today as a form of casual racism in schoolyards.

For many women having the surgery, this was a way of enhancing what Pierre Bourdieu would have called their “symbolic capital”. In the words of “Jane”, the surgery was “an investment in your future.... Especially if you go into business, you kind of have to have a Western facial type, and you have to have like their features”. Another young woman told Oprah Whitney that her eye operation “wasn’t a vanity thing. It really was this belief that if you looked a little more Western and a little less Asian, it’s like having a great degree from a better school.... It was something to put in your portfolio”. Why is the upper-eyelid crease considered more “normal” than the non-crease? In her book *The Cosmetic Gaze: Body Modification and the Construction of Beauty*, Bernadette Wegenstein has a term for this: the internalization of an aesthetic gaze. In other words, the



double eyelids is “normal” or “natural” and therefore better. To advance in a global economy that was economically and culturally dominated by the West, facial architecture and expression needed to conform to the dominant power. Asians could “choose” to improve their prospects by facial re-sculpturing. Cosmetic surgery became a matter of personal choice rather than racism.

When the operation was done on men, the effect was thought to make him a better fighter. In the words of the American surgeon Henry Junious Schireson, writing in the late 1930s, the Asian eye was “not only esthetically [sic] unpleasant; it is also a definite impediment to good vision. That is why the Japanese are reputedly such poor marksmen, why this highly intelligent race has so high a percentage of airplane crashes. Japanese women were the first to seek correction of this defect, for esthetic [sic] reasons. Today in military Japan the functional objective is the moving motive and thousands of Japanese men are having the correction made.”

Such procedures increased after the American occupation of Japan at the end of the Second World War.

Cosmetic surgeons reinforced the view that the double-fold was more aesthetically beautiful. “Dr Koo” contended that “the eye is the window to your soul and having a more open appearance makes you look a bit brighter, more inviting”. “Dr Gee” similarly insisted that “I would say 90% of people look better with double eyelids. It makes the eye look more spiritually alive.... With a single eyelid frequently they would have a little fat pad underneath [which] can half bury the eye and so the eye looks small and unenergetic”.

The author of ‘Cosmetic Surgery for the Asian Face’ (1990) claimed that “traditional Asian cultures” have “a tendency to place great significance on physiognomy that is the relationship of physical traits and characteristics to behavior and personality as well as to prospects for success in business, friendship, marriage, and other relationships.”

Its proponents believed that the absence of the palpebral fold was responsible for producing the “passive expression” that “seems to epitomize the stoical and unemotional manner of the Oriental”.

Cosmetic surgeons Richard Aronsohn and Richard Epstein elaborated such arguments in ‘The Miracle of Cosmetic Plastic Surgery’ (1970). According to them, the eyelid of “Orientals” “hangs down like a thick curtain, obscuring the eyelid margin. This upper-lip droop conceals a portion of the iris, framing an expressionless eye peeking through a slit, an image that (mostly through fiction) has become associated with mystery, intrigue, and inscrutability.”

They went further, arguing that oriental women chose to have the operation in order to “satisfy their own esthetic preferences or those of their immediate peer group. Many Chinese, for example, tend to look derisively upon the “mouse-like eye” (the mouse is not esteemed in Chinese culture) and girls with that feature can encounter romantic difficulties. More familiar to the West is the “Cio-Cio-san” complex, wherein the pliable Oriental charmer [female] strives for further appeal in the eyes of her Occidental lover.”

Who was their typical patient? They discussed the case of “S. N.”, an “Oriental” who visited their surgery. The surgeons described this 26-year old married woman as a “shy, reticent, introverted girl [sic]” who confessed that she wanted to “be more beautiful”. She had met and married her American husband – a marine lieutenant – in Vietnam three years previously and moved with him to the United States. However, “her husband’s interest in her had declined to the point of rejection. He teased her about her eyes, telling her that she constantly looked sleepy. He had begun comparing her to American girls and she felt the comparison was now based on more than visual perception. The appearance that had been enticingly exotic in Vietnam had become obtrusively foreign on Main Street. To recapture her husband, she wished to have “big, round, beautiful eyes like American girls”.

The surgeons did not leave their analysis at that point. They described the woman’s eyes as “puffed out with the fatty fullness of the upper lids.... The typical Mongoloid ‘single eye’”. They then admitted that “In the surgeon’s judgment, her eyes, brimming with Oriental charm and gentle humility, reflected the simple elegance



of a Haiku line”. They fretted that the operation “might change a butterfly into a moth” but, nevertheless, agreed to operate “in view of the patient’s selfless sincerity”. Readers were not told of the final result, except that the surgery had the effect of “alleviating the ‘flat’ Mongoloid appearance”. This was orientalism at its most racist.

To conclude. Eyes convey messages to others. The interpretation of eye shape and colour have been used to distinguish between different degrees of “civilization” (scientific racism), to identify personality traits, and to detect terrorists. Eyes are mythological, metaphorical, historical, and, above all, moral. As Paulo Coelho put it, eyes are “like a mirror, they also reflect the person looking into them.” Eyes weep, conveying sorrow, pain, and nostalgia. They echo power differentials in our society. People responsible for an infant’s socialization pay attention to some tears, and not others. Some tears are kissed better; some, ignored. It makes a difference if you are poor. It matters if you are a girl or woman. This is why the words of the great feminist philosopher Luce Irigaray are relevant. “Don’t weep”, she advised, adding: “One day we will learn to say ourselves. And what we will say will be far more beautiful than our tears”.

© Professor Joanna Bourke 2019

Further Reading:

Joanna Bourke, *What it Means to be Human. Historical Reflections* (London: Virago, 2016)

Thomas Dixon, *Weeping Britannia. Portrait of a Nation in Tears* (Oxford: Oxford University Press, 2015)

Sander Gilman, *Making the Body Beautiful. A Cultural History of Aesthetic Surgery* (Princeton: Princeton University Press, 1999)

Elizabeth Haiken, *Venus Envy: A History of Cosmetic Surgery* (Baltimore: John Hopkins University Press, 1997)

Eugenia Kaw, “Medicalization of Racial Features Asian American Women and Cosmetic Surgery”, *Medical Anthropology Quarterly*, 7.1 (March 1993)

Tom Lutz, *Crying. The Natural and Cultural History of Tears* (New York: W. W. Norton and Co., 2001)

See my personal website: <http://www.bbk.ac.uk/history/our-staff/full-time-academic-staff/Joanna>

See the website for Sexual Harms and Medical Encounters (SH+ME): <https://shame.bbk.ac.uk>

Follow me on Twitter: @bourke_joanna and @shme_bbk