

by Stephen Jay Gould

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Interesting stories often lie encoded in names that seem either capricious or misconstrued. Why, for example, are political radicals called "left" and their conservative counterparts "right"? In many European legislatures, the most distinguished members sat at the chairman's right, following a custom of courtesy as old as our prejudices for favoring the dominant hand of most people. (These biases run deep, extending well beyond can openers and scissors to language itself, where dexterous stems from the Latin for "right," and sinister from the word for "left.") Since these distinguished nobles and moguls tended to espouse conservative views, the right and left wings of the legislature came to define a geometry of political views.

Among such apparently capricious names in my own field of biology and evolution, none seems more curious, and none elicits more questions after lectures, than the official designation of light-skinned people in Europe, western Asia, and North Africa as Caucasian. Why should the most common racial group of the Western world be named for a mountain range that straddles Russia and Georgia? Johann Friedrich Blumenbach (1752-1840), the German anatomist and naturalist who established the most influential of all racial classifications, invented this name in 1795, in the third edition of his seminal work, *De Generis Humani Varietate Nativa* (On the Natural Variety of Mankind). Blumenbach's definition cites two reasons for his choice--the maximal beauty of people from this small region, and the probability that humans were first created in this area.

Caucasian variety. I have taken the name of this variety from Mount Caucasus, both because its neighborhood, and especially its southern slope, produces the most beautiful race of men, I mean the Georgian; and because . . . in that region, if anywhere, it seems we ought with the greatest probability to place the autochthones [original forms] of mankind.

Blumenbach, one of the greatest and most honored scientists of the Enlightenment, spent his entire career as a professor at the University of Göttingen in Germany. He first presented *De Generis Humani Varietate Nativa* as a doctoral dissertation to the medical faculty of Göttingen in 1775, as the minutemen of Lexington and Concord began the American Revolution. He then republished the text for general distribution in 1776, as a fateful meeting in Philadelphia proclaimed our independence. The coincidence of three great documents in 1776--Jefferson's Declaration of Independence (on the politics of liberty), Adam Smith's *Wealth of Nations* (on the economics of individualism), and Blumenbach's treatise on racial classification (on the science of human diversity)--records the social ferment of these decades and sets the wider context that makes Blumenbach's taxonomy, and his subsequent decision to call the European race Caucasian, so important for our history and current concerns.

The solution to big puzzles often hinges upon tiny curiosities, easy to miss or to pass over. I suggest that

the key to understanding Blumenbach's classification, the foundation of much that continues to influence and disturb us today, lies in the peculiar criterion he used to name the European race Caucasian--the supposed superior beauty of people from this region. Why, first of all, should a scientist attach such importance to an evidently subjective assessment; and why, secondly, should an aesthetic criterion become the basis of a scientific judgment about place of origin? To answer these questions, we must compare Blumenbach's original 1775 text with the later edition of 1795, when Caucasians received their name.

Blumenbach's final taxonomy of 1795 divided all humans into five groups, defined both by geography and appearance--in his order, the Caucasian variety, for the light-skinned people of Europe and adjacent parts of Asia and Africa; the Mongolian variety, for most other inhabitants of Asia, including China and Japan; the Ethiopian variety, for the dark-skinned people of Africa; the American variety, for most native populations of the New World; and the Malay variety, for the Polynesians and Melanesians of the Pacific and for the aborigines of Australia. But Blumenbach's original classification of 1775 recognized only the first four of these five, and united members of the Malay variety with the other people of Asia whom Blumenbach came to name Mongolian.

We now encounter the paradox of Blumenbach's reputation as the inventor of modern racial classification. The original four-race system, as I shall illustrate in a moment, did not arise from Blumenbach's observations but only represents, as Blumenbach readily admits, the classification promoted by his guru Carolus Linnaeus in the founding document of taxonomy, the *Systema Naturae* of 1758. Therefore, Blumenbach's only original contribution to racial classification lies in the later addition of a Malay variety for some Pacific peoples first included in a broader Asian group.

This change seems so minor. Why, then, do we credit Blumenbach, rather than Linnaeus, as the founder of racial classification? (One might prefer to say "discredit," as the enterprise does not, for good reason, enjoy high repute these days.) But Blumenbach's apparently small change actually records a theoretical shift that could not have been broader, or more portentous, in scope. This change has been missed or misconstrued because later scientists have not grasped the vital historical and philosophical principle that theories are models subject to visual representation, usually in clearly definable geometric terms.

By moving from the Linnaean four-race system to his own five-race scheme, Blumenbach radically changed the geometry of human order from a geographically based model without explicit ranking to a hierarchy of worth, oddly based upon perceived beauty, and fanning out in two directions from a Caucasian ideal. The addition of a Malay category was crucial to this geometric reformulation--and therefore becomes the key to the conceptual transformation rather than a simple refinement of factual information within an old scheme. (For the insight that scientific revolutions embody such geometric shifts, I am grateful to my friend Rhonda Roland Shearer, who portrays these themes in a forthcoming book, *The Flatland Hypothesis*.)

Blumenbach idolized his teacher Linnaeus and acknowledged him as the source of his original fourfold racial classification: "I have followed Linnaeus in the number, but have defined my varieties by other boundaries" (1775 edition). Later, in adding his Malay variety, Blumenbach identified his change as a departure from his old mentor in the most respectful terms: "It became very clear that the Linnaean

division of mankind could no longer be adhered to; for which reason I, in this little work, ceased like others to follow that illustrious man."

Linnaeus divided the species *Homo sapiens* into four basic varieties, defined primarily by geography and, interestingly, not in the ranked order favored by most Europeans in the racist tradition--Americanus, Europaeus, Asiaticus, and Afer, or African. (He also alluded to two other fanciful categories: *ferus* for "wild boys," occasionally discovered in the woods and possibly raised by animals--most turned out to be retarded or mentally ill youngsters abandoned by their parents--and *monstruosus* for hairy men with tails, and other travelers' confabulations.) In so doing, Linnaeus presented nothing original; he merely mapped humans onto the four geographic regions of conventional cartography.

Linnaeus then characterized each of these groups by noting color, humor, and posture, in that order. Again, none of these categories explicitly implies ranking by worth. Once again, Linnaeus was simply bowing to classical taxonomic theories in making these decisions. For example, his use of the four humors reflects the ancient and medieval theory that a person's temperament arises from a balance of four fluids (humor is Latin for "moisture")--blood, phlegm, cholera (yellow bile), and melancholy (black bile). Depending on which of the four substances dominated, a person would be sanguine (the cheerful realm of blood), phlegmatic (sluggish), choleric (prone to anger), or melancholic (sad). Four geographic regions, four humors, four races.

For the American variety, Linnaeus wrote "*rufus, cholericus, rectus*" (red, choleric, upright); for the European, "*albus, sanguineus, torosus*" (white, sanguine, muscular); for the Asian, "*luridus, melancholicus, rigidus*" (pale yellow, melancholy, stiff); and for the African, "*niger, phlegmaticus, laxus*" (black, phlegmatic, relaxed).

I don't mean to deny that Linnaeus held conventional beliefs about the superiority of his own European variety over others. Being a sanguine, muscular European surely sounds better than being a melancholy, stiff Asian. Indeed, Linnaeus ended each group's description with a more overtly racist label, an attempt to epitomize behavior in just two words. Thus the American was *regitur consuetudine* (ruled by habit); the European, *regitur ritibus* (ruled by custom); the Asian, *regitur opinionibus* (ruled by belief); and the African, *regitur arbitrio* (ruled by caprice). Surely regulation by established and considered custom beats the unthinking rule of habit or belief, and all of these are superior to caprice--thus leading to the implied and conventional racist ranking of Europeans first, Asians and Americans in the middle, and Africans at the bottom.

Nonetheless, and despite these implications, the overt geometry of Linnaeus's model is not linear or hierarchical. When we visualize his scheme as an essential picture in our mind, we see a map of the world divided into four regions, with the people in each region characterized by a list of different traits. In short, Linnaeus's primary ordering principle is cartographic; if he had wished to push hierarchy as the essential picture of human variety, he would surely have listed Europeans first and Africans last, but he started with native Americans instead.

The shift from a geographic to a hierarchical ordering of human diversity must stand as one of the most fateful transitions in the history of Western science--for what, short of railroads and nuclear bombs, has

had more practical impact, in this case almost entirely negative, upon our collective lives? Ironically, Blumenbach is the focus of this shift, for his five-race scheme became canonical and changed the geometry of human order from Linnaean cartography to linear ranking--in short, to a system based on putative worth.

I say ironic because Blumenbach was the least racist and most genial of all Enlightenment thinkers. How peculiar that the man most committed to human unity, and to inconsequential moral and intellectual differences among groups, should have changed the mental geometry of human order to a scheme that has served racism ever since. Yet on second thought, this situation is really not so odd--for most scientists have been quite unaware of the mental machinery, and particularly of the visual or geometric implications, lying behind all their theorizing.

An old tradition in science proclaims that changes in theory must be driven by observation. Since most scientists believe this simplistic formula, they assume that their own shifts in interpretation record only their better understanding of newly discovered facts. Scientists therefore tend to be unaware of their own mental impositions upon the world's messy and ambiguous factuality. Such mental impositions arise from a variety of sources, including psychological predisposition and social context. Blumenbach lived in an age when ideas of progress, and the cultural superiority of European ways, dominated political and social life. Implicit, loosely formulated, or even unconscious notions of racial ranking fit well with such a world-view--indeed, almost any other organizational scheme would have seemed anomalous. I doubt that Blumenbach was actively encouraging racism by redrawing the mental diagram of human groups. He was only, and largely passively, recording the social view of his time. But ideas have consequences, whatever the motives or intentions of their promoters.

Blumenbach certainly thought that his switch from the Linnaean four-race system to his own five-race scheme arose only from his improved understanding of nature's factuality. He said as much when he announced his change in the second (1781) edition of his treatise: "Formerly in the first edition of this work, I divided all mankind into four varieties; but after I had more actively investigated the different nations of Eastern Asia and America, and, so to speak, looked at them more closely, I was compelled to give up that division, and to place in its stead the following five varieties, as more consonant to nature." And in the preface to the third edition, of 1795, Blumenbach states that he gave up the Linnaean scheme in order to arrange "the varieties of man according to the truth of nature." When scientists adopt the myth that theories arise solely from observation, and do not grasp the personal and social influences acting on their thinking, they not only miss the causes of their changed opinions; they may even fail to comprehend the deep mental shift encoded by the new theory.

Blumenbach strongly upheld the unity of the human species against an alternative view, then growing in popularity (and surely more conducive to conventional forms of racism), that each major race had been separately created. He ended his third edition by writing: "No doubt can any longer remain but that we are with great probability right in referring all . . . varieties of man . . . to one and the same species."

As his major argument for unity, Blumenbach noted that all supposed racial characteristics grade continuously from one people to another and cannot define any separate and bounded group. "For although there seems to be so great a difference between widely separate nations, that you might easily

take the inhabitants of the Cape of Good Hope, the Greenlanders, and the Circassians for so many different species of man, yet when the matter is thoroughly considered, you see that all do so run into one another, and that one variety of mankind does so sensibly pass into the other, that you cannot mark out the limits between them." He particularly refuted the common racist claim that black Africans bore unique features of their inferiority: "There is no single character so peculiar and so universal among the Ethiopians, but what it may be observed on the one hand everywhere in other varieties of men."

Blumenbach, writing 80 years before Darwin, believed that *Homo sapiens* had been created in a single region and had then spread over the globe. Our racial diversity, he then argued, arose as a result of this spread to other climates and topographies, and to our adoption of different modes of life in these various regions. Following the terminology of his time, Blumenbach referred to these changes as "degenerations"--not intending the modern sense of deterioration, but the literal meaning of departure from an initial form of humanity at the creation (de means "from," and genus refers to our original stock).

Most of these degenerations, Blumenbach argued, arose directly from differences in climate and habitat--ranging from such broad patterns as the correlation of dark skin with tropical environments, to more particular (and fanciful) attributions, including a speculation that the narrow eye slits of some Australian aborigines may have arisen in response to "constant clouds of gnats . . . contracting the natural face of the inhabitants." Other changes, he maintained, arose as a consequence of customs adopted in different regions. For example, nations that compressed the heads of babies by swaddling boards or papoose carriers ended up with relatively long skulls. Blumenbach held that "almost all the diversity of the form of the head in different nations is to be attributed to the mode of life and to art."

Blumenbach believed that such changes, promoted over many generations, could eventually become hereditary. "With the progress of time," Blumenbach wrote, "art may degenerate into a second nature." But he also argued that most racial variations, as superficial impositions of climate and custom, could be easily altered or reversed by moving to a new region or by adopting new behavior. White Europeans living for generations in the tropics could become dark-skinned, while Africans transported as slaves to high latitudes could eventually become white: "Color, whatever be its cause, be it bile, or the influence of the sun, the air, or the climate, is, at all events, an adventitious and easily changeable thing, and can never constitute a diversity of species," he wrote.

Convinced of the superficiality of racial variation, Blumenbach defended the mental and moral unity of all peoples. He held particularly strong opinions on the equal status of black Africans and white Europeans. He may have been patronizing in praising "the good disposition and faculties of these our black brethren," but better paternalism than malign contempt. He campaigned for the abolition of slavery and asserted the moral superiority of slaves to their captors, speaking of a "natural tenderness of heart, which has never been benumbed or extirpated on board the transport vessels or on the West India sugar plantations by the brutality of their white executioners."

Blumenbach established a special library in his house devoted exclusively to black authors, singling out for special praise the poetry of Phillis Wheatley, a Boston slave whose writings have only recently been rediscovered: "I possess English, Dutch, and Latin poems by several [black authors], amongst which

however above all, those of Phillis Wheatley of Boston, who is justly famous for them, deserves mention here." Finally, Blumenbach noted that many Caucasian nations could not boast so fine a set of authors and scholars as black Africa has produced under the most depressing circumstances of prejudice and slavery: "It would not be difficult to mention entire well-known provinces of Europe, from out of which you would not easily expect to obtain off-hand such good authors, poets, philosophers, and correspondents of the Paris Academy."

Nonetheless, when Blumenbach presented his mental picture of human diversity in his fateful shift away from Linnaean geography, he singled out a particular group as closest to the created ideal and then characterized all other groups by relative degrees of departure from this archetypal standard. He ended up with a system that placed a single race at the pinnacle, and then envisioned two symmetrical lines of departure away from this ideal toward greater and greater degeneration.

We may now return to the riddle of the name Caucasian, and to the significance of Blumenbach's addition of a fifth race, the Malay variety. Blumenbach chose to regard his own European variety as closest to the created ideal and then searched for the subset of Europeans with greatest perfection--the highest of the high, so to speak. As we have seen, he identified the people around Mount Caucasus as the closest embodiments of the original ideal and proceeded to name the entire European race for its finest representatives.

But Blumenbach now faced a dilemma. He had already affirmed the mental and moral equality of all peoples. He therefore could not use these conventional criteria of racist ranking to establish degrees of relative departure from the Caucasian ideal. Instead, and however subjective (and even risible) we view the criterion today, Blumenbach chose physical beauty as his guide to ranking. He simply affirmed that Europeans were most beautiful, with Caucasians as the most comely of all. This explains why Blumenbach, in the first quote cited in this article, linked the maximal beauty of the Caucasians to the place of human origin. Blumenbach viewed all subsequent variation as departures from the originally created ideal-- therefore, the most beautiful people must live closest to our primal home.

Blumenbach's descriptions are pervaded by his subjective sense of relative beauty, presented as though he were discussing an objective and quantifiable property, not subject to doubt or disagreement. He describes a Georgian female skull (found close to Mount Caucasus) as "really the most beautiful form of skull which . . . always of itself attracts every eye, however little observant." He then defends his European standard on aesthetic grounds: "In the first place, that stock displays . . . the most beautiful form of the skull, from which, as from a mean and primeval type, the others diverge by most easy gradations. . . . Besides, it is white in color, which we may fairly assume to have been the primitive color of mankind, since . . . it is very easy for that to degenerate into brown, but very much more difficult for dark to become white."

Blumenbach then presented all human variety on two lines of successive departure from this Caucasian ideal, ending in the two most degenerate (least attractive, not least morally unworthy or mentally obtuse) forms of humanity--Asians on one side, and Africans on the other. But Blumenbach also wanted to designate intermediary forms between ideal and most degenerate, especially since even gradation formed his primary argument for human unity. In his original four-race system, he could identify native

Americans as intermediary between Europeans and Asians, but who would serve as the transitional form between Europeans and Africans?

The four-race system contained no appropriate group. But inventing a fifth racial category as an intermediary between Europeans and Africans would complete the new symmetrical geometry. Blumenbach therefore added the Malay race, not as a minor, factual refinement but as a device for reformulating an entire theory of human diversity. With this one stroke, he produced the geometric transformation from Linnaeus's unranked geographic model to the conventional hierarchy of implied worth that has fostered so much social grief ever since.

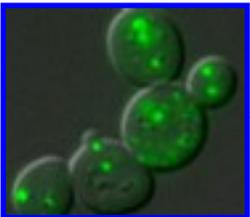
I have allotted the first place to the Caucasian . . . which makes me esteem it the primeval one. This diverges in both directions into two, most remote and very different from each other; on the one side, namely, into the Ethiopian, and on the other into the Mongolian. The remaining two occupy the intermediate positions between that primeval one and these two extreme varieties; that is, the American between the Caucasian and Mongolian; the Malay between the same Caucasian and Ethiopian. [From Blumenbach's third edition.]

Scholars often think that academic ideas must remain at worst, harmless, and at best, mildly amusing or even instructive. But ideas do not reside in the ivory tower of our usual metaphor about academic irrelevance. We are, as Pascal said, a thinking reed, and ideas motivate human history. Where would Hitler have been without racism, Jefferson without liberty? Blumenbach lived as a cloistered professor all his life, but his ideas have reverberated in ways that he never could have anticipated, through our wars, our social upheavals, our sufferings, and our hopes.

I therefore end by returning once more to the extraordinary coincidences of 1776--as Jefferson wrote the Declaration of Independence while Blumenbach was publishing the first edition of his treatise in Latin. We should remember the words of the nineteenth-century British historian and moralist Lord Acton, on the power of ideas to propel history:

It was from America that . . . ideas long locked in the breast of solitary thinkers, and hidden among Latin folios, burst forth like a conqueror upon the world they were destined to transform, under the title of the Rights of Man.

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