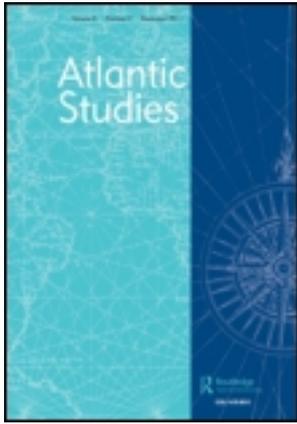


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## The Newtonian slave body: Racial enlightenment in the Atlantic World

James Delbourgo\*

This essay examines an influential treatise on the causes of African skin color published by the Virginia-born physician John Mitchell in the Royal Society's *Philosophical Transactions* in 1744. Instead of charting Mitchell's position in the development of eighteenth-century thinking about human variation – the preoccupation of many intellectual genealogies of race – the essay links Mitchell's account to specific period practices in the natural sciences, questions of authority, and networks of circulation. The diachronic impulse to identify the emergence of a robust concept of race is relaxed in favor of a more synchronic approach that explores how and why such an account was crafted to achieve credibility in the first place. Central here are Mitchell's combination of anatomical work with Newtonian optical theory to explain variations in skin color. His status as a Creole-American author is also considered, as are the relationship between Newtonianism and variationist discourse, and the way in which anti-slavery campaigners later reframed Mitchell's account to draw abolitionist arguments from it. Emphasis is placed on the value of moving from intellectual genealogies of racial thought to histories of practice, authorial situation and circulation.

**Keywords:** race; experiment; anatomy; color; optics; Newtonianism; Creole; enlightenment; Atlantic; Abolitionism; slavery; Virginia; British Empire

### Introduction: Dissecting the matter of color

In the course of delineating the story of his life in the autobiography he published in 1789, Olaudah Equiano rejected the proposition that skin color was an essential and fixed property of human bodies. Demonstrating curiosity about the natural world, a trait increasingly denied Africans by European and American commentators during the eighteenth century, was in fact central to Equiano's writerly self-presentation. His self-conscious literary performance as a civilized Afro-British author included marshalling causal claims about natural phenomena such as skin color. "The Spaniards, who have inhabited America, under the torrid zone," he wrote, quoting another author as evidence, "are become as dark coloured as our native Indians of Virginia; of which I myself have been a witness." Skin color, he meant to suggest, was an impermanent physical characteristic, an accidental quality resulting from climatic variation. Equiano was drawing here on the *Essay on the Slavery and Commerce of the Human Species* (1786) by Thomas Clarkson, published as part of the campaign to abolish the British slave trade. Since, by the later eighteenth century the association of slavery with blackness had become so powerfully reinforced by white propagandists, abolitionists understood that it was important to de-naturalize the very notion of blackness as an essential marker. They also realized the importance of challenging such notions with the greatest possible authority. But this particular quotation

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\*Email: [jdelbourgo@history.rutgers.edu](mailto:jdelbourgo@history.rutgers.edu)

originated not with Equiano's contemporary and fellow abolitionist Clarkson, but in an earlier source, published almost half a century prior. The example of Spaniards turning as dark as Virginia Indians – one that evoked longstanding European anxieties about darkening and degenerating in the torrid zone, not to mention English competition with Spain for mastery of the American landscape – was “a *fact* as related by Dr. Mitchel.” Arguing successfully for abolition would require the mobilization of matters of fact against color as a putative mark of inferiority.<sup>1</sup>

Equiano and Clarkson's source was the Virginia-born physician and naturalist John Mitchell (1711–1768), best known for the map of Britain's North American colonies he produced for the Board of Trade in 1755, but also the author of “An Essay upon the Causes of the Different Colours of People in Different Climates,” read before the Royal Society and published in its *Philosophical Transactions* in 1744. Although often cited, and cited as influential in eighteenth-century debates about human variation, Mitchell's early work has received little sustained analysis. In his landmark study *White over Black* (1968), Winthrop Jordan interestingly suggested that Mitchell's examination of skin color was uniquely detailed for a colonist, most Americans “seemingly not much disposed to investigate a question that to them was loaded with implications extraneous to science.” The science of race was, on this reading, an exclusively European project during the enlightenment, uninteresting (perhaps even threatening) to those on American shores caught up in the practical business of slavery. As such, “Mitchell was more a European than an American.” It were as though engaging in a serious anatomical investigation designed to explain the cause of skin color demonstrated that Mitchell must in fact be European – an interesting judgment concerning the distribution of scientific labor in the colonial era which, as we shall see, is directly relevant to understanding the ambiguities of Mitchell's Atlantic career.<sup>2</sup>

Much historiography of race, and the interplay between the sciences and the question of human variation, has dwelt on the task of identifying the emergence of a robust concept of race. The late eighteenth and early nineteenth centuries have been identified as witnessing a decisive shift among European commentators from claims that Europeans possessed a civility that barbarous foreign peoples might slowly acquire to doctrines of fixed anatomical inferiority and unbridgeable difference. The genre of most such studies – many of them valuable readings against the grain of previous views of enlightenment thought distorted by later nineteenth-century concerns – is intellectual genealogy, and most such genealogies have usually taken for granted (as Winthrop Jordan implied) that the task at hand was to uncover western European statements about non-European peoples.<sup>3</sup>

The approach adopted in this essay is somewhat different. Instead of charting Mitchell's ideas as a step on the path to a mature concept of race, it aims, after a full exegesis of Mitchell's text, to bring questions from the historiography of the sciences to bear on conceptions of human variation, which most writing on enlightenment sciences of race have overlooked. These questions concern scientific practice, authorial credibility, rhetorical persuasiveness and the reformulation of arguments in the appropriating hands of later users.<sup>4</sup> Put simply, it seems insufficient to ask only what commentators on human variation said; we need also to consider *how* they said it. What forms of knowledge and styles of performance might best establish truth claims about variation for learned European audiences in the eighteenth century? Andrew Curran in his fine recent study has convincingly argued against the notion of

a unified European discussion feeding into a single conception of race in the late eighteenth century, so it seems helpful to suspend the diachronic impulse to trace such a putative genealogy, and pursue a more synchronic approach, to explore original contextual resonances, and related questions of credibility and commentators' historical situatedness.<sup>5</sup> In Mitchell's case, this requires understanding two aspects of his treatment of the causes of skin color in particular. The first is his combination of anatomical dissection with a theoretical account of the nature of color conspicuously derived from Isaac Newton's experimental work in optics. Mitchell made the enormous authority of "Newtonianism" central to his appeal to his readers, as he took it upon himself to demonstrate the nature of color itself while making specific claims about African skin. The second aspect of Mitchell's work that deserves consideration, to return again to Jordan's statement, is precisely that he was *not* a European but a Virginia-born American Creole. Scholars of the colonial Americas have shown that American Creoles were highly self-conscious commentators on questions of human variation, not least because of the aspersions that were often cast on their own natures as the products of non-European environments.<sup>6</sup> Mitchell's status as a Virginian informant on African skin color to the Royal Society of London thus deserves scrutiny in its own right. Finally, the appropriation of Mitchell by abolitionists like Clarkson and Equiano transformed the ostensibly contradictory implications of his original statements into a politically useful argument against the equation of blackness and slavery as naturally fixed corollaries. Such appropriations show that the political meanings of naturalistic statements about human variation were never automatic, but subject to redefinition in different contexts across time and space, especially in the late eighteenth-century British world, where abolitionists finally succeeded in making race and slavery inescapably political issues.<sup>7</sup>

### Transatlantic chains

John Mitchell was born in 1711 in Lancaster County in the coastal Tidewater region of Virginia, the son of Robert Mitchell and Mary Chilton Sharpe. Both his mother, and after her death his stepmother, were daughters of tobacco planters, merchants and slave-owners. John's father, meanwhile, was a storekeeper, and most likely a factor who oversaw the supply of tobacco to British consumers via extensive networks of Scottish merchants operating in the region of the Chesapeake Bay, and was appointed Tobacco Receiver for Lancaster and Richmond Counties. Prosperity made possible an expanded family, greater investment in agriculture and livestock, and the acquisition of both land and enslaved African laborers. In the era succeeding Bacon's Rebellion of 1676, Chesapeake planters shifted overwhelmingly from indentured English servants to Africans as permanent bondspeople, a status ratified through a series of statutes passed throughout the Caribbean and Southern colonies which, as Edmund Morgan classically argued, effectively invented blackness and whiteness as agonistic law-based social identities in Anglo-American societies. The wealth generated by the nexus of tobacco and slavery in the Chesapeake gave rise to a process of gentrification among much of white British-American society. For example, the experience of browsing his father's expanding store undoubtedly shaped John's early perception of his world: a colorful array of textiles, including printed linen, Scotch plaid, woolens, silk and leather goods; handkerchiefs and

combs; needles and thread; stationery and ink; Indian corn, brandy and rum. The Mitchells' own house likewise was increasingly a place defined by the goods it contained: pewter dishes, "Delph Ware" dishes, silver spoons and looking glasses. These were spaces where the commercialization and refinement of British America were proceeding apace, emporiums of material improvement transforming relatively spare settler cultures into domains of intensified light, texture and color, which signified the increasing stratification of colonial society through consumerism and the public display of taste.<sup>8</sup>

This Scottish mercantile world was also intellectually formative for John Mitchell, as he crossed the Atlantic in the early 1720s to enroll at the University of Edinburgh under the pseudonym "Scotus-Americanus." With Leiden, Edinburgh was among the leading centers of medical education in northern Europe, where numerous physicians were trained before pursuing careers in the Americas. Mitchell studied botany and *materia medica* under Charles Alston; mathematics under Colin Mac Laurin; optics, Newton's theory of colors and *Principia Mathematica* (1687) under Robert Stewart, as well as astronomy, mechanics and microscopy. Alston conducted practical classes in the King's Garden, stressing the importance of systematic plant taxonomy, while Dr. Alexander Monro *primus* taught anatomical dissection. Mitchell thus gained access to a broad formation in the descriptive sciences of natural history, as well as natural philosophy, with its distinctive emphasis on causal explanatory reasoning. After a decade away from home, he returned to Virginia in 1734, armed with the taxonomic concerns and anatomical skills that, it turned out, would guide his work on skin color.<sup>9</sup>

Charting an independent course from his father's growing Richmond County estate, Mitchell resettled in Urbanna, across the Rappahannock in Middlesex County. Though a small town, Urbanna was a significant intersection point in the networks of Atlantic trade, becoming an inspection center with substantial tobacco warehouses, under the Inspection Act of 1730. Mitchell bought land from the Beverley Family, and lived in something of a transplanted Scottish world, surrounded by Scottish neighbors, setting up a physic garden, apothecary's shop and chemical laboratory inspired by his Edinburgh education, and starting his own medical practice. Despite the proximity of Middlesex's wealthy planters, however, he struggled, and was forced to accept an appointment from the Anglican Christ Church in Lancaster County to offer medical care for the poor, receiving a subsistence income – paid in tobacco. While not a landowner himself, he and his wife employed several domestic servants, Scotch and Irish indentured laborers, and enslaved Africans. His situation modest yet stable, Mitchell then began extensive botanical researches into the local flora and fauna, and undertook correspondences both with old Edinburgh contacts like Alston, and an increasingly organized circle of naturalists on British America's eastern seaboard, such as John Bartram outside Philadelphia. This circle was busily engaged in transmitting specimens to leading figures in European natural history like Linnaeus, Hans Sloane and Johann Jakob Dillenius, commonly via the London-based Quaker merchant and FRS Peter Collinson, supporting new systems of plant taxonomy and commercial speculation in potentially profitable medicinal species.<sup>10</sup>

In his early writings, Mitchell discussed laws of systematic plant classification based on sexual characteristics. Hybridization was the pivotal question, and one that Mitchell, reacting to Linnaeus's new system as well as local experiments on Indian

corn performed by James Logan in Pennsylvania, believed could be resolved experimentally, by determining whether cross-fertilized specimens produced fertile offspring. He posed the same question with respect to animals: could different species produce fertile hybrids? Mitchell first achieved notoriety at the Royal Society through his account of the dissection of the reproductive organs of male and female opossums, which his new contact Collinson had read at its meetings. Going further, Mitchell offered speculations about what he termed extraordinary “hybrids and wonders”: the “kumrah” (half ass, half cow), the camel-panther, the dog-cat and “baboon-man.” Such creatures were particularly associated with geographies Europeans considered peripheral and exotic, holdovers from previous centuries’ commentaries that identified monstrous beings with the margins of the known world. The anatomist Edward Tyson had already dissected the body of what he identified as an “orang-outang” brought from Angola to London in the 1690s, and aimed to resolve whether this *homo sylvestris* or “wild man of the woods” was ape, human, or some kind of intermediary primate life-form. Mitchell, likewise determined to use empirical anatomical examination to resolve such issues, doubted “the existence of so very many productions against the laws of nature . . . or at least in a constant and non-artificial reproduction.” Doubt about the ontological discreteness of recognized species would only intensify, however, when Linnaeus came in the 1730s to classify human beings among the non-human primate class designated *anthropomorpha*. Linnaeus’s interest in assembling a systematic taxonomy was certainly very different from Tyson’s earlier analysis, which had combined both anatomical study with philological attention to folkloric elements. Nevertheless, questions about the juxtaposition and resemblance of human and non-primates turned on a recurrent and singularly disturbing question from the perspective of orthodox Christian anthropocentrism. Was the great chain of being a static vertical hierarchy of angels above men, and men above animals, which guaranteed that man was made in the image of God and endowed by his creator with a rational and immortal soul? Or did the links in that chain suggest, instead, that human beings could in fact degenerate and slide downwards to the level of mere unreasoning brutes?<sup>11</sup>

At some point during the later 1730s and early 1740s, while engaged in thinking about systems for classifying plant and animal varieties, Mitchell began to turn his attention to the question of human variation, which would form the basis of the paper he presented to the Royal Society in 1744. As a Creole-American author, born in the western hemisphere, Mitchell would have been well aware of the resemblance between discourses of animal and human degeneration in the New World. If the American landscape was the home of monstrous creatures, the notion of monstrosity or at least degeneracy of some fashion lurked as an uncomfortable implication for its human inhabitants. Europeans had also long countenanced the notion that Africans were the monstrous results of couplings between women and apes. The best-known eighteenth-century episode in what became known as the *querelle d’Amérique* or “dispute of the New World,” was the later disagreement between Thomas Jefferson and Georges-Louis Leclerc, Comte de Buffon over the size and vitality of American fauna, but as Jorge Cañizares-Esguerra amply demonstrated in his account of Spanish-American “patriotic epistemologies,” debates about (and defenses of) Creole capacities were far more intensive across Iberian communities. The specter of humoral degeneracy stalked British-American Creoles too as a spurious European naturalization of presumptive political hierarchies spanning the Atlantic: American

colonists made natural *local* reporters and describers of phenomena, so the argument ran, but invariably lacked the capacity to pry into the universal causes of such phenomena. Ralph Bauer has shown, for instance, how the English-educated Virginia planter and FRS William Byrd II of Westover was repeatedly frustrated in his attempt to participate fully in metropolitan scientific life from a distance, grumbling at slights to his pride to Secretary Sloane, and ultimately diverting his frustrated provincial intellectualism into satires of official cartographic missions to North America.<sup>12</sup>

More relevant to Mitchell's work, Byrd had published a short account of a "dappel'd negro" in the *Philosophical Transactions* in 1697. The contrast with Mitchell is striking: where Byrd described and reported a marvel for the benefit of those he strove to consider his peers at the society, Mitchell would seek to explain the causes of skin color in all its instances. Why this difference between the two men, especially surprising perhaps, given Byrd's higher status, and that they had both been educated in the British Isles? Leaving aside questions of temperament (Byrd obsessed continually over his sense of isolation and exclusion), the answer may lie in Mitchell's being educated in Scotland soon after the Act of Union (1707), which encouraged Scots to participate as full members of the developing British empire. As we shall see, it is also plausible that, given his anatomical prowess and access to large numbers of African bodies in Virginia, Mitchell felt *more* qualified than his European counterparts to examine and explain the nature of skin color, as an especially American province. Whatever the source of his interpretative confidence, he defied contemporary chauvinisms that constrained much American scientific work to the province of the purely descriptive. Rejecting a long tradition of what he called "Opinions of some learned Men" on the blackness of African skin, "which they rather allege than prove" – among them, the biblical curse of Ham, the darkening effect of the sun in the tropical regions, and the intergenerational transmission of infections of the blood – Mitchell would use what he termed "proper Trials" and "Experiments on living Subjects several times" as the basis for a newly authoritative explanation of pigmentation. Although he did not make the point explicitly, in pursuing an anatomical method, he was departing from both conjectural accounts of human variation, and the kinds of systematic geographical taxonomy to which the schemes of François Bernier and Carolus Linnaeus had been starting to point. In this respect, his work ostensibly belonged less to chorographic and classificatory natural history than to anatomy and the causal explanations of universal phenomena associated with natural philosophy.<sup>13</sup>

And Mitchell doubtlessly realized, from his reading and his contacts with Collinson and others, that in writing his essay he was intervening both in ongoing discussions of African skin color in several different western European nations, and in a historical moment in which the British were establishing themselves as the pre-eminent slave-trading power in the world. Byrd's brief presentation to the Royal Society was not an isolated event, but part of a series of discussions taking place among the Fellowship in the mid-1690s about whether Africans constituted "a distinct race" of men. This was, after all, a Fellowship engaged in sustaining and developing numerous direct links between the curious investigation of nature and the commercial exploitation of the globe. There was no better exemplar of this nexus of curiosity and commodity centered on the slave trade than the man who presided over the meetings where Byrd's presentation was discussed during 1696–1697: the

Secretary, Hans Sloane. Recently returned from the rising sugar colony of Jamaica, Sloane married a plantation widow with sizable income from her estates, offered an extensive account of Africans in his *Natural History of Jamaica* (1707–1725), and possessed a collection of anatomical specimens that included specimens of African skin. There was nothing particularly unique about any of this. Rather, Sloane epitomized both the philosophical and mercantile interests of an entire generation of learned gentlemen at the heart of an increasingly profitable British colonial system in which the deregulation of the slave trade, the proliferation and reinforcement of slave codes, and the dramatic expansion of the enslaved population of the Americas brought the nature and status of Africans increasingly to the fore.<sup>14</sup>

Some four decades before Mitchell, Edward Tyson had dedicated his study of the *homo sylvestris* to his patron Lord Sommers, President of the Royal Society, with a particularly flattering image of the relation between divine and social chains of being. “The Animal of which I have given you the Anatomy, coming nearest to Mankind,” he wrote, “seems the Nexus of the Animal and Rational, as your Lordship, and those of your High Rank and Order for Knowledge and Wisdom, approaching nearest to that kind of Beings which is next above us; Connect the Visible, and Invisible World.” In presenting a physical explanation of human variation, Mitchell was proposing himself also as a nexus between worlds: a colonial British-American who would use empirical anatomical study and the insights of Newtonian optical philosophy to *explain* human color to Europe’s learned philosophers.<sup>15</sup>

### Proper trials

Mitchell’s essay was a response to a question posed in the *Journal des Sçavans* by the Bordeaux Academy of Sciences in 1739, which was offering a prize for the best essay on the cause of black skin and hair, as well as the reasons for their “degeneration.” As Curran suggests, the framing of the question reveals how prominent the desire to explain “blackness” as an aspect of physical degeneration from a putative white norm had become by the second quarter of the eighteenth century. “The Cause of the Colour of Negroes” – that “strange *Phaenomenon* in Nature” – was a “Subject so little known,” in Mitchell’s words, but “so much inquired after, and withal, so curious and useful.” Mitchell, however, lavished so much attention on his answer to this singular prize-problem that he missed the deadline (no prize was in fact adjudicated or awarded), but Peter Collinson ensured that the paper was read at the Royal Society and eventually printed in the *Philosophical Transactions* – one of the longest to be published by an American author.<sup>16</sup>

Skin color, Mitchell insisted, must be understood in terms of depth and the transmission of light. Color existed below the skin. Where the epidermis was thin, the blood lent its color to that skin. Blushing, for example, was the effect of the blood underneath the epidermis showing through and producing a darkening effect. “Negroes,” as Mitchell labeled Africans and African-Americans, neither blushed nor suffered sunburn, unlike “white People.” He reasoned, therefore, that their skin must be denser, in order to “award [sic] off this Violence of the Sun’s Beams.” Observing “the Known doctrine of Light and Colours,” it followed that African skin blocked the transmission of light, producing the appearance of “Darkness or Blackness.” Understanding differences in skin color thus required minute attention to the physical structure of the skin.<sup>17</sup>

To support his claims, Mitchell introduced evidence from numerous “proper Trials” he had conducted on enslaved Africans in Virginia as live experimental subjects, involving such methods as cutting, bleeding, blistering and examining them after they had suffered burns. To “examine the Skins of Negroes on their Body,” he declared, “we need only appeal to our Senses.” In line with several previous authors who followed the conclusions established by the Bolognese anatomist Marcello Malpighi in the 1660s, he identified several distinct layers of skin: the outer epidermis, an intermediate “Corpus reticulare,” and an inner “Cutis.” The decisive layer was the intermediate one because, he claimed, its properties differed in white and black bodies: in whites, the corpus was soft, moist and pellucid, and easily separated out, while in Africans, it was dark, and hard to separate. While the inner cutis was identical in all people, the black corpus overlaying the cutis produced a “brown Copper-colour, somewhat like the colour of an Indian or Molatto.” Experiments on live subjects disproved the hypothetical existence of a “Juice or Fluid of a black Colour” between the epidermis and cutis, as claimed by Malpighi (whom Mitchell cited explicitly), and repeated by Mitchell’s contemporary, the Perpignan physician and traveler Pierre Barrère, whose *Dissertation sur la cause physique de la couleur des Nègres* (1741) was based on his time in Cayenne and submitted in answer to the same essay competition whose deadline Mitchell missed. “Altho’ I macerated the Skins of Negroes, and particularly the Epidermis, in warm Water, which readily dissolves the Juices of the Body, yet I never could extract any black Juices from them.”<sup>18</sup>

In a highly consequential passage, Mitchell then drew on Isaac Newton’s theory of light and color in the *Opticks* (1704) to explain further the differing appearance of white and black skin. In a series of experiments first published in 1672, Newton had used a glass prism to refract sunlight, presumed up until that time to be a pure and elemental white light, to produce a spectrum of its constituent chromatic colors. He then passed this refracted light through a second prism to demonstrate that, rather than producing still more colors, the colors he’d already produced either remained as they were, or could be refracted back into a coherent beam of white light. White light was not a “primary” or “primitive” color, but could be *analyzed* into its elemental constituents. Though by no means uncontested, after publication in the *Opticks* these experiments came to be regarded as a persuasive refutation of Aristotelian doctrines that colors were inherent properties of bodies; of René Descartes’ view that prisms produced rather analyzed colors; and the belief that mixing black and white was the essential technique for producing a chromatic spectrum. Newton also established the corollary that black denoted the absence of color, and consolidated the view that the appearance of distinct colors resulted from the ability of bodies’ micro-physical structures to reflect, diffract and refract light particles.<sup>19</sup>

Citing both Newton and investigations of skin structure performed by the noted Dutch microscopist Anton van Leeuwenhoek, Mitchell proposed that light skin color resulted from the existence of tiny spaces between the pores of the skin, allowing light to be reflected and produce color – that is, whiteness – while denser African skin made the whiteness of the underlying cutis less visible. The thicker the skin, the more the “Colour of the Skin will degenerate from the pure White of the Membranes below it.” The reason why thin-skinned people were a “yellowish or tawny Colour” was “plain, from *Newton’s* Observations (*Opt.* lib. II. P. 1. *Obs.* 9 and 20.); where he shews a faint yellowish Colour to be the one that proceeds from an

imperfect Transmission of a White.” “Indians” were thus “tawny” due to the “imperfect Transmission of a White in their Colours,” whereas Africans were black due to “a Suffocation of the Rays of Light.” Such skin possessed “no Colour, or looks black.” Opacity, refraction, absorption and the dense minuteness of African skin structure constituted the “proximate Cause of the Colour of Negroes.”<sup>20</sup>

While “the Make of the Skin” determined its color, differential skin structure was nevertheless ultimately an effect of climate and “Ways of Life” in Mitchell’s view. The sun was for many commentators the prime agent of color change, but what exactly was the transformation it wrought? Four factors mattered for Mitchell. Solar exposure drained skin of its “pellucid Juices,” rendering it both opaque and resistant to the violence of climate and injury:

For the Skin being designed as a Defence to the other subcutaneous Parts, as the Epidermis is to the Cutis, they both wonderfully accommodate themselves to the Nature and Force of external Injuries, so as to become capable to defend the Body from them; as we see in Smiths, &c. constantly used to handle hot and hard Things, who have the Skin of their Hands become so thick or hard or cartilaginous by it, so as to be able in time to handle even hot Irons. And thus it is in a great measure, with the Skins of Negroes, Indians, &c. constantly exposed, and generally naked, to the scorching Heat of the Sun in a perpetual Summer.

Second, the sun caused new membranes to accrete, thickening the skin further. Third, while the skin’s “pellucid Principles” evaporated, the refractive and absorptive parts of the epidermis proliferated. Finally, a “Necrosis of the Epidermis” was produced, turning skin darker as would an inflammatory fever. Thus, “the Skins of Negroes, besides their Callosity, become more insensible than those of Whites.” Insensibility provided a natural defense against heat and humidity: “their thicker Hides serve as a Coat, to keep off the Power of the Sun, and preserve the Body against the Moisture of the Air.” Thin white skins, by contrast, “too readily imbibe[d] the Humidity of the Air and Aliment,” giving them an unhealthy cold and humid humoral complexion. If, however, the sun created distinctive skin structures, how to explain people at the same latitude with different skin colors? Environment could not be the sole cause; custom must play a role. Physical variation was a moral question as well. Nomadic living, eschewing clothes and applying oils all darkened the skin, while coddling comforts – from bathing to diet and the consumption of alcohol – lightened it. The physical weakness of the planter class Mitchell cast as the gendered weakness of “sickly” female delicacy: “luxurious and effeminate Lives” tended to “soften, moisten, and relax, the Fibres of the Body, and to render the Fluids more thin and watery.” Climate was not the only factor, therefore, in creating the appearance of bodily difference.<sup>21</sup>

Mitchell also upheld the orthodox Christian doctrine of monogenesis, suggesting that whites and blacks “might very naturally be both descended from one and the same Parents, as we are otherwise better assured by Scripture, that they are.” There was no Curse of Ham; black skin, through its thickness, was, rather, a providential “Blessing.” Whites might think themselves “the primitive Race of Men, from a certain Superiority of Worth,” but in his view they had “degenerated more from the primitive and original Complexion of Mankind, in Noah and his Sons, than even the Indians and Negroes.” This original complexion (still visible in the “northern Chinese” and “Tartars of Asia”) was a “dark swarthy, a Medium betwixt Black and

White,” from which Europeans and Africans had degenerated in equal measure. The sun could clearly darken skin: hence, Captain John Smith’s report of an Englishman in Virginia who became “so like an Indian, in Habit and Complexion, that he knew him not but by his Tongue,” and the darkening of Spaniards in the torrid zone to the point of resembling Indians – the example cited by Clarkson and Equiano. But what about the possibility that dark skin might lighten? Mitchell answered intriguingly yet obliquely, through another telling artisanal analogy: “there is a great Difference in the different Ways of changing Colours, to one another: Thus Dyers can very easily dye any white Cloth black, but cannot so easily discharge that Black, and bring it to its first Colour.”<sup>22</sup> While white skin might indeed darken under right climatic conditions, it was much harder for Mitchell to imagine the reverse. Not all skin colors were equally changeable: while whiteness might degenerate and darken, blackness seemed to be a permanent state.

### **True skins**

What are we to make of the different elements of Mitchell’s analysis? How, more specifically, are we to make sense not just of his arguments, but his manner of presenting himself as an authoritative and credible interpreter both of African bodies and, indeed, the determinants of skin color in all human beings? Mitchell’s prize-problem essay was considerably more ambiguous than abolitionists would later claim. For example, his proposition that whiteness was the universal color, and black its degenerate opposite, might appear to anticipate both Buffon’s emphasis on the primacy of white skin from which darker skin is a degenerate instance, and Johann Blumenbach’s identification of “Caucasian” white as the fundamental and most beautiful skin color. Like many other anatomists since Malpighi, Mitchell insisted on the physical identity of all people at the subcutaneous level. His suggestion that tawny rather than white was the “original Complexion of Mankind” appears rather unusual, however, and potentially threatening to white audiences in seeming to cede physical normativity to a non-white group (although there is no evidence that his position reflected any political sympathy with Native Americans). His criticism of the white Virginian slaveholding class as over-refined degenerates, in severe need of correcting their excessively languid habits, was pointed, and surely uncomfortable reading for his New World contemporaries. Africans, by contrast, were “blessed” by physical hardiness and imperviousness to violence – the crucial argument Clarkson and Equiano chose to ignore. Mitchell’s account addressed not just the color of skin, but its thickness and durability in “wonderfully” accommodating “external injuries.” Without making an explicit statement linking questions of bodily capacity to slavery as a legal institution – something he appears never to have openly discussed – his emphasis on African insensibility was consistent with broader legitimations of slavery. What abolitionists later buried was this naturalization of the African body as inured to violence. Differences in skin structure did not simply produce a variety of colors: they produced different capacities for labor, helping to organize the colonial social order in the process.<sup>23</sup>

But Mitchell’s methods counted as much his conclusions, or so he was keen to emphasize. His distinctive authority claim lay in an experimental method that integrated anatomical dissection with the philosophical framework of Newton’s *Opticks*, the latter being a method “hardly to be met with any-where else.” Here

Mitchell parted company with the majority of American correspondents who tended to furnish the Royal Society with descriptive reports in natural history. He contrasted what he labeled mere “opinions” with his own properly reasoned “facts,” in an argument he explicitly identified as “philosophical” (causal) rather than “historical” (descriptive). While his concerns were taxonomic, broadly speaking, his essay was neither conjectural history, nor part of the chorographic tradition of natural histories of man, but underwritten by experiment and grounded in practical dexterity. Simon Schaffer has argued that, by the 1740s, collaborations between early industrial engineers and managers in Britain and France were consolidating understandings of the human body as a laboring machine, as well as organizing new institutions for its profitable disciplined management: the manufactory. While sugar and rice mills were common by this time in the Carolinas and West Indies, Virginia remained largely committed to tobacco and wheat cultivation. While the European laboring body was increasingly construed in mechanical terms, Mitchell’s account by contrast suggests the persistence of artisanal constructions of the enslaved body in colonial North America in this era. Artisanal ways of knowing were both a fit guide for establishing that body’s physical capacities, while also a deeply ironic glorification of its durability that obscured its coercion. Mitchell thus wrote of “the Make of the skin,” and constructed two striking images of the artisan to put across key points about Africans’ bodies, comparing their hardiness to that of smiths, whose hands became inured to handling “even hot Irons”; and invoking the limits of dyers’ different “Ways of changing Colours” to indicate the difficulty of turning black things white. In this crucial passage, Mitchell deferred a question in natural philosophy to the quotidian experience of artificial mixers of color, in order to augment the authority of his claims. In rejecting the view that white and black were opposites as an error of the “unskillful,” he implicitly defined his own authority in terms of artisanal, and more specifically experimental skill. Linking changes in fabric color and changes in skin color was not unique to Mitchell, but evidently common among colonial naturalists, registering both racial anxiety about color change and the notion that practical experience with fabric-dyeing provided a reliable vernacular index of the changeability of skin color. For example, the prominent planter, historian of Jamaica and pro-slavery apologist Edward Long noted the capacity of human sweat to permanently dye clothing, in a statement preoccupied with the prospect of white degeneration in the tropics: “the fetor [of Europeans’ sweat] is not to be compared with that of the blacks, yet it is sufficient to indicate the existence of rancid putrid particles in the fluids, and its yellow colour, by which the shirts of some persons *are so deeply tinged as if they had been dyed in a tincture of saffron* thus plainly, that the serum of the blood is preternaturally affected.” Edward Bancroft, who worked among the plantations of Dutch Guiana before re-inventing himself as a naturalist-turned-spy in London and Paris, both invoked and jokingly questioned dyeing’s reliability as a guide to changes in skin color. As part of a lengthy treatise on colonial dyes, he retold stories about French maids in the West Indies being tricked into washing their skin with the juice of the *Genipa* plant to prevent them from darkening, only to find that it turned their complexion dark blue for several days. As such discursive interplay between body- and fabric-staining suggests, enlightenment discourses of human variation, whose claims to an autonomous scientific basis have often been taken at face value, drew on examples from artisanal color mixing practices to guide their sense of what constituted plausible change in skin color, while

also making manifest persistent worries about the possibility of controlling such changes.<sup>24</sup>

Contrary to his claims of novelty – and to longstanding historiographical claims that experimental anatomical approaches to human variation began in the later eighteenth century – Mitchell was by no means the first to experimentally examine non-white human skin, either in Europe or the Americas, but worked in an established tradition. Jean Riolan the younger was possibly the first to record his anatomical dissection of an African in Paris in 1618. Sir Thomas Browne also carried out experimental work in mid-seventeenth century England, as did Malpighi in Bologna, while John Josselyn had published a description of the skin of a “Moor” in New England in 1675. The casualness, moreover, with which Robert Boyle invoked the Dutch naturalist Willem Piso’s accounts of his dissections of “many Negroes in Brasil” in the mid-seventeenth century – not to mention the dissection of an African by a physician acquaintance in England – suggests a much longer history than is usually acknowledged of anatomical sciences of describing and explaining global human physical variation. In fact, as a leading corpuscularian philosopher with a keen interest in the latest colonial reportage, Boyle anticipated by almost a century Mitchell’s suggestion that skin color must be understood “mechanically” in terms of light’s modification by the micro-physical structures of human skin. Experimental techniques were not innovations of the later eighteenth and nineteenth centuries, but already grounded seventeenth-century accounts, and coexisted with taxonomic and conjectural accounts of variation, rather than neatly succeeding them.<sup>25</sup>

Mitchell’s account *was* unique, however, in its attempt to harness the enormous prestige of “Newtonianism” to his project. Newton’s epochal achievements in the *Principia* and the *Opticks*, in establishing mathematically computable laws of motion and demonstrating the refraction of white light into its primary colors, held out the promise of immense authority to those who would invoke his name, as if natural philosophy were now synonymous with experiment, and experiment with being Newtonian. This was a highly polemical formula that admitted of considerable cultural chauvinism in its rhetorical opposition to Aristotelian learning and especially the doctrines of French Cartesians, and was highly selective in its apportionment of epistemic virtues and vices. But as such, it was an extremely potent one for legitimating experimental investigations of nature, and was forcefully promoted in Britain and its colonies. The outstanding early American example was Isaac Greenwood. An understudy of Newton’s colleague and great disseminator John Theophilus Desaguliers in England, Greenwood returned from a stay in London to assume the Hollis Chair of Natural Philosophy at Harvard in 1727, and embarked on a series of public demonstrations and lectures covering a range of topics, urging his audiences to embrace the dogma that Newtonian experiment alone dealt in “Fact, and Experience, and no other than what Nature herself has made Use of in the Fabrick of the World.”<sup>26</sup>

Mitchell, who had crossed the Atlantic to receive a Newtonian education at Edinburgh, was thus drawing consciously on an established strategy of invoking the authority of Newton’s work to undergird his account of skin color. But adopting Newtonian color theory produced ambiguous effects. Mitchell offered a graduated spectral account of skin color, one which appears to have been inspired by Newton’s demonstration that white light consisted of a spectrum of chromatic colors. Substituting tawny for white as the “primitive” complexion of humankind, visible

in the “middle Regions” of the world, he suggested that skin color shaded geographically by degree across a spectrum from light to dark. The logic of his thinking here, however, appears to have been more Aristotelian than Newtonian: plotting tawny as the intermediate point between contrasting northern lightness and southern darkness. Anticipating the work he was to undertake years later in cartography, he adopted the geographical logic of taxonomic accounts of human variation at work in Bernier and Linnaeus, whose schemes located both physical and cultural traits in geographically defined subsets of human beings. His claims to the contrary notwithstanding, Mitchell was combining the anatomical and causal aspects of his argument with the description of a speculative global map of color. His philosophical account, in other words, was rather more conjectural than he cared to admit.

Furthermore, the empirical and experimental authority he claimed for his method relied at key moments on notions about colors deduced not from philosophical principles alone, but from the practical arts. Newton himself had reduced his total of primary or primitive colors to seven in number, in order to more closely resemble the commonly accepted notion among painters that there were in fact three primary colors – red, yellow and blue. Deriving optical authority from Newton to account for color in nature, in other words, immediately involved embracing notions borrowed from the experience of color-mixing painters. Here was a two-way relationship between the concepts of natural philosophy and the craft of color mixture. Newton’s alignment of his discussion of primary colors with artistic norms was paralleled by Mitchell’s own reliance on dyers’ inability to turn dark fabrics white as a guide to the limits of plausible change in skin color. Both examples suggest how the “facts” of Newtonian optics were not prior to or autonomous from artificial techniques in extraneous domains but, rather, leaned on such techniques to enhance the credibility of their own accounts of how color behaved in nature. Not for nothing did the British physician Thomas Beddoes continue to resort to painterly language to describe an astonishing experiment he made at Oxford in 1790 to whiten the skin of an African man using a jar of oxygenated marine acid air. “The back of his fingers had acquired an appearance as if white lead paint had been laid upon them,” Beddoes observed, although the change apparently proved impermanent.<sup>27</sup>

Mitchell’s appropriation of Newton was part of a larger colonial matrix in which the meanings of Newton and his work were actively being fashioned and re-fashioned in different parts of the world. If Newtonian doctrines were useful for mapping human variation, variation was a useful way to map the significance of Newton during the era of early modern European colonialism. As is well known, Newton came to symbolize a peculiarly English genius for domestic propagandizers and admiring foreign commentators alike. In India, British astronomers insisted on reading Newtonianism as a form of primitive ancient truth, to establish its status as equivalent to, if not comprehensive of, the great Eastern religious traditions. In British America, if only somewhat less mystically, artisans and philosophers built their own monuments to the great natural philosopher. Joseph Pope, a Boston artisan, constructed an orrery in the 1770s, later purchased by Harvard College, that bore busts of Newton, Franklin (often compared to Newton) and James Bowdoin, a wealthy Massachusetts merchant and patron, as a shrine to Anglo-American imaginings of a shared transatlantic tradition in natural philosophy. At the same time, Newton helped map human variation on a global scale, his genius providing a

summit for proverbial chains of being for London commentators who now gazed out at the creation as if it pressed to be freshly reinterpreted in light of Newton's achievements. Alexander Pope's *Essay on Man* (1734) suggested how angelic "Superior Beings" admired the mortal and "earthly shape" who had nevertheless unfolded "all nature's law," as if he had thereby ascended a rung in the great vertical ladder of the creation: "[they] show'd a *Newton* as we show an *Ape*." Other commentators were more concerned to use Newton to discuss variety among different human groups. Some were cautious in their conclusions. Half a century later in the rather more racially politicized atmosphere of the 1780s, the abolitionist James Ramsay saw "genius sporting in various forms, tall in *Newton*," but drew back from locating it in a single human group, since "arts, sciences and the immediate capacity for them, are progressive in their nature and objects, visiting sometimes this region, sometimes another." However, Ramsay's contemporary, the politician and writer Soame Jenyns, advanced a less compromising view, making Newtonian genius the pinnacle of an "astonishing chain" that stretched from fish to angels via apes and men. According to Jenyns, reason existed in "the lowest degree in the brutal Hottentot," and rose via "learning and science . . . thro' the various stages of human understanding, which rise above each other, 'till in a *Bacon*, or a *Newton* it attains the summit." What ascended for Jenyns were not the Hottentots in their reason, but reason itself, the extent to which lower beings could ascend apparently limited. Where Ramsay as an abolitionist was interested to invoke Newton to signal the contingencies of differential capacity among different peoples, others made him a marker of increasingly formidable difference. As orreries modeled the Newtonian universe, Newtonian genius modeled one extreme of the spectrum of human variation.<sup>28</sup>

While no evidence directly connects Mitchell's work on color to the legal framework of racial discrimination as established by Virginia's slave codes, Mitchell does appear to have been widely read in both America and Britain. For example, John Winthrop IV, Greenwood's successor in Harvard's natural philosophy chair, wrote to Yale president and sometime experimental philosopher Ezra Stiles in July 1759 that he agreed that "tawny" was likely the original color of mankind – one of Mitchell's striking conclusions. David Rittenhouse, the American Newton, as he became known for his astronomical and mathematical prowess, also likely drew on Mitchell in his 1775 oration before the American Philosophical Society. Here Rittenhouse exhorted his audience to the inculcation of virtue via the natural sciences, which taught exemplary moral lessons through attention to the rational design of the creator. Astronomy would destroy bigotry, he insisted. So much greater then was the sin of slavery, which experimental demonstrations had revealed to be arbitrarily based on a mere accident of visual perception, "dooming" Africans "to endless slavery by us in America, merely because *their* bodies may be disposed to reflect or absorb the rays of light, in a different way from *ours*."<sup>29</sup>

Assuming that Mitchell was Rittenhouse's source, this statement suggests how Mitchell's essay was later reread by subsequent authors who used it to make original arguments by connecting the physics of color with the politics of slavery. Naturalists' accounts of skin color also counted as credible and authoritative evidence beyond their own community, above all for those engaged in the campaign to abolish the British slave trade. Debates about skin color were by no means entirely local; they traveled across oceans and national boundaries. The authority specifically of the

sciences became an important resource for these campaigners. Ramsay, who hesitated to take Newton's genius as evidence of fixed human intellectual capacities, drew on Buffon's influential conception of species to deny that black Africans were a separate race since they could mate with whites and produce fertile offspring. Thomas Clarkson, who had studied optics himself while an undergraduate at Cambridge, lifted whole swathes of Mitchell's essay and reproduced them in his *Essay on the Commerce and Slavery of the Human Species*. According to Clarkson, in a signal phrase, Mitchell had demonstrated the facts about "true Skin": "the cuticle of the blackest negroe [is] of the same transparency and colour, as that of the purest white; and hence, the *true Skins* of both [are] invariably the same." The visibility of veins and blushes exhibited not changes in the outer skin, but an underlying truth about the white subcutaneous physical identity of all peoples. Such were the "facts, which anatomy has established." It was of paramount importance for Clarkson to suppress both Mitchell's naturalization of the African body as fit for hard labor, and the dependency of optical analysis on practical color-mixing, in order to cast anatomical facts as an unimpeachable basis for moral and political reform. And Clarkson also borrowed Mitchell's Newton-inspired conceit of the spectrum, to help his readers imagine a world not defined by the contrast between white and black, but one of incremental global variation. Again, the authoritative idioms for understanding skin color variation as a natural phenomenon were painterly artifice and global cartography. "Suppose we were to take a common globe; to begin at the equator; to paint every country along the meridian line in succession from thence to the poles; and to paint them with the same colour which prevails in the respective inhabitants of each, we should see the black . . . insensibly changing to an olive, and the olive, through as many intermediate colours, to a white." Black and white were not separate creations but "shades of the same colour" in a single human family distributed around the world. Finally, as an abolitionist, Clarkson was eager to answer the question at which Mitchell had balked. Skin color might indeed vary at the same latitudes, he conceded, but far from proof of some essential and radical difference, this variation was one of gradual shading. Darker-skinned people *did* lighten in northern climates, moreover, for which Clarkson claimed to possess dramatic first-hand evidence from "witnesses of the fact . . . particularly by many intelligent Africans, who have been . . . in *America*" and reported "a sensible difference in themselves since they came to England."<sup>30</sup>

Several other contemporary commentators likewise cast Mitchell's account as a triumph for both environmentalism and monogeneticism, among them the psychologist David Hartley, and the theological writer Henry Murray. Tying claims about color to arguments over abolition made such philosophical discussions explicitly political in a way they had not been before, and thus provoked a new intensity of resistance. The presumptive separation between human variation as a question for naturalists and philosophers, and moral and legal questions concerning the legitimacy of the Atlantic slave trade and American plantation system, now disappeared in many quarters. "Whether the black of the negro resides in the reticular membrane between the skin and scarf-skin, or in the scarf-skin itself," wrote Thomas Jefferson in the 1780s, "whether it proceeds from the colour of the blood, the colour of the bile, or from that of some other secretion, the difference is fixed in nature, and is as real as if its seat and cause were better known to us." Although some of his terminology dates back as far as Malpighi's analysis of the 1660s,

Jefferson's caution as to the status of black blood or bile may have derived from a reading of Mitchell (who rejected the existence of such a fluid), whose text he would likely have known, since it was written by a fellow Virginian. Rather than sort through the complex implications of such anatomical work, however, or reach the environmental conclusions many were endorsing on both sides of the Atlantic (Samuel Stanhope Smith being their foremost American exponent), the slave-owning Jefferson preferred belief in some essential racial difference, even in the absence of clear experimental evidence. In Britain, where the slave trade was under frontal attack, anti-abolitionist polemicists were less polite. In its entry for "Negro," William Henry Hall's *New Encyclopedia* returned yet again to Mitchell's unanswered question about the possibility of dark-skinned peoples turning lighter in cooler climes, evidently perceiving the Virginian's account as a threat to the social order based on essential color difference. Having discussed Mitchell at length, the article stated categorically: "it would be a strong confirmation of his doctrine, if we could see any people, originally white, became black and woolly by transplantation, or *vice versa*, which cannot be the case." This was where Mitchell's argument failed on objective grounds, it was claimed. According to its author, the article's purpose was philosophical, not political. It claimed neither to attack nor defend the legitimacy of the slave trade, but merely to "account for that ferocity and brutality . . . by which Negroes in many respects resemble the most savage beasts of prey."<sup>31</sup>

### **Conclusion: Color maps**

Creole-American knowledge claims have come to be associated with patriotic epistemology and resistance to imperial authority. Mitchell, however, was an imperial Creole. His assertion of philosophical authority to explain skin color as a universal phenomenon had nothing to do with colonial or proto-nationalist resistance to metropolitan power. Rather, like Benjamin Franklin, and other London-bound British-Americans of the *ancien regime* such as Edward Bancroft, who made impressive careers in the imperial capital, Mitchell was committed to making his knowledge tell for his own advancement by linking it to the interests of a united British Atlantic empire. Indeed, Mitchell's own rise in British scientific and political society was almost as remarkable as Franklin's. Leaving Virginia for London in 1746 due to ill health, he was named a Fellow of the Royal Society, helped broker an audience for Franklin's early papers on electricity, and became a leading expert on American botany among the British elite. His contacts brought recognition of his expertise (Linnaeus named the partridge berry *Mitchella repens* for him – a fruit-bearing woody American plant that creeps), and he became part of a well-placed set of Scottish participants in British governance and commerce, enjoying the patronage of John Stuart, Earl of Bute, as well as Bute's uncle the Duke of Argyll. He passed lengthy periods in residence at the Duke's London home and Kew Gardens, later the hub of Britain's imperial botany projects under the leadership of Joseph Banks.

It was cartography, however, that cemented Mitchell's reputation as an imperial information broker. Historians have often cited the importance of his 1755 map of North America, the most comprehensive such chart ever made, commissioned by Lord Halifax at the Board of Trade, and used well into the twentieth century. Mitchell had spoken with Franklin in Philadelphia back in 1744 about the threat of

Amerindians and French settlers on the western frontier and his map, together with published commentaries on the British-French contest in America, became instruments of imperial policy in the decisive period of territorial expansion that resulted from the Seven Years' War. The denizen of the slave-based commercial Atlantic economy thus completed his evolution into an imperial strategist. As Matthew Edney has emphasized, Mitchell's map embodied a highly propagandistic vision of British coastal colonies extending right across the American continent, ignoring and minimizing the claims of French settlers in western regions like the Ohio Country, where violent skirmishes would escalate into a key theater of the Seven Years' War during the 1750s. Where Mitchell had drawn on cartographic ideas to assemble his account of skin color variation – racial variation was perhaps inevitably a science of mapping in this era of geographical expansion – he now used bold colors to paint British colonial claims into striking bands that stretched right across the North American continent depicted in his map. His work in racial anatomy and political cartography were both sciences of colonial reconnaissance, conducted by a locally knowledgeable Creole with a sure eye to powerful audiences in the imperial capital. Despite abolitionists' later claims, his environmentalist account of skin color had been linked to a naturalizing view of African slavery. His opinion that "tawny" was the original complexion of mankind did not, meanwhile, prevent him from supporting the imperial reorganization that would dispossess Native Americans on the British colonies' western frontier after the end of the war in 1763. Although he opposed the Stamp Act as unwise policy, he continued to believe in "the great band of union between the colonies and their mother country," as he put it. Dying in 1768, he did not live to see how his fellow Virginians would rebel against British authority, a course of action he would surely not have countenanced. The great irony of his map is that the instrument he assembled to advance British interests in America, and his own interests in London, was ultimately used in drawing up the Peace of Paris that concluded the American Revolutionary War in 1783 and adjudicating the provisional borders of the new United States.<sup>32</sup>

In revisiting Mitchell's early career, this essay has aimed to suggest an alternative approach to understanding the intersection between the sciences and conceptions of human variation in the eighteenth century. Instead of focusing exclusively on the intellectual genealogies of race, it has attempted to examine questions of scientific practice, authorial context, credibility and authority, the political ambiguities of variationist discourse, and its transformation through circulation and appropriation. The authority of the natural sciences became important to abolitionists who took up earlier accounts of difference to fashion original antislavery arguments. In so doing, however, they recast their significance, and obscured what struck them as their problematic contradictions. For both Clarkson and Equiano, Mitchell's text could be deployed to support an environmental explanation of variation in skin color, intended to destabilize the seemingly natural equation of blackness and bondage as irrevocable states of being.

But as we have seen, to Mitchell in the 1740s, an environmental account of skin color and the naturalization of enslaved labor that emphasized the physical hardness of African bodies were not mutually exclusive positions. This was in large part because abolitionists had yet to insist on the re-reading of such discussions as explicitly and inevitably constituting stances for or against the slave trade as a matter of policy. Explanations of human variation demand broader consideration than focusing on

isolated questions like color or monogenesis to grasp their full historical resonance. The significance of such accounts was, furthermore, dynamic rather than static, and must be sought both in their pre-abolitionist ambiguity and post-abolitionist re-reading. While Clarkson and Equiano wished to use Mitchell to present environmental color change as an autonomous scientific fact, Mitchell's account relied on painters' and dyers notions' of color change to ground his own claims as authoritative. His facts were not autonomous from other domains of cultural practice, but depended on the work of artisans and artificers for their guidance as to nature's behavior. The notion of black-boxed autonomous scientific authority was, however, precisely what later seemed so valuable to abolitionists. Practices such as anatomical dissection, optical philosophy, dyeing and artificial color-mixing were not separated into clear and unidirectional hierarchies of influence, but existed in circular and malleable relation. Invoking Newton to map color methodically in its human variety was part of an enlightenment chiasmus in which human variation also mapped Newton as the pinnacle of human genius, marking an increasingly explicit claim that scientific ability was the preserve of white Europeans. This was why African writers like Equiano self-consciously sought, by contrast, to demonstrate their own curiosity about nature at this time. Given his access to enslaved bodies, which few or none in Europe could command, Mitchell could claim rare public authority as a Creole-American making causal arguments for a learned European readership. His career thus brings to life an Atlantic history in which understandings of human variation, that intensifying preoccupation of the learned, were forged neither wholly in the colonies nor the metropolis, but in circulation around an ocean.

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### Notes on contributor

James Delbourgo is Associate Professor of History at Rutgers University and the recipient of fellowships at the Institute for Advanced Study, Princeton, and the Max Planck Institute for the History of Science, Berlin. He has published *A Most Amazing Scene of Wonders: Electricity and Enlightenment in Early America* (2006) and, as co-editor, *Science and Empire in the Atlantic World* (2007), and *The Brokered-World: Go-Betweens and Global Intelligence, 1770-1820* (2009). His book on Hans Sloane and early modern global collecting will be published by Penguin UK and Harvard University Press. In 2012–2014 he will co-direct the seminar program “Networks of Exchange: Mobilities of Knowledge in a Globalized World” at the Rutgers Center for Historical Analysis.

### Notes

1. Equiano, *Interesting Narrative of the Life of Olaudah Equiano*, 1: 41 (my emphasis); Clarkson, *Essay on the Slavery and Commerce of the Human Species*, 205. On the torrid zone, see Safier, “Transformations de la zone torride”; on matters of fact, Poovey, *History of the Modern Fact*; for Equiano, Carretta, *Equiano, the African*.
2. Jordan, *White over Black*, 246; Wheeler, *Complexion of Race*, 26–7; Parrish, *American Curiosity*, 93–4; Brückner, *Geographic Revolution in Early America*, 63–7; for a discussion

- of both metropolitan and Creole scientific actors in the British Atlantic world, see Delbourgo, "Science."
3. The teleological tendency in intellectual histories of race is most clearly evident in Hannaford, *Race*, but is arguably still present in subtler form even in sensitive contextual works like Wheeler, *Complexion of Race*.
  4. See, for example, Shapin, *A Social History of Truth*.
  5. Curran, *Anatomy of Blackness*.
  6. Cañizares-Esguerra, "New World, New Stars" and *How to Write the History of the New World*; Bauer, *Cultural Geography of Colonial American Literatures*.
  7. See also Curran, *Anatomy of Blackness*, 87, 204; and Wheeler, *Complexion of Race*, chap. 5. Particularly useful overviews of eighteenth-century sciences of human variation are Duchet, *Anthropologie et histoire*; Jordan, *White Over Black*, 216–65; Hudson, "From 'Nation' to 'Race'"; Sloan, "Gaze of Natural History"; Wokler, "Anthropology and Conjectural History"; Bindman, *Ape to Apollo*; Schiebinger, "Anatomy of Difference"; and Gissis, "Visualizing 'Race' in the Eighteenth Century."
  8. Berkeley and Berkeley, *Dr. John Mitchell*, 3–15; Morgan, *American Slavery, American Freedom*; Kulikoff, *Tobacco and Slaves*; Bushman, *Refinement of America*.
  9. Berkeley and Berkeley, *Dr. John Mitchell*, chap. 1; Guerrini, "Alexander Monro Primus"; Landsman, *Nation and Province*.
  10. Berkeley and Berkeley, *Dr. John Mitchell*, chaps. 2–3; O'Neill and McLean, *Peter Collinson*; Hoffmann and Van Horne, *America's Curious Botanist*; Schiebinger, *Plants and Empire*.
  11. Mitchell, "Dissertatio Brevis," 195–6, cited in Berkeley and Berkeley, *Dr. John Mitchell*, 33, and chaps. 3–4; Greenblatt, *Marvelous Possessions*; Tyson, *Orang-Outang*; Curran and Graille, "Faces of Monstrosity"; Sloan, "Gaze of Natural History"; for Tyson, see Nash, *Wild Enlightenment*, chap. 1; Bindman, *Ape to Apollo*.
  12. Hall, *Things of Darkness*, 33; Morgan, "'Some Could Suckle,'" 188–9; Gerbi, *Dispute of the New World*; Cañizares-Esguerra, *How to Write the History of the New World*; Bauer, *Cultural Geography of Colonial American Literatures*, esp. chap. 6; Parrish, *American Curiosity*; Delbourgo and Dew, eds., *Science and Empire in the Atlantic World*, introduction; and the chapters by Delbourgo, Pimentel and Safier in Schaffer et al., eds., *The Brokered World*.
  13. Byrd, "Account of a Negro-Boy"; for earlier explanations of African skin color, see Walvin, *Black Presence*, 32–47, and Goldenberg, *The Curse of Ham*; on natural histories of color, Wokler, "Anthropology and Conjectural History," Sloan, "Gaze of Natural History," and Boule, "François Bernier."
  14. Sloane, minutes of Royal Society transactions; Govier, "The Royal Society"; Blackburn, *Making of New World Slavery*, chaps. 6, 8–9; Delbourgo, "Slavery in the Cabinet of Curiosities."
  15. Tyson, *Orang-Outang*, quoted in Nash, "Tyson's Pygmie," 56.
  16. On the variety of responses to the question, 16 of which are extant, see Curran, *Anatomy of Blackness*, 81–87; John Mitchell to Peter Collinson, Apr. 12, 1743, quoted in Mitchell, "Essay," 102.
  17. Mitchell, "Essay," 105–9; see also the abbreviated account in the Journal Book (copy), 18: 274–7, Royal Society Archives, London.
  18. Mitchell, "Essay," 107, 110–19; on anatomy's authority in this era, see Cunningham, "The Pen and the Sword."
  19. Schaffer, "Glass Works"; Shapiro, "Artists' Colours and Newton's Colours"; Gage, *Colour and Culture*, chap. 9; see also Lowengard, *Creation of Color*.
  20. Mitchell, "Essay," 120–30.
  21. Mitchell, "Essay," 119–20, 131–40, 143; on eighteenth-century intersections between race, science and gender, see Schiebinger, "Anatomy of Difference."
  22. Mitchell, "Essay," 145–50; on monogenetic and polygenetic traditions of interpretation in British discussions, see Kidd, *Forging of Races*.
  23. For Blumenbach, see Bindman, *Ape to Apollo*, chap. 4; Chaplin, *Subject Matter*, 220; see also Chaplin, "Race," in Armitage and Braddick, *British Atlantic World*.

24. Carey, *Locke, Shaftesbury, and Hutcheson*; Sloan, "Gaze of Natural History"; Schaffer, "Enlightened Automata"; Smith, *Body of the Artisan*; Isaac, *Transformation of Virginia*; Schaffer, "Experimenters' Techniques, Dyers' Hands, and the Electric Planetarium"; Long, untitled British Library manuscript; Delbourgo, "Fugitive Colours," esp. 310–1.
25. Boyle, *Experiments and Considerations Touching Colours*, 164, and *Works*, 1: lxx; Klaus, "History of the Science of Pigmentation"; Curran, *Anatomy of Blackness, passim*.
26. Stewart, *Rise of Public Science*; Shank, *Newton Wars*; Greenwood, *Experimental Course of Mechanical Philosophy*, title-page and 2.
27. Shapiro, "Artists' Colours and Newton's Colours"; Beddoes, *Considerations on Factitious Airs*, 45.
28. Pope, *Essay on Man*, 7; Ramsay, *Essay on the Treatment and Conversion of African Slaves*, 181; Jenyns, *Disquisitions on Several Subjects*, 10–11; Cohen, *Science and the Founding Fathers*, 84; Fara, *Newton*; Schaffer, "Asiatic Enlightenments of British Astronomy."
29. Rittenhouse, *Oration*, 19–20; John Winthrop IV to Ezra Stiles, July 19, 1759, quoted in Jordan, *White Over Black*, 248.
30. Kitson, "Candid Reflections," 11–25; Clarkson, "Examinations"; Hudson, "From 'Nation' to 'Race,'" 255; Clarkson, *Essay on the Commerce and Slavery of the Human Species*, 194–207; Brown, *Moral Capital*.
31. Hartley, *Observations on Man*, 2: 109; Murray, *Evidences of the Jewish and Christian Revelations*, 74; Jefferson, *Notes on the State of Virginia*, 138; Curran, *Anatomy of Blackness*, 121–2; "Negro," in Hall, *New Encyclopaedia*, vol. 3; Dain, *Hideous Monster of the Mind*, esp. 40–80.
32. Mitchell, *Present State of Great Britain and North America*, 288; Berkeley and Berkeley, *Dr. John Mitchell*, chaps. 7–17; Edney, "John Mitchell's Map of North America."

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