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1 Reflections on Conceptualizing Africa for Biological Studies with a Historical Component

A Small Essay

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1.1 Prolegomenon

Pliny the Elder said, to paraphrase, that there was always "something new out of Africa." The place that was Africa for Pliny and the Romans was in supra-Saharan and northern Saharan Africa, specifically a region that encompasses the current state of Tunisia, the location of the ancient city-state of Carthage. By Pliny's time, Carthage and the surrounding territories were a colonized region, specifically a Roman (and Romanized) province (called Africa). During the Islamic period, the name Africa passed into Arabic as *Ifriqiya*, and the same region was known by this name for a millennium until it began to be called Tunis. The Ottomans continued to use this name. During French colonial occupation this "protectorate" was called Tunisia and the name was kept after independence. In many instances, Pliny's Africa, as Africa, has all but been forgotten in the conceptualization and naming of Africa, an irony of sorts – given that it was an Amazigh king from this region, Massinissa, who first said "Africa for the Africans," in the heady days of various interactions within and between the region and Rome.

Today, Africa designates an entire continent, although sometimes its supra-Saharan and northern Saharan regions, ironically including Tunisia, are often "forgotten" to be in Africa in various kinds of studies and disciplines. Or it may be seen as Africa minor or in the case of Egypt being called erroneously an "isthmus"(!) (Schuenemann et al. 2017). Africa is often equated with "sub-Saharan," which is the equivalent of equating Asia only with far eastern Asia and ignoring Arabia, India, and the Central Steppe regions, or equating Europe and Europeans only with Northern Europe (as being the only authentic Europe), in both cases excluding the rest of these regions. (Supra-Saharan and Saharan are used to have symmetry with the often used "sub-Saharan," with infra-Saharan being a better term because it is free of ideological baggage related to the colonial enterprise.) Other descriptive terms have no equivalent analogs; for example, South Africa is not the counterpart of North Africa and East Africa and West Africa are not equivalents. There is also the designation "Black Africa," often used as a synonym for sub-Saharan, which is problematic and has no parallels with other continents. Tropical Africa, as another

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term, is interesting in this regard because it includes a part of Egypt and parts of the Sahara desert of multiple Maghreban states, and renders the notion of "tropical" as a denotation only of forested regions as wrong. (Tropical Africa lies between the two tropics and offers the possibility of terms like infra-tropical and supra-tropical.) It is possible to construct various divisions of interest based on various criteria and relevance to particular studies. There is no one way to be African: No claim is made that Africa and Africans are uniform or homogeneous across space and time; it follows that there are and have been many African diasporas generated by voluntary and involuntary migration. There are also internal African diasporas.

The "forgetting" of Africa's northern regions as Africa, although not as common in some scholarship as it once was, has something to do with a set of notions born in the era of European-sponsored human trafficking and enforced settler colonialism. These include ideas about "race" and origins, notions of isolated populations, beliefs about static ethnicities and unchanging peoples, typological thinking, racism, the sociology of knowledge, and nothing to do with geography and interconnected human beings as subjects with value and agency. It is also related to the creation of ranked social identities inscribed onto biology based on racial schema (see e.g., Smedley 2007). This perspective crystallized during the antebellum and official colonial periods and often continues to influence various kinds of scholarship and political and social policy in some countries. The observation that "Africa" in practice is often restricted to its "tropical" regions has led to the question "Where in Africa does Africa start?" (see MacEachern 2007). As noted, what is "tropical" by the map may not be the same as preconceived concepts associated with the term. The issue of what is "African" and what is not becomes interesting in discussions of human biological, cultural, and linguistic origins and diversity, and would influence the collection and interpretation of data, including genetic data. As noted, the issue of African (and descendant) identity exists in some political administrative and social identity contexts (as in the US Census or even requirements for certain research, where some policies define supra-Saharan and some northern Saharan Africans out of Africa in grand racialist tradition). These identity issues will not be discussed here in any depth, but they cannot be avoided because they influence how science is done in terms of sampling and interpretation.

There is a larger set of philosophical issues about the notion of any of the continental/communal "identities": when do they start, what is to be their basis, what must their time depth be, are there notions of ancestral purity embedded in certain perspectives, and who gets to decide these questions? Populations are known to have changed religion and/or language, and acquired ancestry from other groups; sometimes identities have changed in the process. There is also the issue of the relationship of more specific bioethnic ancestry to social and/or cultural identity at any moment in history. This is most easily illustrated by using recent populations. For example, having some Greek ancestry (being of Greek descent) does not mean that someone would be or is necessarily *Greek-identified*: this would depend on social and political contexts, and what gets emphasized or is even known about ancestry. There are numerous other examples of this. As is well known, many if not

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most Latin Americans whose families date to the nineteenth century and before have some Native American and/or African ancestry but are not specifically part of *communities* that are labeled (by the state) or self-identify as "*indigenas*" or are *"Afro"-identified* – the non-European ancestries are dispersed in the general population, held in varying degrees by different individuals and families. Likewise, many people in the *communities* identified as Indian or "African descendant" have varying degrees of European ancestry, usually due to the actions of males during the conquest and enslavement periods. Many of those now identified sociopolitically as "African Americans" (in this case meaning identified as Afro-North Americans of middle passage descent, or legacy African Americans) have European ancestry, but are not socially identified as belonging to a European ethnic group ("European descent") – even if one parent is "solely" of European descent (in the recent sense). There are groups that are known to have and may self-acknowledge multiple ancestries, such as the Melungeons, Brass Ankles, and Nanticoke Moors. These examples from the "New World" can be taken to illustrate interactions that have taken place elsewhere and over millennia. The connotated issues of classification have implications for science, medicine, and history. Ethno-ancestral identities do not project infinitely back in time.

This non-exhaustive essay, with limited references, addresses some issues related to evolution, the race concept, and social organization in the conceptualization of Africa and Africans, and the nature and sources of African biological diversity against cultural and geographical backdrops. There is an awareness here of the lack of significant participation of African scientists and philosophers in much of the human biology and other research done in the human sciences on Africans: from paleontology to social anthropology to genetics/genomics. An effort will be made to present some different perspectives that could be brought to bear on existing data and new studies. No explicit evaluation of research programs such as the 1000 Genomes Project is undertaken here. The bias here is toward an evolutionary/biogeographical perspective about African human biology informed by history and culture, and the history of ideas. The very notion of "population history" becomes of interest in this regard. The concept of an *emergence* of complex biocultural entities is taken as a given in contrast to more traditional notions that imply units of purity. The perspective taken here is that the locale of biocultural history makes the subject of Africa – that any migrations into Africa from outside at any time in which migrants have been largely assimilated has led to populations whose biology has been reworked by an African biocultural environment. (Excluded are recent migrants from the colonial period or endogamous immigrant communities during the last 500 years.) An accurate biogeography is needed, one based on a constant dialoguing with data and theory. Populations are processes and ensembles, assemblages, not akin to monoliths consisting of uniform particles of a single element that emerged one time. It is important to remember, all other things being equal, that over time a biologically defined group could change cultural practices and/or language (by adopting new customs or languages), and that a culturally defined group can change biology (via intermarriage), both only limited by the sociopolitical milieu of the interactions. There are

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many variations of this interplay of culture, ancestry, and identity, which has implications for studies. The philosophy of science has something to offer here as well: how populations are delimited is often a product of "tradition" or subjective parameters, and *not mind-independent entities* (Gannett 2003). This has relevance to a range of studies.

1.2 "Blackness" and Notions of Africa

The stereotypical notion of *African* in recent times, in phenotypical terms, is usually linked to the trait of dark skin color, specifically that of being "black" (maybe beginning at dark brown). In fact, "black African" – the problematic common phrase of use – is often if not always made synonymous with "African" in certain literature. "Black" and "African" are often (incorrectly) used interchangeably, with *African* having a particular cultural content thought of as being indigenous in connection to a conception that makes those so identified part of an entity that was conceived to be isolated from the rest of the world. *African*, in this case, would seem to be used to connote living peoples with a particular phenotype, whose bodies collectively are the repositories of a particular genome. This notion of "blackness" derives from the received race concept and its taxonomic schema modulated through a tradition of stereotypes. The irony here, of course, is that the region that encompasses so-called "black Africa" is the same place that contributed heavily to the emergence of our species, which was likely assembled with ancestries from supra-Saharan/Saharan, eastern, and southern infra-Saharan regions.

"Black" has been and is used in other Western discourses as a referent to various non-African peoples, specifically certain of those in the Pacific region and Asia. It has its own subjectivity: How dark must skin be to be called "black"? It is different in different places. Australian Aborigines, Dravidian Indians, New Guineans, and Melanesians, who are also dark or "black" in color, were all called "black" in the context of colonialism. "Black" has sometimes been used to mean simply non-European and non-Far East Asian in the British context; Professor Leila Ahmed, a light-skinned Egyptian, noted being called black when she was a student in England in the 1960s (Ahmed 2000), a practice now discontinued due to a "refinement" of social taxonomies in England (or maybe the objections of some groups who used to be called black). It is well to note that in ancient northern Africa, the Africa of Roman times, there was a variation in the phenotype of people (Snowden 1970; Thompson 1989); this was also true of the northern Nile Valley.

In the early Islamic period, there are some interesting ironies related to notions of "blackness." Ubadah ibn as-Samit, the appointed envoy of Amr, commander of the "Islamic" or "Arab" forces that entered Egypt, was initially rejected by the Roman prelate apparently *because* he was "black" (Butler 1902: 257). The "Arabs" of that era told the prelate that they held "blacks" and "whites" in equal respect and that Ubadah was one of the best among them. Ubadah informs the prelate:

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> There are a thousand blacks, as black as myself, among our companions. I and they would be ready each to meet and fight a hundred enemies together. We live only to fight for God, and to follow His will. We care nought for wealth, so long as we have where withal to stay our hunger and to clothe our bodies. This world is nought to us, the next world is all. (Butler 1902: 257)

This passage indicates that Ubadah feels himself to be a part of this community, in this era Islamic scholars consider to be Islam's Golden Age, and one of equality, an equality that would later change with various developments, including some level of bias against the darkest skin colors in some regions (Evans 1980), as well as other biases. (Of course, "black" and "white" are relative terms, and socially modulated.) Kamil (1970) documents numerous "blacks" who were a part of the early Islamic community, and even regarded as heroes, some apparently buried by the Prophet Mohammed with his own hands. And there were the "black" pre-Islamic notables, like Antar, and later Islamic figures like al-Jahiz who have down through history been called "black" or some equivalent. These cannot be overlooked. Statistically the numbers of those who became notable/remembered is suggestive that there was an even larger population. How many of these Arabian "blacks" and their families moved into supra-Saharan and Nile Valley Africa is unknown. It is important to say that they were not slaves.

What were the geographical origins of Ubadah and his other "black" companions and/or their ancestors? Was there an indigenous "black" population in early Arabia but Asian in origin – like the Dravidians – or a population that straddled eastern Africa and Arabia (quite possible), or early Holocene "prehistoric" migrants "that participated in the building of the primitive [sic] Arabian population" (as per Abu-Amero et al. 2009)? Were they the descendants of eastern African converts who returned to Arabia with the early *umma* (community) that had been sent to Ethiopia by the Prophet for safety in the earliest days of Islam? Or were they descendants of other known eastern Africans (slaves or migrants) resident in Asia – or solely historic slave descendants – a favorite trope of some researchers, or some composite of these?

The example of Ubadah and others in early Arabia negates a notion of "blackness" equaling Africa in the way that this is often simplistically done. Yet this view lingers across disciplines and in popular discourse. Of course, it would be of interest to understand how a notion of ethnicity fits into this early history. It is also of interest to understand how and when anti-"black" prejudice emerged in the Arabo-Islamic world, breaking from the early egalitarian tradition, given that some "Arabs" sometimes called themselves "black" at least in comparison to more northern peoples (Evans 1980, after Vollers 1910, footnote, page 24). Such prejudice was not apparently developed in the same way or degree that occurred in the West, and had no effect on some Arab groups as they migrated into tropical areas of Africa, with the men marrying local women or taking them as concubines. In other cases, whole groups merged with indigenous populations. It is beyond the scope of this chapter to explore this issue further, but it is clear that received notions of race and racial schema are highly problematic. It is important to say that all indigenous/endogenous African populations are not homogeneous in appearance.

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The Islamic period is often presented as having absolutely changed the northern regions, somehow making that history not a part of an African world, or totally changing its people. Some view the migration that occurred as a simple massive settler colonialism of Arabs – or those composing the early Islamic migrants. The reality is far more complex than this.

1.3 Raciotypological Thinking

The stereotypical idea about Africans and Africa as conceptualized in racial thinking in the received racial schema has had an influence on the interpretation of morphological and molecular data. This has come from a model of raciotypological thinking applied to human populations in general (Keita and Kittles 1997). Races were conceptualized as foundational or fundamental units and conceived as being not only represented but defined by an idealized narrow set of physical characteristics, otherwise called a type. A type, as a concept, could also be based on gene frequencies or specific lineages. Variation from the type was interpreted to be evidence of admixture or an aberration. In this way of thinking, names imply very discrete groups or individuals which are different in kind, and seen as being only distantly connected, and sometimes in the nineteenth century as being of different species. Even when the larger racial schema are not used, there seems to be a tendency to think in terms of discrete populations consisting of uniform individuals, which were sometimes described as types (such as Nordic or Alpine). In real breeding populations, however, there is variation at the molecular and other levels (although perhaps restricted phenotypically to the eye), and types are abstractions, although extreme variants may be real if not actually representative. Traits or trait complexes were conceptualized as having necessarily a single origin. In fact, individuals and populations may have multiple genealogical connections (to other populations), even if they are not very genetically similar overall; some of these may be ancient, reflecting a deep time relationship due to shared ancestry or ancient gene flow, others may be more recent due to recent gene flow. Assumptions that generalize to regions from one or two populations (or individuals) – as in some discussions of gene flow – are merely versions of racial thinking. The use of samples from single populations like the Yoruba to represent "the African" or even infra-Saharan African or tropical African is not defensible on theoretical grounds because it ignores the heterogeneity of Africa. It is congruent with notions of the "Negro" "type" only as African. That this idea persists in various work reflects something about the sociology of knowledge, not a critical evolutionary science.

The results of analyses of groups intended to portray population history or historical processes are often expressed in dendrograms or plots, which are acceptable as long as their limitations are understood and disclosed. The results so expressed are intrinsically attractive, but are incomplete without a discussion of process and interaction, the sources of similarity (including micro-convergence or parallelism), and the problems of assuming that all data are equally good for making comparisons. Misleading results could occur if various kinds of data are not critically

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handled. Care has to be taken when describing or interpreting patterns of culture, biology, and language. Attaching genes to current speakers of language families in an obligatory manner under the assumption that in earlier history the speakers of the ancestral language family were the sole ancestors of those currently speaking the descendants of the language is problematic and wrong. Attempting to classify languages based on the genetics of their current speakers is in principle wrong. The splits within a language phylum are not causative of biological population splits based on mutations or natural selection and vice versa, although they may sometimes track with each other in some specific circumstances if geographical space is involved – but social customs and endogamy can be isolating as well. Early population history cannot be assumed to be a story of entities with obligatorily linked genes, languages, and cultures. Even strictly in terms of biology, population history is not simply gene history or vice versa (Weiss and Long 2009). This is an area where critical scholarship is very important.

There is also the issue of the context of interpretation of data: When should a given discipline lead the narrative? Does one look at genetics first to interpret a cultural or historical pattern, or does one look at chronologies or patterns determined by archaeology, history, or language, and use genetics within? Scale and time depth are important to this question, as well as the kind of narrative that is of interest. It cannot be said enough that gene history is not population history, and population history is not to be equated with social, political, or cultural history. Furthermore, how and why genes "flow" across space and populations cannot be answered by the genes themselves. The factors that spur migration are gene-independent. The social interactions that permit gene flow are not a property of the genes themselves. How we use genetics in developing a narrative of a specific people or kingdom is an important open question, and not a question at all for some scholars. For example, can genetics/genomics teach us anything about Funj *history* as opposed to their ancestral "identity" in a narrow, particular kind of way? And would the genetics give us the appropriate time depth to speak of the Funj as Funj specifically, as opposed to elements in their ancestry? This question about the ranking of data deserves ongoing critical examination. A naïve empiricism will not work. The errors of affirming the consequent and misplaced concreteness are to be avoided.

Another notion that influences how Africa is or has been conceptualized has had to do with stereotypes or perceptions of social organization. Africa, specifically "tropical Africa" in keeping with the stereotypical use, has been and is conceptualized as a place with numerous isolated peoples and/or "tribes" whose individuals have a putative common ancestry with a primordial origin. The idea of closed and isolated groups, in essence, bounded biocultural entities, has often been implicitly employed in much work. This will be further discussed later.

These ideas form a backdrop, an implicit mental template, to the way Africa is thought about, even when not explicitly stated. For example, published work on the "genetic history" of Africans often does not generally include the whole continent, or examine the interconnections of all of its regions, even though it is generally agreed

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that modern humans arose in Africa. It is not always clear what the concept of "genetic history" encompasses.

1.4 Africa: Evolution and Peopling

It has been postulated for some time that modern humans emerged in Africa (Stringer and Andrews 1988), perhaps 200,000–300,000 years ago by recent estimates (confidence intervals are large). By "modern" is meant a suite of characteristics (that permit an identification) in genetics, anatomy, and behavior (McBrearty and Brooks 2000) that relate living people to these distant ancestors. This emergence in Africa is believed by proponents of this theory to have been followed by migration within and out of Africa. The ensemble of biology and culture called "modern human" seems to have emerged in Africa from the interactions of populations from several regions, including the western supra-Saharan area. It is also possible that modern humans learned some forms of symbolic behavior from Neanderthals which speaks to a cognitive flexibility. Various scenarios and routes for the exodus from Africa and the locations for the emergence have been proposed. Interpretations of some genetic data suggest interactions leading to gene flow from other hominid populations, often called "archaic" and understood as being of different species, although it might be preferable to see all of these other populations as being subspecies. However, it may well be that some of the genes being labeled archaic are simply asymmetrical retentions from the ancestor that led to both modern humans and the other species or subspecies (Denisovans, Neanderthals, and possibly others in Africa), but this is not thought to be likely by most investigators. Modern humans may not represent a speciation event which would have largely "reset" aspects of the genome. Whatever the position taken on this matter of taxonomy, the narrative would seem to indicate the emergence of a core population or network of populations in Africa whose biology is predominant in all living humans. These early humans are postulated to have left Africa in a permanent or successful colonization of non-African regions between 40,000 and 70,000 years ago. (There is also some evidence of sporadic earlier out-migration as well.) This means that, between the time of emergence and migration, 100,000 years of biological (and cultural) history elapsed, making the early modern human story an African one; the full implications of this have not been explored in terms of biology or anything else. Serial migration and founder effects can be said to characterize subsequent human biological history, with new mutations being under adaptive and perhaps social selection augmenting differentiation along with gene flow and drift among local populations, and back-migration to Africa. A simple tree with separate non-interconnecting branches will not adequately display this history and production of variation. Rather, a range of ways to depict these can be envisioned.

During this long period, it is reasonable to postulate that modern humans had sufficient time to become differentiated at multiple levels. This differentiation is inferable from many datasets, although mutation rates are not known with certainty and confidence intervals are large. In this period of at least 100,000 years, it is possible that many lineages as represented by the uniparental markers emerged and became

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extinct, along with other markers, and even morphological traits. It must be said that this differentiation, be it in molecular or morphological traits, cannot be called raciation (Keita and Kittles 1997). Furthermore, the range of phenotypic variation is not completely known. Genes for skin color, such as light skin color, have been found to have multiple – including African – origins (Campbell, pers. comm.), and more of this kind of discovery should be expected. However, what is consistent with this long evolutionary history is that before modern humans left Africa they were highly variable, and likely achieved potential for even greater genomic plasticity. Gene flow from other subspecies or species of *Homo*, along with drift, serial founder effects, and adaptive selection in new environments would have contributed to variability, even though those who left Africa were only a subset of people existing at the time.

Fossils from this time period are not numerous. There is variability. There is evidence for modern anatomy or something near it, and modern behavior in northwest Africa (Bouzaggar et al. 2007), the Nile Valley (Van Peer et al. 2010), central, eastern, and southern Africa, as is well known. The Middle Stone Age of Africa is the time and context for the emergence of documentable modern humans from an African ancestor. Conceptually this geographical spread is important to understand because it negates the idea that early modern human developments were confined to southern and eastern Africa.

The oldest described mitochondrial and Y chromosome haplogroups found in living human populations emerged in Africa, but exactly where cannot be said: Current locations are not necessarily a guide to the locale of ancestral emergence due to migration. The lineages largely confined to Africa are also the earliest documented "modern human" lineages, now selectively called "African" since there are other lineages outside of Africa – although these too are derivative from African sources. Although there is DNA evidence of interbreeding with modern people, neither Neanderthal or Denisovan mitochondrial or Y chromosome lineages have been found in living people, and it seems that the Y haplogroup found in one population of living people (the Mbo) is apparently older than the age traditionally given to fossil remains designated as fully modern. This is not surprising (and it does not mean the Mbo are living fossils). Modern humans emerged from "pre-modern" populations in Africa, and by definition there is a connection no matter how invisible it may be. The recent findings that Neanderthals demonstrated symbolic behavior is not surprising, given the observations about other species. Whether or not "archaic" *Homo* like Neanderthals are actually another species or merely a subspecies (race) of *Homo* may be a matter of taxonomic preference as opposed to a matter of "nature," but obviously more research may be informative on this matter. It will be of interest to find ways to systematically explore the genome to look for evidence of disease genes or detrimental gene–gene interactions of non-"modern" origins. Regardless, Africa remains the place of the origin of the "source code" of living humans.

1.5 Human Variation in Africa

The molecular variation of humans in Africa has been said to be the greatest in the world (Armour et al. 1996; Elhassan et al. 2014; Jakobsson et al. 2008; Jorde et al.

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1995; Schlebusch et al. 2012). This has been one element in the argument that modern humans emerged in Africa and is presented as supporting the fossil and/or symbolic evidence from the Horn, Maghreb, Congo, Nile Valley, and southern Africa.

It has been found that diversity in "sub-Saharan" Africa is great at the morphological, metric, and molecular levels. Descriptions, even in older literature, can be informative after wading through older or prejudicial language and interpretations. We can use the writers of older literature as informants for descriptions, not interpretations, even though descriptions may also be problematic. There was great diversity that was observed in the past. The explanation for this diversity is another matter. In terms of morphology, this may be somewhat surprising for those who may have a stereotyped idea of what constitutes the "real" African phenotype. The late Jean Hiernaux (1975: 53), with a critical eye, noted that in one region of east to central Africa there is a "wide range of population means or frequencies" for "many anthropological characters":

> In some of them, the whole of the world range is covered in the sub-continent. Here live the shortest and the tallest human populations, the one with the highest and the one with lowest nose, the one with the thickest and the one with the thinnest lips in the world. In this area, the range of average nose widths covers 92 percent of the world range: only a narrow range of extremely low means are absent from the African record. Means for head diameters cover about 80 percent of the world range; 60 percent . . . the cephalic index.

He noted this long before the surge in molecular data. Hiernaux (1975: 53–54) indicates that there is also great diversity in dermatoglyphics, hair form, skin color, aspects of cranial form, and serological traits in tropical Africa. When the supra-Saharan region is considered, this diversity increases. The observations made by Hiernaux about tropical African morphological variation were not unknown to some Westerners before the late twentieth century. After a description of the extreme morphological variant or the ensemble of traits called in some literature the true Negro or "Negro type," one writer from the nineteenth century noted that:

> No single tribe, however, possesses all these deformities (sic). The colour of the skin passes through every gradation from ebony black . . . to . . . copper coloured . . . As to the skull in many tribes . . . the jaws are not prominent, and the lips not swollen . . . In some tribes the nose is pointed, straight, or hooked; even Grecian profiles are spoken of, and travelers say with surprise that they cannot perceive anything of the so-called negro type among the negroes. (Peschel 1888: 463)

Elsewhere this variability is observed, again with some quaint language:

> What is called the "negro type" – that is the low type of the coast of Guinea – is comparatively the exception – perhaps as much so as the low Irish type in the Keltic race . . . there are jet black negroes with woolly hair and noble Aryan features . . .; or black people with frizzled and even straight hair and regular features . . .; or blacks with flowing hair in ringlets . . . or light brown people with woolly hair and European forms and face . . . or light brown with negro features. (Brace 1863: 308–309)

We can ignore the use of the term "low" as a subjective notion of uncertain meaning to current readers, but with likely negative connotations at the time of its writing.

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