

# DNA and Race



# Are People like Metals?

## *Essences, Identity, and Certain Sciences of Human Nature*

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### PHILOSOPHICAL BACKGROUND

From Plato comes the seemingly eternal idea that people can be sorted and ranked as if they are metals: gold, silver, or brass and iron. This idea is introduced as an important political fiction in *The Republic*. Lest a city fall into disorder, its citizens must believe that all children are born with an inner metallic nature, which determines their public role or office. Children are to be told that their childhood was a dream; in reality, their nature was being formed deep in the earth by God, who then sent them up to the surface with false memories when they were ready to take their place in society as adults.

Citizens, we shall say to them in our tale, you are brothers, yet God has framed you differently. Some of you have the power of command, and in the composition of these he has mingled gold [ . . . ]; others he has made of silver, to be auxiliaries; others again who are to be husbandmen and craftsmen he has composed of brass and iron; and the species will generally be preserved in the children. But as all are of the same original stock, a golden parent will sometimes have a silver son, or a silver parent a golden son. And God proclaims as a first principle to the rulers, and above all else, that there is nothing which they should so anxiously guard, or of which they are to be such good guardians, as of the purity of the race.<sup>1</sup>

It is a troubling phrase to read, that one, the words “purity of the race,” even glossing over the issues of translation. Lisa Ikemoto’s chapter will take up the concept of race purity in greater detail. But I want to stay with those words so as to use them anachronistically, and so use them to take us to a different place. Our next stop,

specifically, is Locke and one of the enduring problems of empiricist philosophy of science. First, though, a bit more Plato.

They should observe what elements mingle in their offspring; for if the son of a golden or silver parent has an admixture of brass and iron, then nature orders a transposition of ranks, and the eye of the ruler must not be pitiful towards the child because he has to descend in the scale and become a husbandman or artisan, just as there may be sons of artisans who having an admixture of gold or silver in them are raised to honour, and become guardians or auxiliaries. For an oracle says that when a man of brass or iron guards the State, it will be destroyed. Such is the tale; is there any possibility of making our citizens believe in it?<sup>2</sup>

The chapter by Carlos Andrés Barragán, Sivan Yair, and James Griesemer discusses the concept of admixture in its modern scientific guise. This chapter, however, is a critical examination of one way that science can be a source of credibility for origin stories about human nature. The scientific details of these modern stories are different, but the analogy is clear: the appeal of stories organized around the idea that people are like metals remains.

By “like metals,” the idea here is not that people are to be valued in correspondence to the prices that precious metals have in markets for commodities. Rather, the idea is that both metals and humans have inner natures—“essences”—that determine their observable characteristics. Unlike the inner nature of the citizens of Plato’s republic, however, inner natures—so we moderns have come to believe<sup>3</sup>—are not discoverable except by using specialized modes of inquiry. Only science now has the epistemological authority to tell stories about the inner natures—of metals, or of people, *if* people are like metals. If so, then stories that imply that human social categories like European or French or even Georgian may have genetic essences, analogous to how many people believe that metals like gold have atomic essences, may become common knowledge, just so long as the stories come from a place with sufficient scientific authority.

The distinction between *real essences* and *nominal essences* is central to Locke’s philosophy of science, and it is useful here because it allows us a more refined set of distinctions than talking about inner natures.

The nominal essence of some category is an abstract mental representation that is shared by a group of people familiar with the perceptually characteristic properties of instances of that category. The contents of the nominal essence should all be observable properties—or, if not that, they should be properties that a person can more or less directly experience.

Real essences are not abstractions: they are the material, physical, or causal “stuff” out of which inductively useful (i.e., scientific) categories are composed. They are—depending on which flavor of metaphysics you want to endorse—the causal powers, the necessary and sufficient conditions, the essential properties,

or the metaphysical grounds that make kinds or categories the kinds or categories that they are. Most importantly, real essences are hidden: they are not usually the things one can experience directly. Because of this, they must be discovered somehow, and for Locke, to a good first approximation, doing natural science is how we discover real essences.

A critical element of this picture is that nominal essences and real essences can be aligned or misaligned with one another. That is, we can form the hypothesis that a set of nominal essences *N* is “generated” by real essence *R*. But as a technical matter, the properties expressed in *N* cannot be the same properties expressed by *R*; otherwise, they would be the same category. But given that *N* and *R* express different properties, there is the problem of trying to discover some certainty-preserving technique or method for showing that *R really is* the grounds for—or foundation of, or cause of, or necessary for, or essence of—the properties of *N*. This is, as I mentioned, one of the enduring problems in empiricist philosophy of science.

About this problem a great deal has been written;<sup>4</sup> here, it suffices to say that Locke was mostly skeptical of the idea that a generally applicable technique or method could be found that solves the problem. Instead, the response Locke prefers goes like this:

I would not here be thought to forget, much less to deny, that Nature in the Production of Things, makes several of them alike: there is nothing more obvious, especially in the Races of Animals, and all Things propagated by Seed. But yet, I think, we may say, the *sorting* of them under Names, is the *Workmanship of the Understanding, taking occasion from the similitude* it observes amongst them, to make abstract general *Ideas*, and set them up in the mind, with Names annexed to them, as Patterns, or Forms, . . . to which, as particular Things existing are found to agree, so they come to be of that Species, have that Denomination, or are put into that *Classis*.<sup>5</sup>

Nature makes things similar and different, but the kinds themselves are “the workmanship” of the mind. Real essences do not define natural kinds; natural kinds are social constructions. Natural kinds are human-made “conceptual tools” for thinking about “naturally produced” patterns observable to most people.

All the same, one of the stories contemporary scientists like to tell about science is that scientists routinely do achieve what Locke was skeptical of—specifically, discover the real essences that explain, cause, generate, or are otherwise responsible for certain nominal essences.<sup>6</sup> Which is to say: many scientists believe that they discover natural kinds by discovering real essences, the definitions of which then explain certain nominal essences—that, for example, gold “really just is” atoms with 79 protons in their nuclei. The real essence of gold is the *pure* essence of gold, one might say. Having a nucleus with 79 protons is the inner nature of gold.

Thus, we see in scientists’ quest for molecular causes of various observable social patterns an updated version of the search for real essences. But the

popularity and appeal of this story about how scientific discovery works does not address the epistemological ambiguity that is arguably the root of Locke's skepticism about whether real essences can ever define natural kinds. To put the argument rhetorically, why think that nominal essences are usually organized in some coherent metaphysical relation with real essences? If the relationship between real and nominal essences were straightforward, why would it take so much effort and energy to discover that gold "really is" anything that has the atomic number 79? But if the relationship between nominal and real essences were not straightforward, why should nominal essences be a guide to what real essences there are? Why care about nominal essences at all? Most observable gold is not elemental; indeed, most of the useful "nominal" kinds of gold are alloys, and so do not correspond at all to the "real" kinds given on the traditional periodic table.<sup>7</sup>

This ambiguity—whether we can ever know that some real essence is the "inner nature" of certain nominal essences—is what this chapter is about. Specifically, it provides a reading of the work of 23andMe and some relevant scientific prehistory that reinforces the thesis that, for all the technical sophistication of modern population genetics, ambiguity remains about the "origin stories" about humans that are suggested by the company's genetic analysis of ancestry and some of the social categories that people identify with. Indeed, allow me to introduce an explicit thesis: let us say that some schema or system of categories that expresses nominal essences has *Lockean ambiguity* if it is uncertain which, if any, real essences explain, cause, or otherwise ground the categories in the schema or the system. The intended conclusion of this chapter, then, is that the genetic analysis of human social categories offered by 23andMe cannot succeed in surmounting Lockean ambiguity about these categories.

The reason this argument matters is that maintaining Lockean ambiguity about human social categories is about as close to an ethical imperative as they come for us moderns. Reviewing evidence for this claim is beyond the scope of this chapter; Kwame Anthony Appiah's writings are a good place to start.<sup>8</sup> But if you share the unease about phrases like "purity of the race," then this evidence is probably already familiar to you. We should not presume that, for every nominal essence used to group, categorize, or act as a source of identity for people, there is a real essence to be found.

#### NEITHER METAL NOR ALLOY: RAZA ROUSTAM

Why? Humans are not metals. Not even alloys. Evidence for this is induction over human history: it is hard to impossible to find examples of the social categories that people identify with—whether by choice or by force or by parentage or by some other means—and that cannot be combined and recombined with one another without any limit over the course of an individual's life. This matters because it falsifies Plato's story: for Plato, people cannot change their inner metallic nature

after they are born, and it is one's ancestry (not one's "nominal essences") that determines one's metallic nature, and thus one's station in society.

But, again, humans are not metals, and this fact can be illustrated more concretely by the story of Raza Roustam. Roustam is known to history through his association with Napoleon, a relationship that began soon after Napoleon landed in Egypt in 1798. Roustam remained connected with Napoleon until Napoleon's first loss of formal political power in France; these and other details of Roustam's life are collected in a memoir he wrote later in life.<sup>9</sup>

Roustam was born in Tiflis, in either 1781 or 1783, of Armenian parents. At the time, Tiflis was a part of the nominally independent Georgian kingdom of Kartli-Kakheti, though it was in 1783 that Tiflis fell under suzerainty of the Russian Empire, ending several centuries of *de facto* and *de jure* Persian rule.

As a young boy, Roustam escaped kidnapping several times by slavers before being successfully kidnapped and forced into slavery at age 13. His kidnapping followed centuries of tradition in the area, according to which young boys were taken from the Caucasus and sold into service as mamluks. The mamluks were originally raised as a fighting force in the seventh century; by the twelfth century, they formed an elite class of warriors and statesmen who held considerable political power throughout the Middle East. Though Armenian by birth, Roustam learned, as he was traded, that part of his value was contingent on his buyer's believing that he was Georgian. He wrote, "The Georgians and Mingrelians were preferred when it came to recruiting mamluks. I don't know why, because the Armenians are braver than any other people."<sup>10</sup>

Roustam consequently adopted a practice of passing as Georgian. He eventually arrived in Cairo, where he received his training as a mamluk, and where he then entered the service of Salih Bey, who was assassinated at about the time Napoleon's forces landed at Rosetta. Desiring to remain a mamluk, who by convention must have a master, rather than start life anew as a free person, Roustam sought out and soon thereafter was accepted into the service of a sheikh who had sworn loyalty to Napoleon. Roustam was then gifted to Napoleon by this sheikh, and Napoleon took Roustam to become his personal bodyguard and second valet.

Napoleon orientalized Roustam, calling him "Ali." Roustam was proud of being a mamluk; he frequently expressed pleasure and satisfaction in being able to dress in the ceremonial clothes of a mamluk. All the same, there are also few things more "French"—recognizing, of course, that it is hardly a static or univocal category—than a personal association with Napoleon. But after Napoleon was first deposed, despite having acquired a degree of fame in France, Roustam left Napoleon's service and lived out the rest of his life in France as a veteran of the Napoleonic wars. He died in 1845.

What is the relevance of this story? Most people's lives resemble Roustam's life. That is to say: none of us is born preconfigured to fit into the different social

(that is, cultural, political, and moral, etc.) categories (“nominal essences”) that are the source of life’s opportunities and limitations. Whether just to survive, or to grow, or even to flourish, we all must find a way of adjusting, adapting, or conforming to the innumerable categories that give structure to the social worlds we move through. Frequently this means “taking on”—internalizing, or at least passing as a member of—categories (again, “nominal essences”) that in no important sense we are born into, or have much prior practice living with. The relevance of Roustam’s biography is therefore quite simple. He survived, grew, and eventually flourished by constructing a life that combined Armenian, Georgian, mamluk, oriental, Egyptian, enslaved, freedman, and French identity categories.

### IDENTITY CATEGORIES

But what then are identity categories? As noted, they are, technically, nominal essences. But they are also the social categories that a person can inhabit, or at least conform to, through an exercise of their own agency, so that at least the appearance of being a member of a type or category of person becomes a practical possibility. Identity categories are different from the more familiar notion of social or cultural stereotypes.<sup>11</sup> Stereotypes are attributed to people in order to explain or understand or make predictions about them. Stereotyping—the action of attributing a category to a person, without regard to whether the person in question wants that category to be applied to them—can be a source of identity formation.<sup>12</sup>

But the focus here is not on how people conceptualize the identity of other people. Instead, the focus is on how a person *qua individual* relates, through their own agency, to the categories that give common structure to their inner mental life and outer social life. While it is, of course, the case that some, many, or even most of these categories may be foisted upon a person, even in such cases there is still the ongoing work of consciously adjusting one’s psychobiography and psychosocial presentation to the reality of these categories—for instance, Roustam’s insight that passing as Georgian was in his practical interest. Identity categories are those categories that a person has—at least partially, at least imperfectly—functionally reconciled with the rest of their psychobiographical and psychosocial self-understanding *and* the conventions, norms, mores, and habits of the social worlds they inhabit.<sup>13</sup> Identity categories are therefore ultimately by-products of widespread patterns of individual choice and agency, even if they sometimes have the appearance of being entirely structural or historical features of large groups of people.

Identity categories are also nominal essences par excellence. They are the workmanship of the understanding: we collectively imagine and construct



and define and stipulate and feel these categories into existence, and to the extent that our thoughts, emotions, actions conform to the public dimensions of the categories, their existence becomes part of the fabric of human history. There are obvious and not-so-obvious social patterns associated with the categories. True, identity categories have a psychological basis,<sup>14</sup> but that is quite a different claim than asserting that certain real essences are the “naturally produced” hidden source of configuration or organization of any of our identity categories.

#### REAL ESSENCES: RONALD FISHER

It is characteristic of Enlightenment theories of human potential that they rest on certain strong assumptions about human nature—that there are certain “real essences” that either do in fact organize (or could, if things were different, be used to organize) identity categories.<sup>15</sup>

But following Darwin, and in particular his philosophy of emotions,<sup>16</sup> it becomes possible to use the logic of natural selection to try to discover real essences of human nature. With this shift, ancestry and descent are sometimes thought to determine the properties of a person’s real essence, much as they do in Plato’s myth. Ronald A. Fisher’s program for eugenics is an example of this convergence; it is probably the most sophisticated modern version of the Platonic myth expressed using Darwinian logic.<sup>17</sup> Other aspects of eugenics will be discussed in greater detail in the chapters by Lisa Ikemoto, Emily Klancher Merchant, and Meaghan O’Keefe.

Consider, for example, how Fisher’s 1919 article, “The Correlation between Relatives on the Supposition of Mendelian Inheritance,” begins:

Several attempts have already been made to interpret the well-established results of biometry in accordance with the Mendelian scheme of inheritance. It is here attempted to ascertain the biometrical properties of a population of a more general type than has hitherto been examined, inheritance in which follows this scheme. It is hoped that in this way it will be possible to make a more exact analysis of the causes of human variability. The great body of available statistics show us that the deviations of a human measurement from its mean follow very closely the Normal Law of Errors, and, therefore, that the variability may be uniformly measured by the standard deviation corresponding to the square root of the mean square error.<sup>18</sup>

Nature makes humans similar and different. But the real essences that are the causes of human biometrical variability can be discovered through the techniques of applied statistics.

The remainder of the article works out the mathematical foundations of what eventually became analysis of variance, or ANOVA. This technique does exactly

what Fisher suggests: it allows you to calculate the constituent percentages of the total variance of some trait in some well-defined population that can be attributed to independent underlying causes of variance. To illustrate this technique, Fisher analyzes height, which is a nominal essence, and which of course can be expressed as a continuous variable. This appears to be one of the first examples in Fisher's work of what he calls "quantitative characteristics"—that is, those human traits that can be explained, at least in principle, by association with population-based measures of the frequencies of genetic values. To simplify, genes—human "inner nature"—explain human biometric variability, variability that is expressed in categories that are, technically, nominal essences.

But it is a significant leap to go from analyzing genetic patterns that explain biometrical variability in populations to treating genes as the real essence for human social categories. Nevertheless, this was a leap that Fisher believed would sooner or later be scientifically feasible. He was prepared to apply the concept of a quantitative characteristic to, seemingly, "all human problems":

Our practical interest in the well-being of human populations turns predominantly on what are known as quantitative characters, such as exhibit themselves in intelligence tests, or in resistance to disease. What matters here, above everything, are the agencies which are capable of influencing the average of the population in a desirable or an undesirable sense. We are, therefore, much concerned with the theoretical and practical study of quantitative inheritance, with cases in which many Mendelian factors contribute to a single measurable effect, an aspect of genetic study which, owing to its difficulty, has been avoided in most centres of genetic research, but which plays such a central part in all human problems that, with us, it must constitute a major objective.<sup>19</sup>

Fisher appears to have hoped that enough of the human phenotype would comprise quantitative characteristics.<sup>20</sup>

From this hope, I want to suggest the following gloss on Fisher's eugenicist social philosophy. If human social categories can generally be associated with quantitative characteristics, then it may be possible to discover the real essences that shape, explain, cause, or otherwise ground such categories. These insights can then be used to better organize otherwise mysterious or messy or irrational aspects of various human social worlds.

#### FROM FISHER TO 23ANDME

Fisher did not seem to explicitly contemplate the idea that identity categories specifically could be treated as if they are quantitative characteristics. But this idea—again, that human identity categories can be treated as quantitative characteristics, and thus their real essence potentially limned by genetic analysis—appears to be central to the business model of 23andMe.

Below is an excerpt from the pitch letter that Anne Wojcicki, the CEO of 23andMe, sent to potential investors in 2007.

Why do some people love to jump out of airplanes and some are terrified to fly? Why do some family members get diseases while others don't? The answers to these and other questions about human traits lie partially in our DNA. . . . 23andMe will enable consumers to have a better understanding of their ancestry and genealogy. Most people possess a natural curiosity of who they are, where they came from, and who their ancestors were. The answers to these and other questions about human traits lie partially in our DNA. The mission of 23andMe is to provide individuals access to their personal genetic data with the goal of unraveling some of these puzzles of inheritance.<sup>21</sup>

Nature makes humans similar and different. But the real essences that are the causes of human variability can be discovered through the analysis of personal genetic data.

So, the leap here is the same as it was for Fisher: there is the hope that enough of the subjectively interesting aspects of human variability can be analyzed as quantitative characteristics. Consider thus 23andMe's effort "to further our understanding of the genetics of musicality." Musicality is treated as a composite construct formed by weighting a set of quantitative measures: "self-reported beat synchronization ability . . . and objectively measured rhythm discrimination" as well as starting age of playing music, amount of musical practice, a psychometric measure of flow proneness.<sup>22</sup> Rhythm discrimination, for instance, appears to be mediated by assortative mating in certain Scandinavian populations.

But what is perhaps most innovative about 23andMe's social philosophy is the construction of a set of novel identity categories that are, by design, quantitative characteristics. Rather than trying to discover a set of historically independent identity categories that are also quantitative characteristics, 23andMe has developed its own inventory. These categories resemble identity categories that are ethnographic common knowledge in many Western societies; technically, they refer only to reference populations for the purpose of calibrating models that predict ancestry from samples of DNA. But they mostly take the names of either contemporary political groupings or commonly known ethnic groups. To determine someone's ancestry, a sample of that individual's DNA is projected into these social categories using an SVM algorithm. The social categories are nested, as depicted in figure 1.1.<sup>23</sup>

A person's ancestry is some combination of the outermost cells, adding up to 1 or 100 percent, so someone could be 47 percent "Arabia," 41 percent "Melanesia," and 12 percent "Kerala." The implied invitation here is straightforward: since the genetic information is categorized using the 23andMe social categories, so, too, presumably, is the person who supplied the genetic



FIGURE 1.1. Early (ca. 2014) 23andMe reference categories. Image created by the author.

information—if, that is, they begin to treat the 23andMe social categories as identity categories.

#### IDENTITY CATEGORIES, QUANTITATIVE CHARACTERISTICS, REAL ESSENCES, AND NOMINAL ESSENCES

But why would anyone want to do this? I suggest that one plausible explanation is the belief that science discovers real essences that explain nominal essences.<sup>24</sup> “Being scientific” is central to 23andMe’s public identity, and so one gloss on 23andMe’s occasional marketing slogan—that they offer clients a way to “know your personal story, in a whole new way”—is that 23andMe can provide you

with the real essences (by categorizing a sample of your genes) that explain the nominal essences that you may identify with—specifically, any of your own preexisting identity categories that coincide with at least some members of a set of 23andMe social categories that is projected from 23andMe’s categorization of your genes.

Note that this works so long as users of 23andMe’s services are prepared to make a similar leap that Fisher makes in expanding his concept of quantitative characteristics. Almost anything can be measured using a quantitative scale or instrument, and there is no reason why some large groups of people could not identify with social categories that are, technically, quantitative characteristics. But in fact, most people do not do this. Most—probably all—of the social categories that become identity categories are nominal categories in the sense of levels of measure.<sup>25</sup> They are not, that is to say, technically, quantitative characteristics—that is, variables that take either integers or real numbers as values and that can therefore be subject to mathematical operations.

The argument for this takes us back to Roustam. The elements of Roustam’s social identity include the nominal categories (“nominal essences”) French, Georgian, Armenian, and mamluk. None of these are quantitative characteristics: it makes no sense to express these social categories using scales built from rational or real numbers. Roustam was not 47 percent French and 41 percent Georgian and 12 percent Armenian. Instead, as his autobiography celebrates, these categories are nonexclusively aggregative over the course of his life’s history. Becoming French made Roustam no less and no more mamluk and no less and no more Georgian.

So there is a gap between 23andMe’s social categories and the identity categories for most people. Genetic categories might be the real essences for the former, but they are not automatically real essences for the latter.

Indeed, we can briefly examine the three metaphysical options for linking between 23andMe’s genetic categories and people’s (usually preexisting) identity categories as a way of strengthening this observation, for what this examination shows is that the metaphysics of the relevant categories will not close this gap. Thus, let  $R$  be the set of “real essences” that is given by 23andMe’s categorization of a sample of genetic information, and let  $N$  be the set of “nominal essences” that expresses the set of identity categories for the same person from which the genetic sample was drawn. ( $N$  is therefore not the social categories that 23andMe projects a sample of genetic information into.)

The strongest relationship between  $N$  and  $R$  is that of identity, such that  $N$  reduces to  $R$  because  $N = R$ .<sup>26</sup> We can ignore this because the number of categories in the  $R$  for 23andMe is vastly fewer than the number of categories in any person’s  $N$ . The residual  $N$ s would be left unexplained. But as a technical matter, a nominal category cannot be mathematically or logically identical to an interval or a ratio measure.

The same observation rules out a slightly weaker metaphysical connection—namely, the assumption that  $N$  and  $R$  have the same formal structure.<sup>27</sup> Technically, real-world identity categories are aggregative without being additive: when

an Armenian moves to France, they do not thereby become proportionally less Armenian and more French; they are, sooner or later, both Armenian and French. But the 23andMe social categories do not behave this way: if we somehow splice new genes into someone's genome that map into certain 23andMe social categories, this would cause a proportional decrease in the percentages of the other 23andMe social categories.

The only remaining metaphysical assumption about the relationship between *N* and *R* is that *R* is the cause of the various *Ns*.<sup>28</sup> But these *Rs* are either just too far in the past or too few in kind to be the causes of most of the relevant *Ns*—that is, the many different social categories that people come to identify with.

So, why would someone think that 23andMe's social categories are relevant to their identity, as Anne Wojcicki appears to hope? It seems, perhaps ironically, that, if it is part of one's identity "to be scientific" and this is taken to mean that it is important to try to discover the real essences that explain the nominal essences that are one's identity categories, then 23andMe has something to offer. They can provide an origin story a bit like Plato's myth for anyone with such a scientific orientation: they provide a set of (novel) social categories that some people can choose to identify with.

#### CONCLUSION: PEOPLE ARE NOT LIKE METALS

At this point, we can leave science and return to ethics. People are not like metals—just so long as they do not adopt epistemological values that lead them to internalize as identity categories *only* categories that are, technically, quantitative characteristics that can be defined or explained genetically, and where the explanation comes from a source with sufficient scientific authority.

This is why it matters that we see the principle of Lockean ambiguity as an important moral imperative. Construed this way, it functions as a guardrail against trying to discover the real essences that somehow account for or explain human social categories. This is not the same as saying that these categories cannot be explained scientifically, of course. History, anthropology, sociology, folklore, and religious practice are all sources of science or science-like knowledge about these categories. The technical point is that treating Lockean ambiguity about social categories as a moral imperative prevents us from trying to explain away social diversity by reducing it to something else.

People are not metals; thus, it does not make sense to ask what they purely are, when this is a question about what a person's "real essence" is, asked because of some kind of concern about what social categories a person can be or should be included within. It is a moral error to ask whether Roustam was really Armenian or Georgian or mamluk or French—a moral mistake, that is, to search for some real essence that can explain what nominal categories "really" were his to identify with.

## NOTES

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