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Generations of philosophers have argued that all human beings are essentially the same, that is, they share the same nature, and that this essential similarity is extremely important. Periodically philosophers have proposed to base the essential sameness of human beings on biology. In this paper I argue that if 'biology' is taken to refer to the technical pronouncements of professional biologists, in particular evolutionary biologists, it is simply not true that all organisms that belong to *Homo sapiens* as a biological species are essentially the same. If 'characters' is taken to refer to evolutionary homologies, then periodically a biological species might be characterized by one or more characters which are both universally distributed among and limited to the organisms belonging to that species, but such states of affairs are temporary, contingent, and relatively rare. In most cases, any character universally distributed among the organisms belonging to a particular species is also possessed by organisms belonging to other species, and conversely any character that happens to be limited to the organisms belonging to a particular species is unlikely to be possessed by all of them.

The natural move at this juncture is to argue that the properties which characterize biological species at least "cluster." Organisms belong to a particular biological species because they possess enough of the relevant properties or enough of the more important relevant properties. Such unimodal clusters do exist, and might well count as 'statistical natures,' but in most cases the distributions that characterize biological species are multimodal, depending on the properties studied. No matter how desperately one wants to construe biological species as natural kinds characterizable by some sort of "essences" or "natures," such multimodal distributions simply will not do. To complicate matters further, these clusters of properties, whether uni- or multi-modal, change through time. A character state (or allele) which is rare may become common, and one that is nearly universal may become entirely eliminated. In short, species evolve, and to the extent that they evolve through natural selection, both genetic and phenotypic variation are essential. Which particular variations a species exhibits is a function of both the fundamental regularities which characterize selection processes and numerous historical contingencies. However, variation as such is hardly an accidental characteristic of biological species. Without it, evolution would soon grind to a halt. *Which* variations characterize a particular species is to a large extent accidental; *that* variation characterizes species as such is not.

The preceding characterization depends on the existence of a criterion for individuating species in addition to character covariation. If species are taken to be the things which evolve, then they can and must be characterized in terms of ancestor-descendant relations,

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and in sexual species these relations depend on mating. The organisms that comprise sexual species form complex networks of mating and reproduction. Any organism that is part of such a network belongs to that species even if the characters it exhibits are atypical or in some sense aberrant. Conversely, an organism that happens to exhibit precisely the same characters as an organism belonging to a particular species might not itself belong to that species. Genealogy and character covariation are not perfectly coincident, and when they differ, genealogy takes precedence. The priority of genealogy to character covariation is not negated by the fact that species periodically split or bud off additional species. To the extent that speciation is 'punctuational,' such periods will be short and involve only a relatively few organisms, but inherent in species as genealogical entities is the existence of periods during which particular organisms do not belong unequivocally to one species or another. *Homo sapiens* currently is not undergoing one of these periods. The genealogical boundaries of our species are extremely sharp. The comparable boundaries in character space are a good deal fuzzier. As a result, those who view character covariation as fundamental and want our species to be clearly distinguishable from other species accordingly are forced to resort to embarrassing conceptual contortions to include retardates, dyslexics, and the like in our species while keeping bees and computers out.

The preceding observations about species in general and *Homo sapiens* in particular frequently elicit considerable consternation. Biological species cannot possibly have the characteristics that biologists claim that they do. There *must* be characteristics which all and only people exhibit, or at least *potentially* exhibit, or which all *normal* people exhibit -- at least potentially. I continue to remain dismayed at the vehemence with which these views are expressed in the absence of any explicitly formulated biological foundations for these notions. In this paper I argue that biological species, including our own, do have the character claimed by evolutionary biologists and that attempts to argue away this state of affairs by reference to "potentiality" and "normality" have little if any foundation in biology. Perhaps numerous ordinary conceptions exist in which an organism that lacks the genetic information necessary to produce a particular enzyme nevertheless possesses this enzyme potentially. I am equally sure that there are conceptions of normality according to which worker bees are abnormal. But these ordinary conceptions have no foundation in biology as a technical discipline. To make matters even worse, I do not see why the existence of human universals is all that important. Perhaps all and only people have apposable thumbs, use tools, live in true societies, or what have you. I think that such attributions are either false or vacuous, but even if they were true and significant, the distributions of these particular characters is largely a matter of evolutionary happenstance. I for one would be extremely uneasy to base something as important as human rights on such temporary contingencies. Given the character of the evolutionary process, it is extremely unlikely that all human beings are essentially the same, but even if we are, I fail to see why it matters. I fail to see, for example, why we must all be essentially the same to have rights.

To repeat, in my discussion of human nature, I am taking 'human' to refer to a particular biological species. This term has numerous other meanings which have little or nothing to do with DNA, meiosis, and what have you. Nothing that I say should be taken to imply anything about ordinary usage, commonsense conceptions, or what 'we' are inclined to say or not to say. In particular I am not talking about 'persons.' The context of this paper is biology as a scientific discipline. Within biology itself several different species concepts can also be found. I am concerned only with those doctrines which claim to be based on the nature of *Homo sapiens* as a biological species. Those authors who are not interested in what biologists have to say about biological species or who are content with conceptual pluralism for the sake of conceptual pluralism will find nothing of interest in this paper.

1. Universality and Variability

All concepts are to some extent malleable and data can always be massaged, but in some areas both activities are more narrowly constrained than in others. For example, it is much

harder to argue for genetic than for cultural universals because the identity of alleles is easier to establish than the identity of cultural practices. However, if biological species are characterized by a particular sort of genetic variability, then one might be justified in exposing claims that cultural traits are immune to a similar variability to closer scrutiny. I certainly do not mean to imply by the preceding statement that I think that cultural variability is in any sense caused by genetic variability. Rather, the reason for introducing the topic of genetic variability is that geneticists have been forced to acknowledge it in the face of considerable resistance, the same sort of resistance that confronts comparable claims about cultural variability. If there are any cultural universals, one of them is surely a persistent distaste for variability. But if genetic variability characterizes species even though everyone is absolutely certain that it does not, then possibly a similar variability characterizes cultures even though the parallel conviction about cultures is, if anything, stronger.

For example, Kaplan and Manners remark that a "number of anthropologists have even attempted to compile lists of universal cultural characteristics. Presumably such cultural universals reflect in some sense the uniform psychological nature of man. But the search for cultural universals has invariably yielded generalizations of a very broad, and sometimes not particularly illuminating nature -- such as, all cultures prefer health to illness; or, all cultures make some institutional provision for feeding their members; or, all cultures have devices for maintaining internal order." (1972, p. 151). Massive evidence can be presented to refute the claim that all human beings have essentially the same blood type. A parallel response to the claim that all cultures prefer health to illness is more difficult because of the plasticity of such terms as 'health' and 'illness.' My argument is analogical. Both population geneticists and anthropologists have been strongly predisposed to discount variability. Genetics is sufficiently well developed that geneticists have been forced to acknowledge how variable both genes and traits are, both within species and between them. The social sciences are not so well developed. Hence, it is easier for them to hold fast to their metaphysical preferences.

One reason for anthropologists searching so assiduously for cultural universals is the mistaken belief that some connection exists between universality and innateness. For example, in a paper on the *human* nature of human nature, Eisenberg states that "one trait common to man everywhere is language; in the sense that only the human species displays it, the capacity to acquire language must be genetic." (1972, p. 126). In the space of a very few words, Eisenberg elides from language being common to man everywhere (universality), to the capacity to acquire language being unique to the human species (species specificity), to its being genetic. Human language is not universally distributed among human beings. Some human beings neither speak nor understand anything that might be termed a 'language.' In some sense such people might not be 'truly' human, but they still belong to the same biological species as the rest of us. Among these people, some may be incapable of acquiring language because they lack the necessary neural equipment, and in some cases this state of affairs is straightforwardly genetic. They are potential language users in the sense that if they had a different genetic make-up and were exposed to the appropriate sequences of environments, then they would have been able to acquire language skills similar to those possessed by the rest of us. But this same contrary-to-fact conditional can be applied to other species as well. In this same sense, chimpanzees possess the capacity to acquire language.

Conversely, any attempt to define language use in such a way as to exclude the abilities of other species results in even a larger percentage of the human race being denied this capacity as well. But regardless of the actual distribution of language use or the capacity for language use, nothing is implied about any 'genetic basis' for language capacity. Blood type in human beings is about as genetic as any trait can be and yet it is extremely variable. Blood type can be made universal among human beings only by defining it in terms of having some blood type or other -- a disjunctive character. For example, at the ABO locus,

four different types exist: A, B, AB, and O. Hence, all people have the same blood-type at this locus just in case they have one of these types. If one of these alleles were to be lost or another to crop up, the disjunction need only be contracted or expanded accordingly. This strategy is universality made easy. However, it should be noted that even if this all-purpose strategy were adopted, these disjunctively-characterized traits have a temporal dimension.

Except in the preceding vacuous sense, blood type in human beings is anything but universal. Different people have different blood types, and the combinations of these blood types vary in different populations. An allele which is common in one population may be rare in another, and vice versa. But, one might complain, there must be some blood type which is at least prevalent among the human race. Sometimes certain alleles are widely distributed. In other cases no allele even reaches the fifty percent level. At the ABO locus the frequencies are A (.447), B (.082), AB (.034), and O (.437) among the white population in England. However, at the MNS locus for this same population, the frequency of the most common genotype is only .260. Of course, these frequencies are quite different in other populations, such as Basques and Navahos. Yet blood types is as genetic as any trait can get.

To complicate matters even further, the allelic frequencies at the dozen or so loci known to influence blood type vary independently of each other. Given the most common genotype at each of these loci, only one-fifth of one percent of the world's population is likely to possess the most common genotype at all of these loci (Lewontin 1982). In short, if blood type has anything to do with human nature, only one person in 500 is truly human. However, blood type is hardly the sort of character which advocates of human nature are likely to emphasize. In order to be human, people must be capable of rationality, lying, feeling guilty, laughing, etc. And *these* characters are both unique to and universally distributed among human beings. Once again, our application of these terms tends to be so selective that it is impossible to say. Those who insist on the uniqueness of humankind dismiss anything that organisms belonging to other species do or do not do with considerable ease. Although an ape might succeed in solving problems that many human beings cannot solve, in no way can these primates be said to 'think.' The traits (and genes) which characterize all species save our own vary statistically. For some reason those characters which make us what we truly are happen to be universally distributed among all members of our species (at least potentially among normal human beings) and absent in all other species. I find this coincidence highly suspicious.

One reason for insisting on the existence of cultural universals is the mistaken belief that universally distributed characters are liable to have a more determinate genetic basis than those that are distributed in more complex patterns. Another is the desire to formulate laws using these cultural universals. Kinds are easy enough to come by. The difficult task is to discover kinds which function in natural regularities. Even if we grant anthropologists their cultural universals, nothing yet has come of them. In response to the preceding sorts of considerations, Gould complains of "our relentless search for human universals and our excitement at the prospect that we may thereby unlock something at the core of our being." (1986, p. 68). If evolutionary theory has anything to teach us it is that variability is at the core of our being. Because we are a biological species and variability is essential to biological species, the traits which characterize us are likely to vary, our own essentialist compulsions notwithstanding (see also Dupré 1986).

To repeat, some properties may characterize all human beings throughout the existence of our species. After all, we all have some mass or other, but possessing mass can hardly fulfill the traditional functions assigned to human nature because it characterizes all species, not just our own. Some traits may also be unique to our species at the moment, though possibly not universal. For example, we can successfully mate only with other human beings, although a surprisingly high percentage of human beings are sterile. They cannot been able to mate successfully with an organism belonging to another species. Some

mate with other members of our own species. But for several million years, no one has combination or combinations of traits must be responsible for this reproductive gap. But once again, these traits are not likely to fulfill the traditional functions of human nature. If all and only human beings were able to digest Nutrasweet, this ability would still not be a very good candidate for the property which makes us peculiarly human.

2. Potentiality and Normality

Most phenotypic traits are highly variable both within and between species. In some species there is more intraspecific variation than interspecific variation. Reverting to the genetic level does not help. In fact, it only reaffirms the preceding observations. Zebras and horses look very much alike, but genetically they are quite different. Human beings and chimpanzees look quite different, but genetically we are almost identical. On one estimate, 30% of the genes at loci which code for structural genes in human beings are polymorphic, and in any one individual roughly 7% of the loci are heterozygous, while human beings differ from chimpanzees at only 3% of loci. The usual response to these and other observations about patterns of phenotypic and genetic variability within and between species is to discount them. What do biologists know about biology? Organisms that lack a particular trait actually possess it potentially or else are abnormal for not possessing it.

Sometimes the claim that an organism which lacks a trait nevertheless possesses the capacity for such a trait makes sense. Reaction norms are frequently quite broad. In a variety of environments organisms with a particular genotype exhibit character C, in others C', in others, C", and so on. They have what it takes to exhibit any one of these character states depending on the environments which they confront. For example, on rare occasions children are raised in near total social isolation until adulthood. As a result they cannot speak or understand any human language, nor can they at this late date be taught one. At one time they had the potentiality for language use but now lack it. On equally rare occasions babies are born with little in the way of a cerebrum. If there is a significant sense in which they nevertheless retain the potentiality for language use, it eludes me. Perhaps such unfortunates are not persons, but they belong unproblematically to *Homo sapiens* as a biological species. Similar observations hold for every other characteristic suggested for distinguishing human beings from other species, whether that characteristic be biochemical, morphological, psychological, social or cultural. In this respect rationality is no different from apposable thumbs.

The more usual way to discount the sort of variation so central to the evolutionary process is to dismiss it as "abnormal." Normality is a very slippery notion. It also has had a long history of abuse. Responsible authorities in the past have argued in all sincerity that other races are degenerate forms of the Caucasian race, that women are just incompletely formed men, and that homosexuals are merely deviant forms of heterosexuals. The normal state for human beings is to be white, male heterosexuals. All others do not participate fully in human nature. That white, male heterosexuals make-up only a small minority of the human race did not give these authorities pause. But the failings of past generations are always easier to see than our own. Few responsible people today are willing to argue in print that blacks are abnormal whites or that women are abnormal men, but it seems quite natural to most of us to consider homosexuals abnormal heterosexuals. Heterosexuality is the normal state programmed into our genes. It needs no special explanation. Normal genes in a wide variety of normal environments lead most children quite naturally to prefer members of the opposite sex for sexual and emotional partners. Homosexuality, to the contrary, is an abnormal deviation which needs to be explained in terms of some combination of defective genes and/or undesirable environments. Such a view is central to several present-day psychological theories. Certainly nothing that a biologist might say about reaction norms, heterozygote superiority or kin selection is liable to dislodge the

deeply held intuitions upon which these theories are based -- and this is precisely what is wrong with deeply held intuitions.

However, just because a particular notion has been abused in the past, it does not follow that it totally lacks substance. As much of a curse as racism has been and continues to be, biologists are unable to characterize the human species as a homogeneous whole. As a biological species we are seamless but not homogeneous. Various groups of people at a variety of levels of generality exhibit statistical differences. *Homo sapiens* is polytypic. Even so, perhaps one or more biologically respectable notions of "normality" and "abnormality" might be discoverable. The three most common areas of biology in which one might find a significant sense of these notions are embryology, evolutionary biology, and functional morphology.

From conception until death, organisms are exposed to sequences of highly variable environments. The phenotype exhibited by an organism is the result of successive interactions between its genes, current phenotypic make-up and successive environments. The reaction norm for a particular genotype is all possible phenotypes that would result given all possible sequences of environments in which the organism might survive. Needless to say, biologists know very little about the reaction norms for most species, our own included. To estimate reaction norms, biologists must have access to numerous genetically identical zygotes and be able to raise these zygotes in a variety of environments. When they do, the results are endlessly fascinating. Some reaction norms are very narrow, i.e., in any environment in which the organism can develop, it exhibits a particular trait and only that trait. Sometimes reaction norms turn out to be extremely broad. A particular trait can be exhibited in a wide variety of states depending on the environments to which the organism is exposed. Sometimes a reaction norm starts off broad but rapidly become quite narrow. Some reaction norms are continuous; others disjunctive. Sometimes most organism occupy the center of the reaction norm; sometimes they are clustered at either extreme, and so on. Everything that could happen, in some organism or other does happen.

In spite of all the preceding, the conviction is sure to remain that in most cases there must be some normal developmental pathway through which most organisms develop or would develop if presented with the appropriate environment, or something. But inherent in the notion of a reaction norm is alternative pathways. Because environments are so variable in both the short and long term, developmental plasticity is absolutely necessary if organisms are to survive to reproduce. Any organism that can fulfill a need in only one way in only a narrowly proscribed environment is not likely to survive for long. Although there are a few cases in which particular species can fulfill one or two functions in only highly specialized ways, both these species and their specialized functions are relatively rare.

But, one might complain, there *must* be some significant sense of "normal development." There is a fairly clear sense of "normal development," but it is not very significant. As far as I can see, all it denotes is that developmental pathway with which the speaker is familiar in recent, locally prevalent environments. We find it very difficult to acknowledge that a particular environment which has been common in the recent past may be quite new and 'aberrant' given the duration of the species under investigation. Throughout most of its existence, a species may have persisted in very low numbers and only recently boomed to produce high population density, and high population density might well switch increasing numbers of organisms to quite different developmental pathways. During this transition period, we are likely to look back on the old pathway as "normal" and decry the new pathway as "abnormal," but as we get used to the new alternative, just the opposite intuition is likely to prevail. Although the nuclear family is a relatively new social innovation and is rapidly disappearing, to most of us it seems "normal." Any deviation from it is sure to produce humanoids at best.

From the evolutionary perspective, all alleles which we now possess were once more than just rare: they were unique. Evolution is the process by which rare alleles become common, possibly universal, and universally distributed alleles become totally eliminated. If a particular allele must be universally distributed among the organisms belonging to a particular species (or at least widespread) in order to be part of its 'nature,' then natures are very temporary, variable things. From the human perspective, evolutionary change might seem quite slow. For example, blue eyes have existed in the human species from the earliest recorded times, and yet less than 1% of the people who belong to the human species have blue eyes. Because people with blue eyes can see no better than people with brown eyes, one plausible explanation for the increase of blue eyes in the human population is sexual selection. It might well take thousands of generations for a mutation to replace what was once termed the 'wild-type' and become the new 'wild type.' Early on one allele will surely be considered natural, while later on its replacement will be held with equal certainty to be natural. Human memory is short. From the evolutionary perspective, claims about "normal" genes tend to be sheer prejudice arising from limited experience.

If by 'human nature' all one means is a trait which happens to be prevalent and important for the moment, then human nature surely exists. Each species exhibits adaptations, and these adaptations are important for its continued existence. One of our most important adaptations is our ability to play the knowledge game. It is important that enough of us play this game well enough because our species is not very good at anything else. But this adaptation may not have characterized us throughout our existence and may not continue to characterize us in the future. Biologically we will remain the same species, the same lineage, even though we lose our "essence." It should also be kept in mind that some non-humans play the knowledge game better than some humans. If those organisms that are smarter than some people are to be excluded from our species while those people who are not all that capable are kept in, something must be more basic than mental ability in the individuation of our species. Once again, I am discussing *Homo sapiens* as a biological species, not personhood. Although in a higher and more sophisticated sense of 'human being' retardates are not human beings, from the crude and pedestrian biological perspective, they are unproblematically human.

The central notion of normality relative to human nature, however, seems to be functional. When people dismiss variation in connection with human nature, they usually resort to functional notions of normality and abnormality. Perhaps someone has produced a minimally adequate analysis of 'normal function,' but I have yet to see it. As the huge literature on the subject clearly attests, it is difficult enough to give an adequate analysis of 'function,' let alone 'normal function.' In general, structures and functions do not map neatly onto each other, nor can they be made to do so. A single structure commonly performs more than one function, and conversely, a single function can be fulfilled by more than one structure. If one individuates structures in terms of functions and function in terms of structures, then the complex mapping of structures and functions can be reduced, possibly eliminated, but only at considerable cost. For example, no matter how one subdivides the human urogenital system, there is no way to work it out so that a particular structure is used for excretion and another structure is used for reproduction. No amount of gerrymandering succeeds without extreme artificiality. Nor has anyone been able to redefine functional limits so that excretion and reproduction turn out to count as a single function.

Like it or not, a single structure can perform more than one function, and one and the same function can be performed by more than one structure. Nor is this an accidental feature of organisms. In evolution, organisms must make do with what they've got. An organ evolved to perform one function might be commandeered to perform another. For example, what is the normal function of the hand? We can do many things with our hands. We can drive cars, play the violin, type on electronic computers, scratch itches, masturbate, and strangle one another. Some of these actions may seem normal; others not, but there is

no correlation between comonsense notions of normal functions and the functions which hands were able to fulfill throughout our existence. Any notion of 'the function of the hand' which is sufficiently general to capture all the things that we can do with our hands is likely to be all but vacuous and surely will make no cut between normal and abnormal uses. About all a biologist can say about the function of the human hand is that anything that we can do with it is 'normal.' A more restricted sense of normality must be imported from common sense, society, deeply held intuitions, or systems of morals. Some might argue that this fact merely indicates the poverty of the biological perspective. If so, so be it, but this is the topic of my paper.

A few additional examples might help to see the huge gap that exists between biological senses of 'function' and the various senses of this term as it is used in other contexts. A major topic in the biological literature is the function of sexual reproduction. What is the function of sex? The commonsense answer is reproduction, but this not the answer given by biologists. Biologically, first and foremost, the primary function of sex is to increase genetic heterogeneity. "But that is not what I mean! When I say that the biological function of sex is reproduction, I do not mean 'biological' in the sense that biologists use this term but in some other, more basic sense." Is being sexually neuter functionally normal? Well, it is certainly normal among honey bees. Most honey bees are neuter females. Many species, especially social species, exhibit reproductive strategies that involve some organisms becoming non-reproductives. What counts in biological evolution is inclusive fitness. It is both possible and quite common for organisms to increase their inclusive fitness by not reproducing themselves. "But I am talking about human beings, not honey bees." From the perspective of commonsense biology, human non-reproductives such as old maids and priests may be biologically abnormal, but from the perspective of professional biology, they need not be.

Finally, having blue eyes is abnormal in about every sense one cares to mention. Blue-eyed people are very rare. The inability to produce brown pigment is the result of a defective gene. The alleles which code for the structure of the enzyme which completes the synthesis of the brown pigment found on the surface of the human iris produce an enzyme which cannot perform this function. As far as we know, the enzyme produced performs no other function either. However, as far as sight is concerned, blue eyes are perfectly functional, and as far as sexual selection is concerned downright advantageous. What common sense has to say on these topics, I do not know. My own commonsense estimates about what 'we' mean when 'we' make judgments on such topics depart so drastically from what analytic philosophers publish on these topics that I hesitate to venture an opinion lest I mark myself as being linguistically abnormal.

3. Conclusion

Because I have argued so persistently for so long that particular species lack anything that might be termed an 'essence,' I have gotten the reputation of being totally opposed to essentialism. To the contrary, I am rather old fashioned on this topic (see Dupré 1986 for a more contemporary view). In fact, I think that natural kinds do exist and that they exhibit characters which are severally necessary and jointly sufficient for membership. More than this, I think that it is extremely important for our understanding of the natural world that such kinds exist. All I want to argue is that natural kinds of this sort are very rare, extremely difficult to discover, and that biological species as evolving lineages do not belong in this category. Just because one thinks that species are not natural kinds, it does not follow that one is committed to the view that there are no natural kinds at all. One misplaced example does not totally invalidate a general thesis.

In fact I think that the species category might very well be a natural kind and that part of its essence is variability. If variability is essential to species, then it follows that the human

species should be variable, both genetically and phenotypically, and it is. That *Homo sapiens* exhibits considerable variability is not an accidental feature of our species. Which particular variations we exhibit is largely a function of evolutionary happenstance; the presence of variability itself is not. Nor does it help to switch from traditional essences to statistically characterized essences. If the history of phenetic taxonomy has shown anything, it is that organisms can be subdivided into species as Opertional Taxonomic Units in indefinitely many ways if all one looks at is character covariation. Compared to many species, our species is relatively isolated in character space. Perhaps a unimodal distribution of characters might be found which succeeds in placing all human beings in a single species and in keeping all non-humans out. If so, this too would be an evolutionary happenstance and might well change in time.

But why is it so important for the human species to have a nature? One likely answer is to provide a foundation for ethics and morals. If one wants to found ethics on human nature and human nature is to be at least consistent with current biological knowledge, then it follows that the resulting ethical system will be composed largely of contingent claims. The only authors of whom I am aware who acknowledge this state of affairs and are still willing to embrace the consequences that flow from it are Michael Ruse and E. O. Wilson. Ruse and Wilson propose to base ethics on the epigenetic rules of mental development in human beings. They acknowledge that these rules are the "idiosyncractic products of the genetic history of the species and as such were shaped by particular regimes of natural selection... . It follows that the ethical code of one species cannot be translated into that of another. No abstract moral principles exist outside the particular nature of individual species." (1986, p. 186).

Although Ruse and Wilson are willing to grant that morality is "rooted in contingent human nature, through and through," they argue that morals are not relative to the individual human being because human cultures "tend to converge in their morality in the manner expected when a largely similar array of epigenetic rules meet a largely similar array of behavioural choices. This would not be the case if human beings differed greatly from one another in the genetic basis of their mental development." (1986, pp. 186, 188). The number of genes which influence our mental development have to be at least as large as those that determine blood type. Unless there is evidence to the contrary, the most reasonable hypothesis is that the same sort of variability and multiplicity that characterizes the genes which code for blood type also characterize those genes which code for our mental development. However, perhaps the genetic basis for mental development is a happy exception. Perhaps we all do possess a largely similar array of epigenetic rules based on largely similar genetic make-ups. If so, this too is an accident of our recent evolutionary history, and once again ethics is being based on an evolutionary contingency. Ruse and Wilson agree. Because their view is empirical, they "do not exclude the possibility that some differences might exist between large groups in the epigenetic rules governing moral awareness." (1986, p. 188).

Although I feel uneasy about founding something as important as ethics and morality on evolutionary contingencies, I must admit that none of the other foundations suggested for morality provides much in the way of a legitimate sense of security either. But my main problem is that I do not see the close connection which everyone else sees between character distributions, admission to the human species, and such things as human rights. Depending on what clustering technique one uses, the human species can be subdivided into a variety of 'races.' Roughly fifty percent of human beings are male and fifty percent female. The number of intersexes is quite small. Estimates of the percentage of human beings who engage in sexual activity and pair bond exclusively or primarily with members of their own sex vary from five to ten percent. These percentages may vary from society to society and from time to time. I do not see that it matters. All the ingenuity which has been exercised trying to show that all human beings are essentially the same might be better used trying to

explain why we must all be essentially the same in order to have such things as human rights. Why must we all be essentially the same in order to have rights? Why cannot people who are essentially different nevertheless have the same rights? Until this question is answered, I remain suspicious of continued claims about the existence and importance of human nature.

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