

ARGUMENTS FROM NATURE

by *Ronald de Sousa*

The first duty in life is to be as artificial as possible.

Oscar Wilde

“No Thank you. I don’t think Nature intended us to drink while flying.”

New Yorker Cartoon

One truth is clear: whatever is, is right.

Alexander Pope

L’homme n’est que ce qu’il devient: vérité profonde.
L’homme ne devient que ce qu’il est: vérité plus profonde
encore?

Alain

SOME PRELIMINARY BOTANY

“It’s good because it’s natural.” This argument, which apparently entitles health food stores to charge more for organic vegetables, is also found in Aristotle: “What is by nature proper to each thing will be at once the best and the most pleasant for it.”¹ I will call it the positive naturalist argument.

The negative naturalist argument is the one offered by the Catholic Church (and others) against buggery or contraception: “It’s bad because it’s unnatural.”

The two arguments are independent. You could believe that what is natural is to be commended while being quite indifferent about the unnatural, or conversely. But both are “naturalist” in preferring the natural to the unnatural. In this they contrast with corresponding variants of antinaturalism.

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A negative antinaturalist argument is offered by Katharine Hepburn to Humphrey Bogart in *The African Queen*: "Nature, Mr. Alnut, is what we were put in the world to rise above." This conception of a corrupt nature is also honored in the Christian tradition. Some atheists like Arthur Schopenhauer have agreed that "man is at bottom a savage, horrible beast"; and perhaps something like the badness of nature is involved in the argument from evil against atheism.²

The positive antinaturalist argument also has a tradition behind it, though not such an influential one. It is represented by the aestheticism of Oscar Wilde and Joris Karl Huysmans's *Against Nature*.³

That all these positions actually have been held suggests that either humans are naturally perverse or a number of different conceptions of nature are involved.⁴ At least the latter is true. Nature has been contrasted with the human, the learned, the cultural, the social, the artificial. But in its most general meaning it contrasts only with what is not: The natural is merely the factual.

In this last sense most of us were brought up to think no argument from nature (AN) valid. Ironically it is a small step from this view to the construction of a new kind of AN: "It's natural; therefore it's neither good nor bad." On this view nothing in the world has intrinsic value: Good or bad is mere projections of our will onto the morally inert screen of natural fact.⁵ But though the step is small it is fallacious. From the invalidity of naturalist and antinaturalist arguments (call it weak neutralism), it does not follow that no fact of nature has intrinsic value (strong neutralism.) The fallacy is the obvious one of going to $(p \rightarrow \sim q)$ from $\sim (p \rightarrow q)$. Yet the weak doctrine is a powerful motive for the strong, for epistemologically they are equivalent: If we cannot argue from fact to value, what remains to ground judgments of value but the pure subjective will?

A value judgment must be grounded in something, and, as Socrates might add, in something that is, not something that is not. At the very least, the widely adopted maxim that "ought" implies "can" requires that we discover what is "humanly possible." This brings in another common pattern of AN: "It's impossible, so we shouldn't try it," or "You can't change human nature." Call this the negative argument from impossibility. It has acquired a rather bad press, for in practice what those who use this argument generally mean by "nature" is the status quo. It is rare that something is positively known to be impossible, surprisingly enough to be news fit to print. So this argument finds an obvious home in dubious propaganda. But when it really is known to be true, as well as surprising, that something is impossible, then this pattern of argument constitutes one clearly valid form of AN. For

example: "Perpetual motion machines are impossible, so don't waste your time trying to construct one." So it is to be expected that arguments of this form will be popular at those periods (from the eighteenth century on) when science seems to have provided some novel and unshakable insight into human nature. But though all ANs aspire to the condition of this impossibility pattern, few attain it. The very improbable is not enough: "Ought" does not imply "is not unlikely to succeed."

Quite the opposite, in fact: It has been held, apparently, that "unlikely to succeed implies ought." Or so I interpret Sir Edmund Hillary's explanation of why he climbed Everest. The Vesuvius, after all, was there too. We might label this the positive argument from possibility. Whether this and the negative argument from impossibility are to be classed as naturalist I leave the reader to decide. A positive argument from impossibility ("try because it is impossible, and not merely very difficult") is exemplified perhaps by Tertullian's "Credo quia absurdum" and by Albert Camus's "Sisyphean" ethics. And to complete our botanizing, we might list as the negative argument from possibility the view—perhaps at least this is one that has never been held—that whatever is possible is not worth attempting.

THE IMPOSSIBILITY OF RATIONAL ETHICS

Any ethics must posit a ground of preference between possible alterations of the status quo. The very concept of an action necessarily requires at the outset two conceptions of nature, for, as John Stuart Mill put it, "while human action cannot help conforming to nature in one meaning of the term, the very aim and object of action is to alter and improve nature in the other meaning."⁶ But neither of these conceptions of nature is one from which we can seek guidance. So it seems we need three concepts of nature, as follows: Nature₁ (the status quo, or the condition of the world as it subsequently would be without the intervention of human beings, or of a given agent); nature₂ (whatever is a fact, without counterfactual qualification); nature₃ (that subset of N_1 and N_2 that contains the reasons for preferring a particular difference between them). Now it cannot be merely arbitrary, for a rational ethics, that some r is a reason for preferring A to B . It must be a fact. So N_2 will contain the differences between N_1 and N_2 as well as the reasons for preferring some such differences to others. But if so N_2 must contain all hypothetical facts about N_1 too; in other words N_2 must contain all practically accessible possible worlds. "All possible worlds lie within the actual one," and N_2 must include N_1 , Mill's "other meaning."⁷ But on what basis are we to select the members of

N_3 ? By hypothesis, N_3 contains all the facts that constitute reasons for preferences. It presupposes itself, so a rational ethics is impossible.

The problem is quite general. It affects antinaturalists no less than naturalists. To those that would fight nature or improve on her the aspiration to do so—even if divinely inspired—is also a fact about humans, something contained in N_2 . And they too therefore need a principle of selection, something to sort moral fact from corrupt nature. They may have a worse problem than the naturalists if they insist that their principle of selection must come from outside N_2 altogether. But at best the antinaturalist is in the same logical position as the naturalist, and I shall mostly ignore the former.

At this point the advocates of ANs will protest in the name of utilitarian good sense. The argument for the impossibility of ethics is as silly as it is preposterous, they will say, for there is a principle of selection too obvious to need grounding: What ANs need as premises are facts about the needs, aspirations, wants, and capacities of human beings. “The sole evidence it is possible to produce that anything is desirable,” says Mill, “is that people do actually desire it.”⁸

But which ones are the relevant desires? Nothing seems more characteristic of human nature than to desire one’s desires to be other than they are.⁹ In practice our second-order desires are as often celebrated as deplored in the name of nature. So we cannot escape the need for a principle of selection.

FUNCTIONS: THE ARISTOTELIAN SOLUTION

Perhaps if we look at the problem squarely in the face it will suggest its own solution. The paradox we are faced with involves the need to select among merely possible facts some that are more factual than others: to select a class of more factual nonfacts. Well, Aristotle had just the name for what we need: potentiality, or teleological facts. To find guidance in ethics you should look neither to the actual facts alone whatever they may be, nor to possibilities in the abstract, but for the function of the human being. But how is this to be discovered? This is where the work starts. One might give a minimal answer, “Be just what you are,” or a maximal one, “Become whatever you can.” But a minimal answer will not do; “simply living,” as Aristotle points out, “we share even with plants.”¹⁰ Our principle of discrimination does not lead far enough. A maximal answer is no better off. If we are to actualize all our potentialities, then again the principle of discrimination has told us nothing, for whatever we do is an exercise of some potentiality and takes time out from the exercise of another.

Aristotle's solution to this problem invokes two principles. One is that the relevant potentialities must be the ones that belong to us as human beings, that is, as beings of a certain kind. The other is that these potentialities are to be ones that belong to humans alone. "We are looking," he continues in the passage from which I have just quoted, "for something peculiar to humans."

The second principle is generally dismissed with an allusion to Aristotle's obsession with definition by genus and differentia as if it were only the differentiae that gave the true nature of the species. But this explanation fails to note that what we share with plants and other animals, for Aristotle, has its own standards of vegetative and sub-rational excellence, which Aristotle simply took for granted. It was not there that the ethical choice among distinctly human possibilities could lie. More important is the first assumption: that individual potentialities must be understood in terms of the potentialities of the kind, for if you were to investigate the potentialities of an individual in isolation you could only wait around and see what they did. And by the time you had your evidence it would seem otiose to encourage self-actualization. The supreme moral injunction would have to be "Whatever you're doing, carry on." (Or, for the antinaturalist, what parents tell their children: "Whatever you're doing, don't.") Aristotle escapes the problem. He can examine some specimens, and especially specimens of a "complete" life ("for one swallow does not make a spring") and thereby gain insight into the nature of the others.¹¹ On this model the nature of a species is both fixed in time and determinate in character. Individuals have natures in virtue of belonging to certain kinds, and the variations between them are explained away at best as inessential or at worst as teratology: monsters outside the regular order of nature.

This implies a two-step program for the discovery of individual natures. At the first step the collection of instances yields insight into their common essence; at the second step any individual's nature is deduced from its membership in the kind.

In the light of Darwinian natural selection we have lost faith in this program. Species are not fixed in time, and what we allow as the norm for a given species at a given time is only a matter of convenient statistics. Individual variation is the fundamental fact. The degree of uniformity within a species is what stands in need of explanation (as Charles Darwin signaled by the title of his book). If we want to know the nature of an individual, we no longer can make the same use of the evidence we gather from the observation of others. There are two crucial differences.

The first is that the two-step program for the discovery of individual essences is no longer available. We are left with a more pedestrian brand of statistical induction, implementing the expectation that resemblances of certain sorts are likely to go together to a certain degree. The second, deductive step in Aristotelian induction no longer makes sense since there is no first step in which a fixed essence is discovered.

The second difference is that while Darwinism loosens the connection between members of the species it establishes a new kinship between members of different species. We need no longer be confined to looking at what is exclusively human. The range of evidence that is *prima facie* relevant is thus vastly increased. If DNA is the same everywhere, perhaps even behavior is similar in more quarters than we thought. But conversely the vegetative and animal functions may be more different among species than we thought. Moreover, the notion of function—the teleological notion that is so vital to the Aristotelian scheme—shows no signs of being abandoned in modern biological talk. The hope therefore might seem reasonable that modern evolutionary biology can reconstruct a useful conception of nature on which evaluative arguments can get a grip. I shall consider whether this hope can be fulfilled.

When we appeal to biology to guide us, we can do one of two things. We can look at the biological facts of life to gain power and multiply our options by understanding its mechanisms. We require only minimal ethical assumptions to infer from the existence of a vaccine that we ought to use it unless it has deleterious side effects or to believe that educational methods can be improved by more knowledge of the facts of human development. Such arguments generally fall into the class of impossibility or possibility arguments. I shall have little to say about them. The principal disputes arise from attempts to look to biological nature for some deeper levels of human fact. It is here that references to the concepts of evolutionary theory come in. The most common strategies are three: (1) Look for the general direction of evolution for a reconstruction of the notion of higher and lower forms of life. (2) Look to adaptation (or fitness, or survival) for a criterion of biological value. (3) Look to the conditions prevailing at the time our adaptive mechanisms were selected (the environment of evolutionary adaptedness) for clues to the deeper nature of our wants as they are rooted in natural needs and capacities.

THE DIRECTION OF EVOLUTION

Some biologists have been sanguine about plotting the course of evolutionary progress:

When we look at evolution as a whole, we find, among the many directions which it has taken, one which is characterized by introducing the evolving world stuff to progressively higher levels of organization and so to new possibilities of being, action, and experience. . . . I do not feel that we should use the word purpose save where we know that a conscious aim is involved; but we can say that this is the *most desirable* direction of evolution, and accordingly that. . . it is ethically right to aim at whatever will promote the increasingly full realization of increasingly higher values.¹²

In this version, which is Julian Huxley's, the argument seems to recoil from its own thrust right in the middle when it turns out that evolution offers us not so much a menu as a cafeteria. But for some evolutionists nature herself will prescribe the dish if we will listen. Witness G. G. Simpson:

Man has certain basic diagnostic features which set him off most sharply from any other animal. . . . interrelated factors of intelligence, flexibility, individualization, and socialization . . . occur rather widely in the animal kingdom as progressive developments, and all define different, but related sorts of evolutionary progress. In man all four are carried to a degree incomparably greater than in any other sort of animal. . . . Even when viewed within the framework of the animal kingdom and judged by criteria of progress applicable to that kingdom as a whole and not peculiar to man, man is thus the highest animal.¹³

Not all biologists are on the naturalist side. Here for example is Thomas Henry Huxley: "Let us understand, once and for all, that the ethical progress of society depends, not on imitating the cosmic process, still less in running away from it, but in combating it."¹⁴ That sounds like the trumpet of antinaturalism. But Thomas Henry Huxley, for good measure, also presented the neutralist position, variety strong: "The propounders of what are called the 'ethics of evolution' . . . adduce a number of more or less interesting facts and more or less sound arguments, in favour of the origin of the moral sentiments . . . by a process of evolution . . . but as the immoral sentiments have no less been evolved, there is, so far, as much natural sanction for the one as the other."¹⁵ To discover whether we should side with the older and tougher evolutionist, or with the younger generation, we must ask whether biology is able to construct a credible concept of the function or teleology of evolution.

What tempts us to teleology is the improbable. That is when we say this cannot be just coincidence. That is what makes the force of the argument from design for the existence of God. The intricacy of adaptations in nature seems so intrinsically improbable as to demand a planner. Chance variation and natural selection remove the sting from the improbability. Now the designer hypothesis is no longer

attractive. But can we still speak of functions? We can, if a definition of them can be found that is sufficiently general to fit both the productions of natural selection and those of intelligent plans. Such a definition is available, due to Larry Wright, Charles Taylor, and others. On their proposal a fact, thing, or event is teleological if its existence can be explained by its tendency to produce a certain result.¹⁶ A designer's artifact is obviously teleological because the designer's conception of its effects caused him to produce it. But so is an adapted organ. To say that it is adapted is to say that it was spared differentially by the axe of selection because of its effects. Whether some character has a function and what it is are difficult biological questions, but their meaning is clear. They are questions about the character's effect on differential reproduction in the ancestors of the organisms in question.

The virtue of this analysis is that it explicates the notion of goal without presupposing it.¹⁷ This is exactly what we need if we are to ground our ethical goals in natural functions. But it immediately follows that while we legitimately can attribute functions to organs and characteristics on this basis no such sense can be made of the "function" or "direction" of evolution as a whole. It was not brought about by its effects—since it only happened once—unless designed by God. So those evolutionists who insist on reading a function into evolution as a whole are most consistent if, like Pierre Teilhard de Chardin, they hold onto God.

THREE PARADOXES OF ADAPTATION AS VALUE

Still perhaps there is another way to squeeze some sense out of the notion of the function of evolution without abandoning biology for theology. In this spirit one sometimes hears it said that the basic biological "virtue" is fitness.¹⁸ Fitness is reproductive success, called adaptation when it is considered in relation to a given environment and perhaps adaptability when considered in relation to ecological change. In the chapter from which I quoted above, for example, Simpson refers to humans as "the most adaptable of animals." The only aseptic meaning I can give to this is that insofar as we can make any reasonable predictions about the durability of the species it is likely to be among the highest. Yet if we keep our notion cleanly biological in this way it will not give us the results we might hope for. We must face three paradoxes.

1. To say that we are extraordinarily adaptable seems extremely plausible. We can even survive on the moon, for a while. But the only real test of adaptation is long-term survival. By that test only actual

seniority can earn the high rungs of the evolutionary ladder. Our special talents may spur lofty aspirations; but in terms of achievements we are very far below the rat, the shark, and the cockroach—not to mention the amoeba.

2. Nor can we even celebrate the survival in us of our ancestors' prehominidoidal genes, for they, unlike those of the cockroaches' ancestors, have not survived intact—"they are changed, changed utterly." When a species has done some adapting, it is not that species any more. This is the equivalent for the species of the question whether what "survives" in the afterlife will be sufficiently like me to count as me. The question arises with a vengeance for the survival of a species, for the identity of a species over time is made particularly obscure by the fact that the usual test of species difference—reproductive isolation—is trivially satisfied across distant generations:

If Adaptation be Nature's Grand Prize.
The Winner fades before evolving eyes.

3. The third paradox lies in the antithesis that may be conjured between adaptation and evolution. If a species is adapted, it does not need to change. But without change there is no evolution.¹⁹ So if, as has been claimed, we are now so very well adapted, our superiority amounts to the fact that we need no longer evolve. But that is where the cockroach, etc., are already. Does our superiority then lie merely in having taken longer to get there? To be sure, an objector will say we are still evolving, but culturally, not biologically. This is what always is pointed out in the last chapters of books on evolution.²⁰ But there is no getting away from the fact that biologically our capacity to adapt culturally can be considered a merely longer route to a genetic constancy that the cockroach and the shark achieved a good deal faster.

OSCAR WILDE'S BOOMERANGS

I conclude from the preceding considerations that neither the notion of a direction of evolution nor the mechanism of adaptation yields a coherent grounding for an evolutionary concept of value. But perhaps my mistake was to seek criteria of value too far afield in nature, too far outside the individual consciousness—or perhaps too far inside the still inaccessible genes. The Utilitarian will protest again: Look to pleasure and pain. The contribution of a philosophy of nature may be only to help in sorting natural pleasures from unnatural not because natural is good but because natural is more pleasant and pleasant is good. Thus David Hume speaks of "these sentiments that spring up naturally in my present disposition. . . . should I

endeavour to banish them by attaching myself to my other business or diversion, I feel I should be a loser in terms of pleasure."²¹ The assumption here is that those pleasures that "spring up naturally" will be deeper and stronger (though not necessarily finer; Plato, Sigmund Freud, and perhaps Mill agree) than those that arise from an acquired taste in "higher," mental, or sublimated pleasures.²² The only trouble is that we simply cannot tell by introspection which of our pleasures are the natural ones and which are conditioned by perversion, self-deception, or honest-to-goodness civilization. So here is where biologists can help us—not with the construction of criteria of value but by telling us which pleasures are the natural ones. If we could understand the origin of our various impulses and desires, we at least would know then how to "follow nature" if we wanted to. The biological notion of adaptation can help us if we do not assume that we were made for the life we lead now: "The only relevant criterion by which to consider the natural adaptedness of any particular part of present-day man's behavioural equipment is the degree to which and the way in which it might contribute to population survival in man's primeval environment," that is, "the one that man inhabited for two million years until changes of the past few thousand years led to the extraordinary variety of habitats he occupies today, . . . his environment of evolutionary adaptedness [EEA]."²³ In this way, suggests Mary Midgley, we might be able to understand—and implicitly justify—the universal horror of parricide: "Why is parricide . . . *unnatural*? Because we are brood tending creatures, of a sort that forms bonds of affection, gratitude and cooperation in infancy."²⁴ This argument is hard to assess principally because our attitude to the "naturalness" or otherwise of parricide may well be clouded by some inklings of its other drawbacks. Better consider something not inherently criminal, say, the argument often made by psychoanalysts that the choice of a career to the exclusion of motherhood is for women an "unnatural" choice or that homosexuality is wrong because it is unnatural.

Such arguments present a number of difficulties. An ad hominem: that some behavior is instinctual, in Freud's own thinking, is far from a sufficient reason for enjoining it. Quite the contrary, his view of the relation of ethics to instinct is not too far from that of Thomas Henry Huxley cited above: The repression of instinct is the price that must be paid for civilization. The nuance of difference is that for Freud the energy for the repression is also of instinctual origin—and thus in some sense natural.²⁵ But, even if sociality itself has roots as deep as the aggression it requires us to repress, on the Freudian scheme some

natural wants in the EEA must have had to be curbed for the sake of others. Besides, not all our instincts need have sprung fully armed from the conditions of our EEA. Paul D. MacLean's hypothesis of the "triune brain" makes excellent evolutionary sense: Bred in different environments to perform different but now overlapping functions, the "reptilian," "early mammalian" or limbic brain, and the "advanced mammalian brain" continue to function together—but not always in harmony.²⁶ Not all of our inner conflicts spring from the pull between instinct and culture. Some may lodge among different evolutionary layers of instinct itself. And when there is conflict at the heart of "nature," which voice does nature require us to attend to?

The question admits of no coherent answer. We may want to say the EEA-generated voice matters most because it is closest to our own (who cares what we thought before we split off from the crocodiles?). But in that case why not look at our own present environment directly—it is even more like itself. No, the answer will come, for we are looking to illuminate our nature, and we can do that while appealing only to strategies of survival that are not too remote from our emotional imagination. Let us look more closely, for example, at Edward O. Wilson's sociobiological speculation about "homosexual genes."²⁷ They were adaptive in the EEA by promoting cooperative and avuncular behavior. This argument might have the effect of reassuring us as to the value of homosexuality in terms of its evolutionary credentials. But this consideration appears to presuppose that homosexual behavior stands in *prima facie* need of such justification. And this need in fact may be merely the product of pseudobiological myths in the first place. (Besides, what of the backlash from the anti-naturalists? This is Wilde's first boomerang. Imagine his reaction on being told that his homosexuality was only natural. Would he have changed his sexual preference on the spot?) As S. J. Gould observes, "the strategy is a dangerous one, for it backfires if the genetic speculation is wrong . . . for the behavior then becomes unnatural and worthy of condemnation."²⁸ Strictly speaking, this does not follow since, as we saw, the two naturalist arguments—positive ("natural therefore good") and negative ("unnatural therefore bad")—are independent. But the rhetorical slide is nonetheless tempting.

Is there any more than rhetoric on the side of sociobiological comfort? Not if we mean to privilege the EEA, or any epoch other than our own, for every behavior could be matched within some niche, past or possible, in which it would be adaptive. Midgley has compared this difficulty to the problem of deciding how long a run economic man must be given before he does his accounting: "Changes long after an

individual's death can bring his hitherto unwelcome genes into sudden demand; webbed feet or a silent habit become necessary in new circumstances. But they might not have done, and it is idle to say 'then he was fitter than we supposed';—after all, we might have to reverse the judgment again later on."²⁹ Indeed the argument can be turned on its head: Every adaptive innovation was an abnormality in the light of evolution so far; its value therefore must have derived from its adaptive value not in the past but for the future. This is Wilde's second boomerang: Nothing is more natural than the abnormal; freaks are the fuel of evolution.

STATISTICAL NORMALITY AND A LITTLE BIT ABOUT SEX

More must be said about whether we can infer something about a trait's value from its conditions of acquisition. I shall return to this in a moment. But first, some troubles caused by the statistical nature of "normality": The problem is this. What we are ultimately interested in are individual natures and norms. And until we are able to read an individual's genetic code straight off the DNA we can construct cases, under plausible assumptions, in which (1) "conforming to the statistical norm" does not provide a sufficient condition of individual normality. Worse, we also can imagine situations where (2) a high degree of uniformity around a statistical norm might be a sign of widespread pathology. Let me explain.

Sociobiological arguments presuppose that there are basically two sources of individual variation among the organisms of a single gene pool: genetic endowment and environmental influence. A notion of biological normality must be specifiable in terms of these two classes of factors. Whatever the criteria turn out to be, there will be a range of normal variation within each set of factors. The geometry of this will be enormously complicated, for there will be many ranges of variation with various degrees of mutual independence. But consider a single dimension, in which a range of environmental conditions will act on each point in a range of genetic variation. These two together will determine a total range of phenotypic variation (fig. 1). Now it is a natural assumption that the extreme points on the scale of phenotypic possibilities will be pathological, and the middle points paradigmatically "normal." But this assumption is false, for consider the range *E-D* of environmental possibilities acting on point *A*, the uppermost point in our chosen dimension of the genetic range of variations *A-B*. *E-D* will determine a range of nonpathological phenotypes. Outside the range of phenotypes, individuals of that particular genetic constitution (but not of some very different genetic makeup) will be

pathological. Take physical size, for example. A given genome *A* will determine phenotypes at the upper end of variation found in any particular environment; another—at *B*—will result in individuals at the bottom end of any particular environmental constant. But some environmental factors—a severe vitamin deficiency at a crucial stage of growth, for example—will result in a pathologically small individual in relation to genome *A*, who might yet be taller than average individuals of genome *B*. Whether any purely biological notion of the pathological can be constructed is a matter of dispute; but the advocate of ANs must assume that it can.³⁰ Then the two possibilities I have mentioned arise:

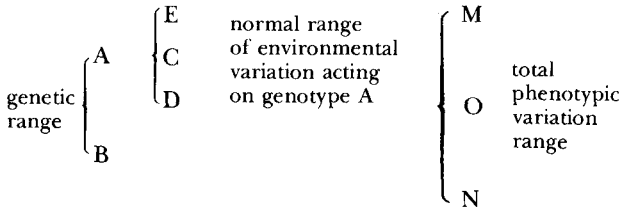


FIG. 1.—A phenotype at *O* may fall outside the “normal” range for its genotype *A*.

1. In some cases a phenotype that is exactly at the midpoint of the total phenotypic variation range (say, at point *O* on fig. 1) and who is therefore statistically normal will be outside the range of non-pathological variation for genome *A*. All that is needed is that the range of normal environmentally generated variation in genotype *A* fails to overlap with the corresponding range of genotype *B*.

2. Common sense suggests that statistical normality in general will be definitionally incompatible with pathology. If a bell curve is narrow and symmetrical then it would seem to be evidence that the population consists in the main of normal individuals. But imagine that we have evidence (perhaps obtained indirectly, by looking at a control population where the gene pool is roughly similar) that genetic variability is high—has a flattish bell curve—and that the environmental variance is low. Then the expectation would be, on the same assumptions as before, that the observed phenotypes also would arrange themselves along a flat bell curve. If the curve is narrow, with a very large proportion of the population close to the statistical mean, this may well mean that most individuals are in the pathological range for their genome (fig. 2).

It is conceivable that circadian patterns of wakefulness might provide an example. Suppose they are determined quite closely by gene-

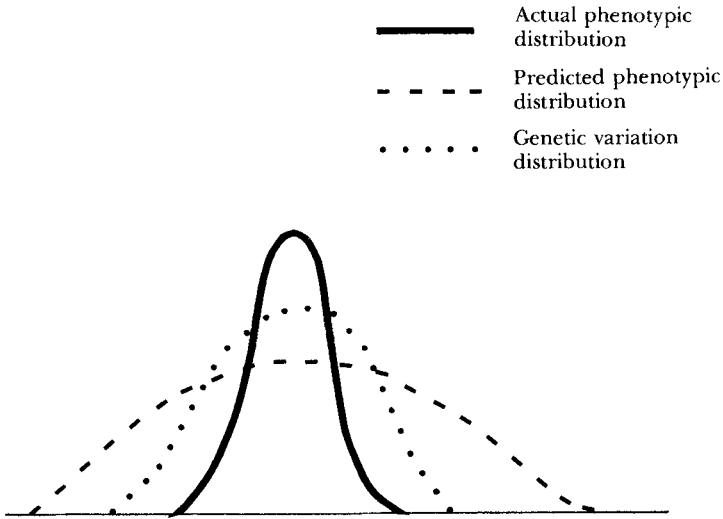


FIG. 2.—Most individuals may be in the pathological range for their genome.

tic factors and vary all around the clock. Imagine further (what many people's experience seems to confirm) that having to make peak demands on one's metabolism more than two or three hours away from the midpoint *C* leads to pathological losses in efficiency (fig. 1). Then a society in which everyone rises, works, and sleeps in synchrony might be one where most people are pathologically abnormal.

My point here is not to deny the distinction between genetic endowment and environment, still less to deny the relevance of facts about both these aspects of our "natures" to questions of value. It is that the epistemological difficulties in the way of arguments *to* nature are such as to enslave them to ideology. Two politically significant examples can be found in the race-and-IQ controversy and in discussions of sex roles.

The race-and-IQ controversy in the past decade has been fueled by A. R. Jensen's contention that the differences between races in average IQ are not to be accounted for in terms of environmental differences. But Theodosius Dobzhansky points out that an impoverished environment might be pathological in that it does not allow genetic differences to be manifested in the phenotypes: "Genetic differences may manifest themselves conspicuously in people who develop in favorable and stimulating environments, and remain undisclosed in adverse or suppressive environments. Carriers of genetic endow-

ments who could unfold high IQ's under favorable conditions will fare no better than genetically less well endowed people in suppressive environments."³¹ The same hypothesis suggests itself to explain the long popular view that "women depart less from the normal than men."³² Far from supporting the claim that there is less genetic variability in women than in men (which anyway makes no genetic sense) such lesser variance among women, if it is a fact, supports the feminist argument that the social imposition of sex roles—the existence of gender as we know it—is a source of widespread pathology even if there are statistically significant differences between the genetic components of male and female aptitude or temperaments. As Joyce Treblicott has said, the imposition of roles "tends to force some individuals into roles for which they have no natural inclination and which they might otherwise choose against."³³

THE AMBIGUITY OF "NEED" AND "POTENTIAL"

The foregoing arguments have proceeded as if we could isolate single dimensions of variability. In fact the only characteristics for which this is true are likely to be uninteresting ones, such as eye color or body size. Those that affect behavior are likely to interact in such a way that a high degree of development of one potential may ride on or interfere with that of another. "Our nature fits us to operate as a whole," says Midgley.³⁴ We must integrate the development of our various capacities and sometimes pay a price for the hypertrophy of one with the hypo- (or hyper-) trophy of others. Do we pay for sublimation with sexual repression? Do we pay for the hypertrophy of left-hemispheric functions with diminished right-brain functions? Must we choose between art and life? And if we must, is that bad? The previous considerations suggest that this is possibly so for some individuals but that it is almost impossible to tell. The answer presupposes a notion of individual need, that is, of what is "natural in the strong sense": "If it is natural, in the strong sense, it fills a need, and one that cannot easily be filled with a substitute. What we need is not necessarily something we die without, but it is something without which we shall be worse off."³⁵ Let us continue to waive the question of how much "worse off" we must be to count as pathological and assume that criteria could be found. To say that something is a need is to say that in some way there is a biological ground to it. But this can be so in two significantly different ways. I shall say that our needs can be direct or indirect.

The need for food is direct not just for some food, without which we die, but for nutritionally adequate food, without which we do not

thrive. It is direct because it is not merely a consequence of some adaptation in some distant EEA; we need food now, for its own sake. Indirect needs may feel equally imperative to the individual, but we have them only because they served some direct need which our ancestors had but we no longer do. Suppose for example that Lionel Tiger is right about men "needing" to get together in groups. This is a speculation based on (1) the observation that men seem to want to get together in groups and (2) the reconstruction of an EEA in which our ancestors needed to be programmed to want to band together for survival.³⁶ It serves no conceivable purpose right now and may cause considerable harm. So the only sense in which they need to is that they want to, though such wants once may have had a selective advantage.

Whether a need is direct or indirect may not be easy to tell. Take sleep, for example. It feels like a direct need if anything does. And most people display severe pathology if deprived of sleep. But no one has found what sleep actually does for us, what it "restores" or whether indeed it restores anything.³⁷ Carl Sagan, following W. B. Webb and Ray Meddis, has suggested that the original function of sleep was to keep us quiet: "It is conceivable that animals who are too stupid to be quiet on their own initiative are, during periods of high risk, immobilized by the implacable arm of sleep."³⁸ This would make our present need for sleep indirect: Our bodies now need sleep because our ancestors' bodies were fooled, as it were, into thinking that they needed it.

Most of the needs on which our sociality is built are indirect. We are free to speculate that those "natural needs" which social taboos and sanctions aim to normalize are those that are both indirect and imperfectly programmed. Mill points out, in a famous passage of "The Subjection of Women" that "the anxiety of mankind to interfere in behalf of nature, for fear lest nature should not succeed in effecting its purpose, is an altogether unnecessary solicitude."³⁹ But in the case of imperfectly programmed indirect needs, it is quite understandable. Biology is supposed to tell us that the need is really there even if we do not feel it; so it is logical to try and meet it. But the results are likely to be paradoxical. While there is a direct biological need for a process of selection the social sanction will slow it down. It is only when the need has become indirect that the social sanctions may activate a selection which by now serves no useful purpose. Consider, for example, the relation between the biological fact of incest avoidance and the sociological fact of incest taboos.⁴⁰ Assume a selective advantage to exogamy. This will favor individuals with an instinctive disposition to avoid mating with close kin. But suppose this gets reinforced (perhaps

through the indirect need to promote social conformity) by a social taboo. Then the selection will not get a chance to favor the "naturally exogamous" since the social taboo will cover up the genotypic difference between them and the "naturally endogamous." Hence the proportion of incestuous genes will remain relatively constant. A few individuals, under these conditions, may be incorrigibly incestuous. The taboo and the sanctions implied may lessen their reproductive success, but this will be a very marginal effect. It will continue, however, when by the separation of sex from reproduction the need for incest avoidance is adaptively obsolete. So the incest taboo is perfectly counterproductive: It slows the process of selection when it might be useful and accelerates it when it is useless.⁴¹

In short, the analysis of indirect needs leads to the same conclusion as the paradoxes of adaptation: Difficult though it is to tell by inspection how to rank our apparent needs, the long way around through ancestral biology seems hardly worth the journey. It is not that our indirect needs do not matter or that light thrown on their adaptive origins is without explanatory value. But if they are indirect needs they matter only as wants. To be rid of the desire is to be rid of the need. For now all there is to the need is "the need to satisfy that want."

This distinction between direct and indirect needs may throw some light onto some of the perennial arguments surrounding sexual morality and normality. The "vaginal orgasm," for example, may be seen as the myth of a direct need, based on a speculation about an indirect one. The rationale would go something like this: Because reproduction is effected by copulation, nature must have "programmed" women as well as men for copulation. But the vaginal orgasm is the only form of pleasure that could reward copulation directly; so it must be the only "natural" pleasure of sex. Feminists have pointed out that if we attend to the present facts of pleasure and desire we get a very different picture of female sexuality: "... there is no apparent physiological condition in the human female to stimulate simple, direct reproductive behavior. . . . since the clitoris is the center of female sexual response, the phallus is less relevant to female sexuality than is a finger or a tongue. . . . it becomes clear that women don't need men for satisfaction."⁴² This disconnects the observable facts about the sexuality of (at least some) women from any biological speculation about its origins. And why should it not? Why should we attend more closely to biology than to the phenomenology of desire and satisfaction? Because, the conservatives will say, nature is too complex to "second guess." We know that sex must have had a reproductive function even if the need for it is now only indirect. So if we

keep it that way we cannot go far wrong; if we do not we risk the fate of the sorcerer's apprentice.

This—the know-nothing AN—is hard to refute. Luckily it refutes itself, for what we do not know cannot take sides. And there is an important complication which it neglects: Among our (indirect) needs is the need to exercise our capacities. And like our needs, capacities can be direct or indirect, though here the basis for the distinction is a little different.

A direct potentiality or capacity is one that evolved because it conferred an adaptive advantage. Such is the capacity for running, jumping, or standing still. But most capacities are indirect, in a way best illustrated in terms of artifacts.

The bugging industry markets a small device which once installed in your correspondent's telephone set enables you to listen to any conversation within hearing range of the set. I gather you work it this way: You dial the number of the bugged set, and before it gets a chance to ring you blow a special whistle. This disconnects the bell and opens the line. This is a capacity of the phone system. But it was not built in. In the technical sense of "function" defined earlier, this is not a function of the telephone even though it can be made to function that way. Call it an indirect capacity.

It is likely that a great many of our capacities are biologically indirect. Take sleep again. Even if the fanciful Sagan-Webb-Meddis hypothesis is correct about the indirect need for sleep, it may be that sleep since its "invention" has developed important indirect capacities, such as some sort of neural programming in paradoxical sleep, for example.⁴³ It was not developed for that, but that is what it does for us now. So it is no argument against K. F. Rotkin's view of female sexuality, even on the biological level, that "it wasn't developed for that"—if indeed it was not. Sexual capacities, like most things social, are none the worse for being to the natural organism what the whistle-bug device is to the telephone.⁴⁴

Unlike the distinction between direct and indirect needs, the difference between direct and indirect capacities has no biological significance beyond that of historical accident. Direct needs are "more real" in that if the psychological aspect of them could be painlessly suppressed they would not disappear; indirect needs would. But capacities are no more and no less real for being direct. In biology indirect capacities are called "preadaptations"; but these are not a special sort of adaptation—they are just what, if conditions are favorable, will happen to be useful. So there is never any validity in the argument that "this is a biological potentiality (e.g., to have babies as

opposed to writing sonnets); therefore you should develop it.” These considerations also invalidate the know-nothing argument, for “Don’t interfere with nature” presupposes that nature is what you would be interfering with. But throughout evolution the existence of preadaptations has meant that nature has never, as it were, left itself alone.⁴⁵ There is no natural base line that we could hope to remain at or return to.

NATURE AS A NORMATIVE CONCEPT

I set out to consider evaluative ANs. I have been driven to conclude that insofar as these appeal to concepts of evolutionary biology the only valid argument is an uninteresting one: “It’s impossible, so don’t try.” At root it is with the premise that the gravest difficulties lie, with the concept of nature itself and arguments *to* the claim that something is “natural,” for the concept of nature is, irreducibly, an evaluative one. Nature is a utopia.

What could be the biological meaning of utopia? I suggest this: In biological jargon a utopia is a reconstructed niche to a reconstructed organism. If our ecological niche were fixed, we could speculate about improvements to ourselves. If we could catalogue our capacities exhaustively, we might be able to devise a niche to which they would be perfectly adapted. But neither our niche nor our capacities are fixed. When we propose to make ourselves better adapted to our environment, we are pretending we cannot change it. And when we think of changing our niche, we may be missing novel ways in which we might be preadapted to this one or any others. But among such a fluidity of possibilities as “nature” offers—as utopia—we can make only a choice that is conditioned by our values.

Let me illustrate this with a familiar positive-naturalist argument for conservation. Here the evaluative element is particularly candid:

“This species is endangered, so we should try to preserve it.” There is no time for a proper discussion of this argument; but in the light of the strategies we have considered it is easy to imagine how the discussion might go.

—You’re just sentimental. You want the species preserved not because it’s part of nature but because it has such lovely soft eyes, or fur, or such quaint customs. Isn’t the argument purely aesthetic?

—So let’s avoid the distraction of sentimental appeal. Let’s take the smallpox virus; it’s probably endangered. Shouldn’t we save it just because it is there?

—Well, in the wild, species are continually becoming extinct. So why should we interfere with the course of nature?

—But where we are is no longer *The Wild*. The smallpox virus is becoming extinct precisely because we have interfered.

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—On the contrary. We may seem to fight dirtier, but that's just anthropomorphic prejudice. What could be wilder and more natural than the fight for survival against smallpox?

—But we weren't threatened by it. Before we set out to exterminate it we were in ecological balance.

—So why shouldn't the balance alter? That's nature's way: Things change. And ours too, for that matter. And aren't we part of nature?

And so on. I have met biologists who deplored the loss even of such a nasty bug, but maybe not in the wild but in a jar, somewhere. (But then is it really *it*, in its natural systemic identity, that we are preserving? Or are we creating another organism—*jarpox*, perhaps?) But then naturalists tend to be collectors, so it seems that, even though the smallpox virus does not look as immediately attractive as the sperm whale, the argument in its favor is aesthetic, after all.

If so it is a species of a genus that is very important and to which I have paid too little attention: the genus of aesthetic arguments to and from nature.

The genre admits of relatively trivial forms. Sometimes it is a prescription for the relief of anxiety: "Kinsey says 98 percent of males masturbate. So it's natural to masturbate. So I'm normal." In slightly loftier form the books used to ask the anguished question: "Why are we the only species that kills its own kind?" Well, now it turns out that if you look at other species for more than a thousand hours you find out we are not the only ones. What a relief—we are normal among species!⁴⁶

We also could have said: How gloomy! So there is no redemption even in nature! Logically both reactions are about equally silly. But they occur; and the popularity of theses about our relation to other animals is surely due to the change they bring about in our vision of the human animal. To see ourselves as the outcome of evolution need not change any beliefs that we have about human nature as it now is (though most likely it will); but it looks different in that light. And it is likely to foster attitudes that will have incalculable effects on how we think of science and of ourselves.

The whole argument of this paper can be seen as just such an aesthetic AN: a metaargument from the nature of biological nature to a certain perspective on other ANs. Among the legitimate effects of this argument, if I am right, we may expect the following: an erosion of kind and stereotype thinking; a recognition of the multiplicity of levels of natural determination; a separation of the social structures favored by certain selective processes from the mechanisms of instinct that once served to foster them; a rejection of the search for some sort of natural concept of higher and lower forms of life, untainted by the

values peculiar to our conceptions of consciousness and social life. Perhaps, in addition, we may have less respect for the average not only because average does not entail biologically normal but also because even if it did the normal can lay no special claim to biological superiority. You should consider your freakier acquaintances all the more precious for being potentially preadapted to some possible stage in the directionless course of future evolution.

The change of vision that comes with thinking of ourselves as part of nature is an important one, and so is the repercussion that the change in our self-concept may have on the way we see nature. This too, even as biology informs it, is fluid, for how we see what we see ourselves as will depend in part on how we see ourselves. In the end then, without quite siding with Wilde, we may find unexpected support in the contemplation of the biological concept of nature for the unpopular view that although a naturalistic ethics is not, after all, impossible it may be possible just insofar as ethics is a branch of aesthetics.

NOTES

1. Aristotle *Nicomachean Ethics* 1178a. 6-7.
2. Arthur Schopenhauer, *On Human Nature* (1897; reprint ed., London: George Allen & Unwin, 1957), p. 18.
3. Joris Karl Huysmans, *Against Nature*, trans. Robert Baldick (Baltimore: Penguin Books, 1966).
4. More variants could be obtained by applying a distinction between axiology (judgments of worth) and deontology (judgments about what one must, may, or may not do). Axiology only partly constrains deontology. On some views only what is good may be done; on others whatever is not bad may be done. The number of variant arguments, both naturalist and antinaturalist, could be multiplied accordingly. But these refinements will not affect my discussion, and I shall neglect them. Nor shall I offer to discriminate between kinds of value, ethical and otherwise. I shall require only the assumption that values, or ethics, provide rational reasons for acting.
5. Cf.: "Reason deals in neutral descriptions. . . . Value terminology will be the prerogative of the will; . . . pure choice, pure movement, and not thought or vision . . ." (Iris Murdoch, *The Sovereignty of Good* [London: Routledge & Kegan Paul, 1970], p. 8).
6. John Stuart Mill, "On Human Nature," in *Three Essays on Religion* (New York: Greenwood Press, 1969).
7. Nelson Goodman, *Fact, Fiction and Forecast*, 2d ed. (Indianapolis: Bobbs-Merill Co., 1965), p. 57.
8. John Stuart Mill, *Utilitarianism* (Indianapolis: Bobbs-Merrill Co., 1957), p. 44.
9. H. Frankfurt, "Freedom of the Will and the Concept of a Person," *Journal of Philosophy* 68 (1971): 5-20.
10. Aristotle *Nicomachean Ethics* 1097b30.
11. *Ibid.*, 1098a18.
12. Thomas Henry Huxley and Julian Huxley, *Evolution and Ethics* (1947; reprint ed., New York: Kraus Reprint, 1969), p. 125.
13. As quoted in Ronald Munson, ed., *Man and Nature: Philosophical Issues in Biology* (New York: Dell Publishing Co., 1971), pp. 270-71.

14. Huxley and Huxley, p. 82.
15. *Ibid.*, p. 80.
16. Larry Wright, "Functions," *Philosophical Review* 82 (1973): 139-68.
17. For some criticisms of this approach see C. Boorse, "Wright on Functions," *Philosophical Review* 85 (1976): 70-86, and Andrew Woodfield, *Teleology* (Cambridge: Cambridge University Press, 1976), pp. 82-85, and further references given in the latter.
18. Cf. James D. Wallace, *Virtues and Vices* (Ithaca, N.Y.: Cornell University Press, 1978). Wallace claims (p. 24) that adaptation is a "normative fact" for which natural selection provides an objective explanation in purely biological terms. But see my critical discussion of Wallace's book in *Nous* (in press).
19. I believe this idea comes from a book by Lecomte du Nouy which I cannot now trace. A related difficulty is discussed by R. C. Lewontin: "If ecological niches can be specified only by the organisms that occupy them, evolution cannot be described as a process of adaptation because all organisms are already adapted" ("Adaptation," *Scientific American* [September 1978], p. 215). The solution Lewontin offers is the "Red Queen Hypothesis," attributed to Leigh van Valen: Species change in response to changing environments, and organisms have to "keep running to stay in the same place." This saves the notion of evolution by adaptation from its apparent absurdity, but it does not solve the philosophical problem in the text.
20. See, e.g., the last chapters of Richard Dawkin's *The Selfish Gene* (Oxford: Oxford University Press, 1976) and T. A. Goudge's *The Ascent of Life* (Toronto: University of Toronto Press, 1967).
21. David Hume, *Treatise on Human Nature*, ed. L. A. Selby-Bigge (Oxford: Oxford University Press, 1975), p. 271.
22. In *Philebus* 45a-b Plato describes the greatest and most intense pleasures as being those experienced in diseased conditions. Sigmund Freud says that the pleasures of sublimation can never be as intense as those of direct instinctual satisfaction (*The Standard Edition of the Complete Psychological Works of Sigmund Freud*, trans. James Strachey et al. [London: Hogarth Press, 1957-73], 21:79); and Mill insists that the "higher" pleasures are preferable though they are not greater (n. 8 above).
23. J. Bowlby, *Attachment* (New York: Basic Books, 1969), p. 59.
24. Mary Midgley, *Beast and Man: The Roots of Human Nature* (Ithaca, N.Y.: Cornell University Press, 1978), p. 274.
25. Freud, 22:77.
26. Paul D. MacLean, "On the Evolution of Three Mentalities," in *New Dimensions in Psychiatry*, ed. S. Arieti and G. Chrzanowski, vol. 2 (New York: John Wiley & Sons, 1977).
27. Edward O. Wilson, *On Human Nature* (New York: Bantam Books, 1978), pp. 149-50.
28. S. J. Gould, *Ever Since Darwin* (New York: W. W. Norton & Co., 1977), p. 267.
29. Mary Midgley, "Gene Juggling," *Philosophy* 54 (October 1979): 453.
30. Cf. L. King's "What Is Disease?" *Philosophy of Science* 21 (1954): 193-203, for the view that it can, and C. Boorse's "On the Distinction Between Disease and Illness," *Philosophy and Public Affairs* 5 (1975): 49-68, for the contrary view.
31. Theodosius Dobzhansky, *Genetic Diversity and Human Equality* (New York: Basic Books, 1973), pp. 21-22.
32. S. A. Shields, "Functionalism, Darwinism, and the Psychology of Women," in *Psychology of Women*, ed. J. H. Williams (New York: W. W. Norton & Co., 1979), pp. 23-32.
33. Joyce Trebilcote, "Sex Roles: The Argument from Nature," in *Philosophy of Woman: Classical to Current Concepts*, ed. Mary B. Mahowald (Indianapolis: Hackett Publishing Co., 1977), p. 292.
34. Midgley (n. 24 above), p. 265.
35. *Ibid.*, p. 186.
36. Lionel Tiger, *Men in Groups* (New York: Vintage Press, 1970).

37. W. B. Webb, "Sleep," in *The Encyclopaedia of Ignorance*, ed. R. Duncan and M. Weston-Smith (Toronto: Pergamon Press, 1977), p. 375.
38. Carl Sagan, *The Dragons of Eden* (New York: Random House, 1977), p. 131.
39. John Stuart Mill and Harriet Taylor Mill, *Essays on Sex Equality*, ed. Alice S. Rossi (Chicago: University of Chicago Press, 1970), p. 154; Trebilcote, p. 291.
40. This distinction was made clear to me by P. van den Bergh in a paper read to a colloquium on sociobiology, University of Toronto, Spring 1979.
41. Dobzhansky (n. 31 above, p. 33) makes essentially the same point with respect to the genetic effects of caste: "Genetically conditioned adaptedness will be dissipated for at least two reasons. First, inept progeny will be pressed to follow their parents' careers despite the genetic incapacity. Second, whatever natural selection may have operated in the formation of the caste gene pool will probably be modified, abandoned, and perhaps even reversed." In the text I imagine that there may be conditions under which selection continues but is very slight.
42. K. F. Rotkin, "The Phallacy of our Sexual Norm," in *Beyond Sex Role Stereotypes*, ed. A. G. Kaplan and J. P. Bean (Boston: Little, Brown & Co., 1976), pp. 155, 157.
43. M. Jouvett, "Does a Genetic Programming of the Brain Occur during Paradoxical Sleep?" (paper).
44. For some brilliant variations on this theme see Stanislaw Lem's "Die Kultur als Fehler" in his *A Perfect Vacuum: Perfect Reviews of Nonexistent Books*, trans. Michael Kardel (New York: Harcourt Brace Jovanovich, 1979).
45. Cf. Jean Piaget's notion of behavior as the "motor of evolution." I owe to Francis Burton the realization that Piaget's idea is essentially a generalization of Charles Darwin's theory of sexual selection.
46. Edward O. Wilson, *Sociobiology: The New Synthesis* (Cambridge, Mass.: Harvard University Press, 1975), p. 555.