

# THE AEOLIAN HARP: SOCIOBIOLOGY AND HUMAN JUDGMENT

by *J. W. Bowker*

At the Institute on Religion in an Age of Science conference I was asked to contribute a paper on the day which was given the general heading "Sources of Value in Contemporary Society." As a result this paper is somewhat tangential to the main issues raised by sociobiology as I see them, although I believe they are important issues in their own right. It is hard to disagree with what, as a program, sociobiology proposes. Sociobiology is defined by Edward O. Wilson as "the scientific study of the biological basis of all forms of social behavior in all kinds of organisms, including man," and its purpose "is to develop general laws of the evolution and biology of social behavior, which might then be extended in a disinterested manner to the study of human beings."<sup>1</sup>

That can scarcely be regarded as controversial, except that the notion of "general law" is not a simple one. But with that exception this represents a program which is about as obvious and lacking in controversy as a program to teach the Pope the virtues of celibacy. The controversy begins over the actual execution of the program and over the issue of whether the program can in fact be executed with such sufficient comprehensiveness that it is entitled to be called "the new synthesis." Where its handling of religion and theology is concerned, sociobiology is certainly open to the charge "that it can only explain religion if it rejects what religion says about itself."<sup>2</sup> Those much more important issues were not a part of my brief, but they are clearly so fundamental that they certainly deserve much closer examination.<sup>3</sup>

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## SOURCES OF VALUE IN CONTEMPORARY SOCIETY

The first and most obvious point that has to be made is that the sources of value in contemporary society are not all contemporary. As Bernard of Chartres put it in more familiar words, we see further than our ancestors, only because we stand on the shoulders of the giants.

Left like that, the remark is a platitude. But there is a serious point underlying it: Sociobiology emphasizes that we are not far removed genetically from our ancestors; this means that "the psychic unity of mankind," to which Wilson refers, potentially extends backward through time as well as sideways through space.<sup>4</sup> You cannot teach your grandmother to suck eggs, particularly, one would suppose, in America, which has the technological ingenuity to set foot on the moon but has not yet invented the egg cup.

This means that when we are talking about value we should listen very carefully to the phenomenological reports that come in from our ancestors (and that means the reports which come in through their arts, their music, their social organization, their rituals, their writings, their traditions) about the ways in which they have explored and exercised the possibilities of being human—the ways, that is, in which they have explored both the internal and the external environment. Above all, we should not dismiss their accounts of the range of those possibilities in experience simply because the language they have used or the characterizations they have given of what they believe to be the ground of those experiences are, from our point of view, naïve, erroneous, nonscientific, or whatever. It is of course equally true that we should not confer truth on their reports simply because they are made; but that scarcely seems likely to happen. The phenomenological point is that, despite all the obvious problems of relativity and acculturation, we should take the psychic unity of mankind more seriously than sociobiologists seem inclined to do; and that can only be done provided that we pay diligent attention to the data—to the evidence. Certainly it will be necessary to pay as much attention to the data when one is dealing with the past (in, e.g., the history of religions) as one does when one is working on the life cycle of the mosquito.<sup>5</sup> All too often the exponents of sociobiology seem cavalier in their handling of the past. If, for example, historians of religion were as casual in their description of genetics as Richard Dawkins is casual in his description of religion, geneticists would be justifiably angry.<sup>6</sup> Historians, theologians, and philosophers have an equal right to be annoyed if scientists are casual in their handling of data in relation to the past—and indeed much of the violence of the debate about sociobiology has been generated by exactly that irritation.

What then does it mean to say that an appeal to the psychic unity of mankind should be more carefully extensive, in time as much as in space? It means basically that what are sometimes referred to as the intuitional anthropologies—the pre-Darwinian and pre-Mendelian anthropologies—are not wholly intuitional; they were derived from very long-term observations by the human animal of itself and of its environment. Consequently, even without the benefit of Gregor Mendel, major anthropologies, both East and West, concluded that we were determined in our behavior from our heredity transmitted through our parents. In other words, they were able to observe that the consequence of being born from parents went far beyond the length of a nose or the color of the eyes. They could observe *that* without difficulty; what they also observed was an evident constraint over behavior equally derived from ancestry.

The implication of this is not that our ancestors were cryptosociobiologists and that they were saying “the same thing” as sociobiology, albeit in a different language. That is as clearly false as the view that the dance of the particles is the dance of Siva or that the Hindu and Buddhist philosophers were “really saying the same thing” about the universe and its appearance as modern quantum mechanics. The reason why there are correlations and points of undoubted connection and agreement lies much more fundamentally in the fact that there is a common subject matter in human inquiry and reflection—a subject matter which constrains the account that is given of it, however mistaken (from a later point of view) any particular response or description may be. That common subject matter is the human subject and the universe in which it is set. There has been no global agreement in the past about the nature of the human subject or about the nature of the universe. The fact that there is a greater consensus in the present, at least about the latter, is simply an illustration that what presents itself evidentially does constrain our account of it: There are instantiating data. Wilson’s ambition is to extend the global consensus on the former, “on human nature.”

What should encourage him in that endeavor is precisely the point made above, that some major Eastern and Western anthropologies in the past have a close approximation to the genetic constraint and cultural determination which characterizes sociobiology. That that should be the case is not in the least surprising. It is not surprising, first, because at least some of our ancestors were as willing to be constrained by the available data (by what presents itself evidentially) as are some of our contemporaries, although they did not of course have access to the same data, and, second, because, as sociobiology emphasizes, the human subject is not changing genetically in a drama-

tic way from generation to generation, although it is changing culturally, and even there the changes are not wholly disjunctive. As I have put it before, it is possible to have breakfast with Sophocles, lunch with Shakespeare, and supper with Coleridge and to know to some extent (quite a large extent) what they are talking about.

But precisely because we can find points of connection between the genetic determination of behavior in sociobiology and the realism with which at least some of our ancestors assessed the constraints, derived from heredity, which delimited the possibilities of their own action and behavior, we should give an equal respect to the realistic way in which they assessed the possible range of those behaviors within the limits. Certainly they came to false conclusions in many respects about the ground and nature of those experiences; but they are not proved, for that reason, to have been wholly foolish and self-deceived. Wilson may well be right that “neurobiology cannot be learned at the feet of a guru,” but then *satori* cannot be learned, still less attained, at the feet of a neurobiologist.<sup>7</sup> To say that the human exploration of its own possibility and of its relationships, in the ways that have subsequently come to be described as religious, is always self-illusory, or is simply a product of the gene’s determination to replicate, is a naïve oversimplification—and one which is not redeemed by extolling the virtues of reductionism (which are indeed many and necessary if the universe is to be intelligible) unless it is appreciated that reductionism is a much more complicated procedure than the discussion in Wilson’s *On Human Nature* seems to allow.<sup>8</sup>

#### HEREDITARIAN ANTHROPOLOGIES IN RELIGIOUS TRADITIONS

What then does it mean to say that some major religious traditions recognize that there are constraints, derived from heredity, over the outcomes in social and individual behavior? Let me refer—there is no space to do more than refer—to two brief illustrations.

In the East the notion of *karma* or (in Buddhism and in Pali) *kamma* is basic to the understanding of human nature. *Karma*, as a belief, is tied to a corresponding belief that there is rebirth or continuity from one form of appearance (e.g., human or animal) to another (*samsara*). *Karma* asserts that the form or condition of a subsequent appearance and its behavior is determined at least in part by previous behaviors—behaviors, that is, in previous forms of appearance.

The genetic determinism of this belief, although it is expressed in thoroughgoing Lamarckian terms of acquired characters, is potentially very great because it suggests that the observable behaviors in

this life are a result of consequence transmitted through birth. *Karma* is thus a strong determinant of Indian social life, in the sense, to take the most obvious examples, that it reinforces the social system of *varna* (caste) and *ashrama* (the four stages of life).

The genetic determination of individual and social behavior is thus potentially very strong, and it was indeed made explicit on one occasion by Mohandas K. Gandhi, when he was defending the caste system: "I believe that just as everyone inherits a particular form so does he inherit the particular characteristics and qualities of his progenitors, and to make this admission is to conserve one's energy. That frank admission if he will act upon it would put a legitimate curb on our ambitions and thereby our energy is set free for extending the field of spiritual research and spiritual evolution. It is the doctrine of *Varnashramadharma* which I have always adopted."<sup>9</sup>

One must repeat that all this is far too Lamarckian, but it does articulate very clearly the hereditarian component in social determination. But equally it articulates the major issue which sociobiology also has to face: How extensive is the determination? The Gita undoubtedly modified *karma* by *prasada* (what a Westerner might mean by "divine grace"), and equally clearly it emphasizes that men are constituted in such a way that they have the capacity to initiate good or evil actions. This "capacity," so fundamental to the whole of Indian religious life and thought, is known technically as *adhikara*. But what is the distribution of balance between *karma* and *adhikara*? At one extreme S. Radhakrishnan spiritualized the hereditarian determinism into nonexistence.<sup>10</sup> But at the other extreme there were certainly some who drew strongly deterministic conclusions from the basic data: "Just as a ball of wool, when thrown on the ground, unwinds itself until it comes to an end, so the wise and the foolish travel on equally in *samsara* [rebirth] until eventually they reach salvation."<sup>11</sup> So argued Makkhali, a contemporary of the Buddha, known also as Gosala, because, according to the Jains, he was born in a cowshed. His views were refuted by the Buddha, along with many other Indian beliefs and practices, including the caste system. But the Buddha did not refute *kamma*; indeed he affirmed it. Once again the hereditary determinism is fundamental, as one can see in the Culakamavibhanga Sutta, where the Buddha is asked why some humans have short lives, others long, some are sick, others healthy, and so on, summarized in the question: "What is the reason and the cause for the inequality [*hīnapanītātā*] among human beings despite their being human?" The Buddha replied: "Beings inherit their karma and it is karma which divides beings in terms of their inequalities."<sup>12</sup>

This is inevitably Lamarckian, and the same Sutta actually analyzes some of the correlations between actions and consequences—those who are angry tend to be ugly and so on. But on the other hand *kamma* is not wholly deterministic, and *kamma* certainly is not identical with heredity in general, although they may of course coincide. Human beings are thus constrained into their outcome by heredity (*bijaniyama*), by their environment (ideological as well as physical), by their psychological experience in this life (*uttarniyama*), which includes the kammic inheritance (*kammaniyama*). But through all this each individual retains his responsibility and initiative to make what he can, for good, of his state of being as it has come to be in the process of time, which itself flows on through other forms of reappearance or rebirth, although of course there is no self or substance being reborn and going from one existence to another.

But hereditary determinism (the recognition that our behavior is determined, at least in part, from what we inherit from our parents) is not confined to the East. It occurs also in the West and particularly in the Christian understanding of sin, for “original sin,” at least in its traducianist forms, is strongly genealogical and hereditarian in its emphasis, and, if it were not so, the Virgin Birth would have nothing like the same significance as it does in later Christianity. But original sin is not of course aboriginal to Christianity. It is virtually impossible, for example, to find it in the Apostolic Fathers or in the Apologists. What is aboriginal is the Pauline symmetry between the first Adam in whom death entered the world and the second Adam by whom life is restored, “for as through the disobedience of the one man the many were made sinners, so through the obedience of the one man the many will be made righteous.”<sup>13</sup> Paul undoubtedly believed that man is unable to rescue or exempt himself from all fault and is therefore in need of rescue or redemption: “The good that I would I do not; and the evil that I would not, that I do.”<sup>14</sup>

But Paul certainly did not articulate what later became the classical doctrine of original sin. The first hints of that appear in Irenaeus, who believed, on the basis of Hebrews 7:9-10, that as Levi was in his ancestor’s loins when Melchizedek met him, so all people are seminally connected with Adam and are both the agents and the victims of his transgression. Cyprian, appealing to Psalm 51:5, believed that the wounds, the *vulnera*, of the original sin are transmitted seminally; and Tertullian made explicit the traducianist theory, that the whole person, body and soul, is derived from the parent, as opposed to creationism, which holds that the soul is created with and for each new life by God, or to preexistence, whereby, as Origen maintained,

souls are embodied as a punishment intermediate between being a devil and an angel.

Tertullian's view was that Adam "infected the whole race by his seed, making it the channel [*traducem*] of damnation".<sup>15</sup> However much we are constrained in our environment to fault—that is, as Tertullian would have put it, however, much we are tempted by the devil—"the evil that exists in the soul . . . is antecedent, being derived from the fault of our origin [*ex originis vitio*] and having become in a way natural to us."<sup>16</sup>

But the full expression of this view is obviously associated with Augustine, for whom the whole human race is *massa damnata*. Since we are constrained into this circumstance by the fact of birth, it is obvious that here again the hereditarian determination of behavior is extremely strong—particularly since Augustine distinguished the guilt or *reatus* of original sin, which baptism can remove, and its *actus*, its actualization, which continues and which baptism cannot remove. The genetic determination is indeed so strong that it constrains outcomes even after death in the sense that unbaptized children go to the eternal fire with the devil, although they will not suffer so much as adults, who in fact have added offenses to the guilt.

Not surprisingly therefore Augustine appealed to the practice of infant baptism as justifying his view that the inherited fault must be dealt with. But historically Augustine seems to have been wrong in this appeal. Tertullian himself argued that "deferment of baptism is more profitable, in accordance with each person's character and attitude, and even age—and especially so as regards children."<sup>17</sup> It is in fact much more probable, as E. Ferguson has concluded on the basis of an analysis of early Christian funerary inscriptions, that "the universal understanding of baptism as for the remission of sins gave impetus to the doctrine of original sin which then in turn became the theological basis for infant baptism."<sup>18</sup> But even without that consideration the extreme emphasis of Augustine was not undisputed not only by the so-called semi-Pelagians but even more by the failure of Augustine's ideas in this respect to make any serious impact in the Eastern Church.<sup>19</sup>

The issue is exactly the same: No one doubts that at least a measure of consequence is genetically (or as they would have put it, "seminally") derived; but how consequential is the measure, and how measurable is the consequence? At one extreme there is, associated with John Calvin, the strong hereditary determinism which is summarized in a catechism, "Certain Questions and Answers," bound into the Breeches Bible of 1615:

Question: Why doe men so much vary in matters of religion?

## ZYGON

Answer. Because all have not the like measure of knowledge, neither do all beleeve the Gospel of Christ.

Q. What is the reason thereof?

A. Because they onely beleeve the Gospel and doctrine of Christ, which are ordeined unto eternall life.

Q. Are not all ordeined unto eternall life?

A. Some are vessels of wrath ordeined unto destruction, as others are vessels of mercy prepared to glory.

Q. How standeth it with God's justice, that some are appointed unto condemnation?

A. Very well: because all men have in themselves sinne, which deserveth no lesse. . . .

At the other extreme there is the emphasis, relying on 1 Timothy 2:4, that God wills all men to be saved ("omnes omnino, ut nullus habeatur exceptus," as one of Augustine's opponents put it to him) and that the human will may be flawed but it is not fatally corrupt. From this follows the view that human behavior is indeed channeled from the past and from its seminal inheritance but that it is not fatalistically determined or worthless in its achievements. This is the view particularly associated with Thomas Aquinas and which we therefore may call the Thomist, as opposed to the Calvinist, emphasis.

### CALVINIST AND THOMIST SOCIOBIOLOGY

What we find in sociobiology is the same uneasy shifting between a Calvinist and a Thomist emphasis. Dawkins is a clear Calvinist, with his picture of genes constructing "lumbering robots" to ensure their own survival.<sup>20</sup> David P. Barash is clearly Thomist, and Wilson oscillates between the two. To put the matter of the extent of genetic determinism in this form may well seem to trivialize it, but it is in truth the most fundamental issue confronting sociobiology because it carries with it the issue of exactly how much, of any particular behavior, the genes are supposed to be determining. No one, presumably, doubts that the genes construct what Wilson calls the basic capacity to behave (the genotype) and that they determine explicitly a range of particular outcomes in the human case of which *On Human Nature* gives examples.<sup>21</sup> But do they determine, with the same explicitness, all outcomes? Or is it the case that the human brain (itself obviously genetically constructed) is able to organize its own and its body's activ-



ity in ways which are not, in all cases, a direct expression of a genetic program? On how long or short a genetic leash, for example, are cultural innovation and independence held? As S. Gould put it: "If genes only specify that we are large enough to live in a world of gravitational forces, need to rest our bodies by sleeping, and do not photosynthesize, then the realm of genetic determinism will be relatively uninspiring."<sup>22</sup>

Sociobiologists recognize as clearly as anybody else that this is the basic issue. When Wilson observes that "the evidence that human nature is to some extent genetically influenced is in my opinion decisive," one can only reply, so it is in virtually everybody else's opinion.<sup>23</sup> "The question of interest," to continue with Wilson's own words, "is no longer whether human social behavior is genetically determined: it is to what extent."<sup>24</sup> But so far the attempt to "determine the determinism" is so vague as to be virtually worthless.

Take Barash's *Sociobiology and Behavior* as an example: Barash is clear that he is not a Calvinist—he is not a strong genetic determinist. So if the genes do not determine outcomes in social behavior, what do they do? They provide "blueprints, codes for a range of potential phenotypes"; they supply the "*capacity*" (Barash's italics) to perform "social learning and the passage of traditions"; they create "*susceptibility* to various experiences" and genetic "*tendencies*" as opposed to genetic determinism.<sup>25</sup> "Some correlation always exists between genes and behavior, even human behavior," but "it may be diffuse and therefore almost entirely dependent upon environmental influences, as in the case of personality."<sup>26</sup> So it is likened to "the difference between shooting a bullet at a target and throwing a paper airplane; the paper airplane is acutely sensitive to environmental influences such as wind, and its ultimate path is not entirely predictable by the thrower."<sup>27</sup> And finally, applying "a sociobiological approach to human altruism," Barash writes: "Once again, this is not to deny a role for learning or social tradition in mediating such behavior; factors of this sort are entirely compatible with underlying genetically influenced tendencies as well. The value of sociobiology's evolutionary approach is that it allows predictions of possible behavioral universals or at least a common substructure rooted in our biology."<sup>28</sup>

But so what? Barash accepts that human altruism is a more extensive, and therefore a different, behavior from what is described as altruism in animals or insects, although it includes that behavior: "Of course," he writes, "human altruism is not reserved exclusively for relatives."<sup>29</sup> What then is the exact relevance of sociobiology to the understanding of what human behavior has become in its cultural

extension? Of course it is relevant to our understanding of how the genes construct what Dawkins calls their survival machine; but that is nothing like enough to justify the claim that sociobiology is the new synthesis of behavioral science, or the claim of R. L. Trivers: "Sooner or later, political science, law, economics, psychology, psychiatry, and anthropology will all be branches of sociobiology."<sup>30</sup>

In contrast, Barash, who has rightly seen and avoided the trap of even a restricted genetic determinism, has very much reduced the claim: "It may be that social psychology, sociology, and anthropology will also move increasingly toward sociobiology. If so, these disciplines will bring much light with them, and it will be appreciated."<sup>31</sup> But the only way in which that could happen would be if some much greater precision could be established in evaluating the balance between genetic determination and cultural constraint; and that seems a very distant goal. Indeed in view of the highly complex relation between genetic and cultural evolution it may be that the goal is literally unrealizable because human behavior is as much enabled as determined by the genes. The sociobiologist may reply that in principle, if not yet in practice, he can specify the genetic role; but it is worth bearing in mind the response of C. Longuet-Higgins's biologist, in his dialogue contributed to the IUBS symposium "Towards a Theoretical Biology": "Physicist: Surely if we knew all the structures of all the molecules in a cell, we could in principle work out everything about the cell from quantum-statistical-mechanics? Biologist: Well, for a start, you know as well as I do that when someone says something is possible 'in principle' he really means that it is impossible in practice."<sup>32</sup>

The point of this is not to hide in a gap of temporary ignorance, which will be closed one day, but to emphasize that the imprecision is inherent as a consequence of *Homo sapiens* being the sort of animal that it is. Thus it is all very well for Barash to conclude in a vague way: "Another way of viewing the interaction of genetics and environment in producing behavior is to recognize that behavior is not contained somehow *within* a gene, waiting to leap out like Athena, fully armored, from the head of Zeus. Rather, genes are blueprints, codes for a range of potential phenotypes. In some cases the specification may be very precise, leaving little room for modification due to learning or other experiences. In others, the blueprint may be so general as to be almost entirely at the disposal of experience. Nonetheless, some restrictions remain: an armadillo can behave only like an armadillo and a zebra must behave like a zebra."<sup>33</sup>

That is obvious—and important. But what does it actually mean to extend the sequence and say that a human must behave like a human?

E. L. Mascal put the point very graphically some years ago: "Living like a gorilla is a very good thing to do if you are a gorilla, and living like an angel is a very good thing to do if you are an angel. And neither of these tasks is very difficult for the being in question. If, however, you are a human being you can achieve true happiness only by living as a human being, and that is a much more difficult task. . . . It is to be a dweller in both the great realms of creation, the realm of matter and the realm of spirit. . . . He must be ready to live, not as a disembodied spirit, but as the kind of being . . . that he actually is, in a right relationship to God, to his fellow men, and to the material earth which is the basis of his physical life."<sup>34</sup>

But of course all talk of "realms of spirit," as opposed to "the psychic unity of mankind," is surely suspect to both Barash and Wilson. This is presumably what Wilson means when he says that we should not look for truth through the prisms of our mythologies: "To understand . . . evolutionary history and the contemporary biogram that it produced is to understand in a deeper manner the construction of human nature, to learn what we really are and not just what we hope we are, as viewed through the various prisms of our mythologies."<sup>35</sup>

And yet, to return to the first point in this paper, our ancestors, who produced those mythologies, necessarily belong to the psychic unity of mankind to which Wilson referred. They too (or some of them) were engaged in issues of mechanism and determination, with (as I have suggested) as much realism as a sociobiologist that we do not start life as a complete *tabula rasa*. Yet at the same time they explored with equal realism the possibilities, including the spiritual possibilities, which are enabled in the human form of appearance. The debate about the extent of determinism and capacity in human behavior is not a new one, as Wilson of course is well aware. Introducing Arthur L. Caplan's *The Sociobiology Debate*, Wilson wrote: "Caplan has correctly identified the debate as the continuance of the historic conflict created in the social sciences and humanities by the mechanistic examination of human nature through the instruments of conventional biology."<sup>36</sup>

But in that case, since we are considering sources of value, it would be as well to keep in mind what that debate was, and why and how the mechanistic ambition failed. Once again we cannot do this in detail but we can easily remind ourselves of the central issues if we concentrate on a single object, on a musical instrument, which became a summary of the debate in the eighteenth and nineteenth centuries and which still has some lessons for us. The instrument is the Aeolian harp.

## ZYGON

### THE AEOLIAN HARP

The Aeolian harp was so called because Aeolus was the Greek god of the wind. The Aeolian harp is an instrument played without human hand—played, in other words, by the wind when the harp is hung in a window. The strings are tuned to the same note, but the strings themselves are of a different thickness and therefore vibrate differently when the wind blows obliquely over them. William Jones described its sound in 1781: “If we consider the quality of its harmony, it very much resembles that of a chorus of voices at a distance; with all the expressions of the *forte*, the *piano*, and the *swell*; in a word, its harmony is more like to what we might imagine the aerial sounds of magic and enchantment to be, than to artificial music—we may call it, without a metaphor, the music of inspiration.”<sup>37</sup>

It is the music also of sorcery since it is played by no visible human hand; and tradition has it that this is why Saint Dunstan was thrown into a cesspit. At least by 1650 the harp reappears, when Athanasius Kircher designed an automated version, a water driven *aeolia camera*, either with a water wheel driving a variable shaft which would then, by means of pistons, pump bellows up and down and drive wind through the harp, or by compressing air by the raising of the level of water in airtight containers.<sup>38</sup> By 1784 the more ordinary Aeolian harp was so well known that Matthew Young could state: “This pleasing instrument, which has been reputed by some to be a modern discovery, was in truth the invention of Kircher. . . . It is an instrument so universally known, that it may well be presumed unnecessary to give any account either of its construction, or the manner of using it.”<sup>39</sup>

Actually, though, there were some ways of using the Aeolian harp of which Young, as a bishop, would surely have disapproved. Ferdinand Count Fathom, in Tobias Smollett’s novel of that name, used “the stream of melody” from an Aeolian harp, “more ravishingly delightful than the song of Philomel, the warbling brook, and all the concert of the wood,” in order to seduce Celinda in a forest hut.<sup>40</sup> Not surprisingly, perhaps, Curt Sachs commented: “The supernatural, ghostly sound of these chords, changing, increasing and fading away with the wind, without any player or any artificial contrivance, was wholly romantic. Between 1780 and 1860, therefore, Aeolian harps were much in favour in parks, on roofs and on ruins of medieval castles, especially in Germany and England.”<sup>41</sup>

But the harp was not hanging simply on the roofs of romantic castles; it was hanging very firmly in the romantic imagination. From the very start of the romantic protests against materialism, against

Isaac Newton's sleep, the Aeolian harp became a symbol of the divisive issue of whether a mechanistic account does tell us "what human beings really are" or whether the description of the human machine and its construction leaves us far short of what constitutes the human case. Exactly then as now there was no shortage of those who derided "the prisms of our mythologies." The most explicit was Thomas Love Peacock, who laid into what he regarded as the extravagances of English and German romanticism with an invective hardly matched even in the sociobiology debate, although what was at stake is exactly the same, the extent to which human behavior is constrained into its outcome by the way in which the machine is constructed. Peacock attacked what he called "the degenerate fry of modern rhymesters" because in his view they were not sufficiently aware that only modern science can tell us what the meaning and value of life really are. Their fault, in other words, lay in their adherence to poetry "as if it were still what it was in the Homeric age, the all-in-all of intellectual progression, and as if there were no such things in existence as mathematicians, astronomers, chemists, moralists, metaphysicians, historians, politicians, and political economists."<sup>42</sup> The result, according to Peacock, had been a divorce between poetry and life.<sup>43</sup>

It was particularly the Lake Poets who were the target of Peacock's satire. Their fault was precisely that divorce between the contemporary exploration of nature, including human nature, and the poetic imagination, which suggests an early version of the two cultures—to which Wilson also refers with a similar ambition: "I became more persuaded than ever [after the publication of *Sociobiology*] that the time has at last arrived to close the famous gap between the two cultures, and that general sociobiology, which is simply the extension of population biology and evolutionary theory to social organization, is the appropriate instrument for the effort."<sup>44</sup> "We know," wrote Peacock, with a comparably prosaic literal-mindedness,

that there are no Dryads in Hyde-park nor Naiads in the Regent's canal. . . . While the historian and the philosopher are advancing in, and accelerating, the progress of knowledge, the poet is wallowing in the rubbish of departed ignorance, and raking up the ashes of dead savages to find gewgaws and rattles for the grown babies of the age. Mr. Scott digs up the poachers and cattle stealers of the ancient border, Lord Byron cruises for thieves and pirates on the shores of the Morea and among the Greek islands. . . . Mr. Wordsworth picks up village legends from old women and sextons, and Mr. Coleridge, to the valuable information acquired from similar sources, superadds the dreams of crazy theologians and the mysticisms of German metaphysics, and favours the world with visions in verse, in which the quadruple elements of sexton, old woman, Jeremy Taylor, and Emanuel [*sic*] Kant are harmonized into a delicious poetical compound.<sup>45</sup>

But what was at stake in the mysticisms of German metaphysics, and the reason why Coleridge turned not only to Kant but to Friedrich Schelling and others, was what I have called, in *The Sense of God*, the rapidly developing dilemma of individual meaning or of individual significance, and that dilemma was a consequence of the ambition, on the part at least of some, to extend to human nature those Newtonian mechanistic principles which had proved so exhilaratingly successful in explaining fundamental phenomena in the natural universe, or, to put it the other way round, to include man within the natural order and to account for the phenomena exhibited in his nature by the same principles which are deployed elsewhere.<sup>46</sup> Thus whereas René Descartes had argued that all animals are “machines” but that man is an exception, Julien Offray de La Mettrie responded, in *The Natural History of the Soul* (1745), by denying any distinction between animals and humans. In that work he obliterated the distinction by maintaining that animals are not machines because they also think and feel. However, three years later, by a subtle inversion whose consequences were almost as profound intellectually as the inversion whereby Karl Marx stood G. W. F. Hegel on his head, La Mettrie argued that the distinction between men and animals is still to be obliterated but now for a different reason. Both animals and humans are machines but the sort of machines which think and feel: “Man is but an animal, or a collection of springs which wind each other up. . . . Wherefore the soul is but a principle of motion or a material and sensible part of the brain, which can be regarded, without fear of error, as the mainspring of the whole machine. . . .”<sup>47</sup> It is not unlike the strong mechanistic opening of Wilson’s *On Human Nature*: “If the brain is a machine of ten billion nerve cells and the mind can somehow [*sic*] be explained as the summed activity of a finite number of chemical and electrical reactions, boundaries limit the human prospect—we are biological and our souls cannot fly free.”<sup>48</sup>

So we arrive at *l’homme machine*. The unity of living organisms is absolute: “Man is not moulded from a costlier clay; nature has used but one dough, and has merely varied the leaven.”<sup>49</sup> Indeed La Mettrie went so far as to suggest that a young ape might be educated much as Amman had educated deaf mutes, provided one chose for the experiment “an ape with the most intelligent face, and the one which, in a thousand little ways, best lived up to its look of intelligence.”<sup>50</sup> In that case the ape “would no longer be a wild man, or a defective man, but he would be a perfect man, a little gentleman, with as much matter or muscle as we have, for thinking and profiting by his education.”<sup>51</sup>

The antireligious and antitheological implications of this are obvious and were explicitly articulated by La Mettrie, although even in eighteenth-century France he hedged a little and attributed the most extreme statement of the view that "the universe will never be happy until it is atheistic" to a friend of his, whom he described as "a wretch—cet *abominable* Homme."<sup>52</sup> So despite his claims that human faculties summarized in imagination are not diminished in worth, the whole thrust of the argument is that the analogy between animals and humans is legitimate and observable and that even morality is not a distinctive human possession: "Convinced," wrote La Mettrie in conclusion, "that in spite of the protests of his vanity, he is but a machine or an animal, the materialist will not maltreat his kind, . . . and following the natural law, given to all animals, he will not wish to do to others what he would not wish them to do to him."<sup>53</sup>

This Isaianic vision, of the wolf lying down with the lamb, or of a pack of wolves restraining their conduct altruistically by appeal to the Golden Rule seems somewhat remote from the world in which lambs live. But still the real thrust of La Mettrie's argument is to unify all phenomena under single principles or laws of explanation, with nothing distinctively human to escape the net: "Let us then boldly conclude that man is a mechanism, and that in the whole universe there is but a single substance differently modified. . . . Such is my system, or rather the truth, unless I am much deceived. It is short and simple. Dispute it now who will."<sup>54</sup>

It is this which created the dilemma of individual significance. What is the virtue or the value of the overplus in human performance and character? There is certainly a difference of degree; but is the difference of such proportion that it amounts to a difference of kind? As Hegel put it, looking for an escape from the bondage of materialism, and identifying one of the three moments of civil society as the system of needs: "An animal's needs and its ways and means of satisfying them are both alike restricted in scope. Though man is subject to this restriction too, yet at the same time he evinces his transcendence of it and his universality, first by the multiplication of needs and means of satisfying them, and secondly, by the differentiation and division of concrete need into single parts and aspects which in turn become different needs, particularized and more abstract."<sup>55</sup>

The same point can be put in more colloquial and familiar terms: We may accept that a thousand of La Mettrie's apes, with a thousand typewriters, would, in a thousand years, produce the works of Shakespeare. But would they recognize and share the qualitative nature of their achievement, and would they reinforce and inspire their sub-

sequent lives by reference to what they had produced? The German metaphysicians, whose mysticism Peacock disliked, had recognized more acutely than most the seriousness of the issue and the complete inadequacy of a naïve Newtonian materialism to account for the qualitative and mental function of brain behavior. That is why such figures as Coleridge and Thomas Carlyle relied so heavily on them, if not in detail, at least as an encouragement and as an inspiration—what we might call now “a background assumption” that the tale was not yet entirely told—“living riotously,” as Carlyle once put it (consoling himself for the loss of his first love, Margaret Henderson), “with Schiller, Goethe and the rest.”<sup>56</sup>

Coleridge did not begin his serious study of Kant until his three-year visit to the Lake District between 1800 and 1803.<sup>57</sup> Already by 1801 he was able to write to Thomas Poole: “I turn at times half reluctantly from Leibniz or Kant even, to read a smoking new newspaper—such a *purus putus* metaphysician am I become.”<sup>58</sup>

Less than ten years before, while still an undergraduate at Jesus College, Cambridge, Coleridge had been overwhelmed by the persuasive power of David Hartley’s *Observations on Man*, published in 1749; it had a similarly Newtonian and systematic inclusiveness, bringing all phenomena, including all human phenomena, into a single frame of explanation or analysis. As Walter Jackson Bate put it, “it was precisely this systematic inclusiveness that appealed to Coleridge. It seemed to explain everything, from the most elementary physiological facts to the highest states of consciousness, benevolence, and religious apprehension.”<sup>59</sup> It was, we might say, the sociobiology of its day.

Coleridge’s enthusiasm for iconoclastic novelty is familiar to anyone who has been an undergraduate—taken to an extreme, perhaps, by Coleridge, who called his first son Hartley. But in later years he saw with increasing clarity that a Newtonian materialism, bringing all phenomena within its single scope, did not do justice and could not do justice to the creativity of the mind in initiating and in observing its own activity. Referring specifically to Hartley’s system, Coleridge wrote in *Biographia Literaria*: “Whether any other philosophy be possible but the mechanical, and again, whether the mechanical system can have any claim to be called philosophy, are questions for another place. It is, however, certain that as long as we deny the former and affirm the latter, we must bewilder ourselves, whenever we would pierce into the adyta of causations.”<sup>60</sup> Why must we remain bewildered? Because the *explicandum* becomes the *explicans*:

The will, and with the will all acts of thought and attention, are parts and products of this blind mechanism, instead of being distinct powers whose



function it is to control, determine and modify the phantasmal chaos of association. The soul becomes a mere *ens logicum*; for as a real separable being, it would be more worthless and ludicrous than the grimalkins in the cat-harpsichord described in the *Spectator*. For these did form a part of the process; but in Hartley's scheme the soul is present only to be pinched or stroked, while the very squeals or purring are produced by an agency wholly independent and alien. . . . Accordingly this *caput mortuum* of the Hartleian process has been rejected by his followers, and the consciousness considered as a result, as a tune, the common product of the breeze and the harp.<sup>61</sup>

Here at last the Aeolian harp returns to the scene; and here also we can see why Geoffrey Grigson called the Aeolian harp "really the prime romantic image."<sup>62</sup> The question is utterly simple and divisive: Are we an instrument hanging in the wind, played by the mechanistic laws which govern the falling of an apple—played by the genes which program us? Such an instrument produces ethereal and ravishing sound, unique and unrepeatable, on each occasion; but it is ultimately passive to the forces which evoke its utterance. Or are we constructed in such a way that even within the mechanism we are able to initiate our own program of music and composition? In that case we would be active in harnessing the forces which have made our utterance possible.

Within a year of leaving Cambridge Coleridge had married and moved to Clevedon, and there, in 1795, he wrote "The Aeolian Harp," in which exactly this conflict is expressed, although Coleridge at this stage was still very much more on the materialist side, in the form of a spiritualized materialism; indeed W. Schrickx argued that we can be more precise and say that it is a neoplatonic spiritualism of a Cambridge kind.<sup>63</sup> Coleridge, in this early poem, gets no further. He edges cautiously toward a more explicit pantheism, but he puts it very hypothetically:

And what if all of animated nature  
Be but organic harps diversely framed,  
That tremble into thought, as o'er them sweeps  
Plastic and vast, one intellectual breeze,  
At once the Soul of each, and God of all?<sup>64</sup>

But Coleridge draws back from the edge and puts into the mouth of his newlywed wife "a mild reproof" against "these shapings of the unregenerate mind."<sup>65</sup>

But of course the real issue which ran on into the rest of Coleridge's life was not orthodoxy versus speculation but how to account for the creativity of human life. Are we the harp or the harpist?

This is exactly the point of a letter by Robert Burns, in which the image of the Aeolian harp again sharpens the issue:

## ZYGON

We know nothing or next to nothing, of the structure of our souls, so we cannot account for those seeming caprices in them, that one should be particularly pleased with this thing, or struck with that, which on minds of a different cast, makes no extraordinary impression. I have some favourite flowers in spring, among which are the mountain-daisy, the harebell, the foxglove, the wild-brier rose, the budding birch, and the hoary hawthorn, that I view and hang over with particular delight. I never hear the loud solitary whistle of the curlew in a summer noon, or the wild mixing cadence of a troop of gray plover in an autumnal morning, without feeling an elevation of soul like the enthusiasm of devotion or poetry. . . . Are we a piece of machinery, which, like the Aeolian harp, passive, takes the impression of the passing accident; or do these workings argue something within us above the trodden clod?<sup>66</sup>

Exactly the same issue, focused on the Aeolian harp, became the foundation of Shelley's *Defence of Poetry* against the sallies of Peacock: "Poetry, in a general sense, may be defined to be 'the expression of the imagination': and poetry is connate with the origin of man. Man is an instrument over which a series of external and internal impressions are driven, like the alternations of an ever-changing wind over an Aeolian lyre, which move it by their motion to ever-changing melody."<sup>67</sup>

The words "Aeolian lyre" here are very precise because in what appears to be the first draft of this essay Shelley originally wrote the word "lute."<sup>68</sup> So thus far in the argument, by the change of instrument from "lute" to "Aeolian lyre," Shelley has constructed a thoroughgoing Hartleian, mechanistic argument, which is very similar—indeed, it is formally identical—to an argument put forward in sociobiology: Man is indeed driven from behind (by Newtonian laws in the one case, by the genes and by their necessity to inhabit bodies and environments appropriate for their survival in the other), but this does not diminish the accidental beauty of human achievement; it is simply that nothing further, such as mind or God, should be inferred from it.

However, Shelley did not leave the argument at that point. His own experience of himself—to say nothing of the reported and observed experience of such friends as John Keats and Robert Southey—drove him on to make exactly that statement of issue which occurred also in the letter by Burns. Shelley continued: "But there is a principle within the human being, and perhaps within all sentient beings, which acts otherwise than in the lyre, and produces not melody, but harmony, by an internal adjustment of the sounds or motions thus excited to the impressions which excite them. It is as if the lyre could accommodate its chords to the motions of that which strikes them, in a determined proportion of sound; even as the musician can accommodate his voice

to the sound of the lyre.”<sup>69</sup> There is thus a deep uncertainty in Coleridge and Shelley, focused on the harp: On the one side, of course the materialist arguments are strong—Coleridge had been converted by them in Cambridge. And yet the new synthesis, attempting to embrace all phenomena and all other forms of inquiry in its scope, was undoubtedly a Procrustean bed. William Blake, with his usual intuitive vision, had seen the point at much the same time, when he protested, in his famous letter to Thomas Butts in 1802, against not Newton’s genius but Newton’s sleep. The edge of his protest is against single vision, that is, against seeing the world in one way only:

With Angels planted in Hawthorn bowers  
And God himself in the passing hours,  
With Silver Angels across my way  
And Golden Demons that none can stay . . .  
What to others a trifle appears  
Fills me full of smiles or tears;  
For double the vision my Eyes do see,  
And a double vision is always with me.  
With my inward Eye ’tis an old man grey;  
With my outward, a Thistle across my way . . .  
    May God us keep  
From Single vision and Newton’s sleep.<sup>70</sup>

This is the very root and sustenance of what we refer to as the Romantic movement: “Believe me, Southey!” wrote Coleridge, “a metaphysical solution, that does not instantly *tell* you something in the heart is grievously to be suspected as apocryphal. I almost think that ideas *never* recall ideas, so far as they are ideas, any more than leaves in a forest create each other’s motion. The breeze it is that runs through them—it is the soul, the state of feeling.”<sup>71</sup>

Here yet again the breeze is blowing strongly, just as it does through the poems of William Wordsworth:

O there is blessing in this gentle breeze  
That blows from the green fields and from the clouds  
And from the sky . . .

Those are the very opening words of the original version of *The Prelude*; and before long the Aeolian harp makes its appearance (ll. 101-7):

It was a splendid evening, and my soul  
Did once again make trial of the strength  
Restored to her afresh; nor did she want  
Aeolian visitations; but the harp  
Was soon defrauded, and the banded host  
Of harmony dispersed in straggling sounds  
And lastly utter silence.

Here Wordsworth would seem to be on the side of those who regard man as a passive instrument. But just before this, in lines 41-47, he writes strongly of "the correspondent breeze" within the human subject, a creativity which acts within the mind as the breeze acts upon the body.

The correspondent breeze as a romantic metaphor is the subject of a study by M. H. Abrams, and there is no need to pursue it further.<sup>72</sup> What the so-called Romantics were concerned to defend was what we may deliberately call "inspiration"—deliberately because of the Latin words *in-spiro* (I breathe in). Coleridge did not need to doubt that we are "an ingenious mechanical contrivance," but human mechanisms do not respond identically to identical phenomena: One eye works much the same as another; but no two eyes see the same thing, even when they look upon the same object. That is the point of Blake's protest. To the materialist the individual vision and its interpretation in the mind are epiphenomena; to the poet the hardware of muscle and bone are the vehicle from which he is launched into eternity. The fundamental issue remains, as it did for Coleridge, whether we are played by the program or whether we are programmed in such a way that we take some control of the transactions of energy in this system.

#### THE SINGER AND THE SONG: THE QUESTION OF JUDGMENT

This long pursuit of the Aeolian harp is not simply an exercise in the archaeology of knowledge. It is a reminder that the issues raised by sociobiology do not originate with sociobiology. They arise from and are a part of the long human exploration of itself and of its own capacity. Certainly we advance in our understanding of what we are and of how we are what we are, and we do indeed correct the errors of an earlier age, as our own in due course will be corrected. There is no suggestion here therefore that we are on Dooley's roundabout: "Progress is like a merry-go-round. We get up on a speckled wooden horse an' the mechanical pianny plays a chune an' away we go, holler-in'. We think we're thravellin' like th' divvle but the man that doesn't care about merry-go-rounds knows that we will come back where we were."<sup>73</sup>

On the other hand the exploration of what the transaction of energy in the human case is capable of being and becoming may achieve landmarks even without particularly accurate (from our point of view) scientific symbols with which to articulate their nature. One of the ironies is that virtually every literate English-speaking person will have heard or read a poem by Wordsworth, and virtually none will have read or heard a single line of David Hartley. And that is a

more serious point than it probably appears to be: One of the most fundamental objections to sociobiology in its claims to be a new synthesis is not scientific; it is, as Kant realized in facing the same issue in his own time, aesthetic. The poverty of the new synthesis, based on Newtonian mechanisms, demanded an entirely different reconciliation between nature and imagination, and Kant supplied it with the "transcendental faculty of imagination"—in other words, an a priori synthetic power of mental function, which is implicit in being human. We do not have to agree with Kant's formulation in order to realize that no amount of emphasis on the quantity of the mechanism can reduce the quality of that function or its value in experience as a goal and as a resource of being human.

But precisely because the ambition to construct a new mechanistic synthesis continued in the nineteenth century, with its claim, on the part of some of its advocates, to be the only true account of human nature, so the artistic protest continued and gathered momentum, culminating in the paradox of Oscar Wilde—in other words, in what is now referred to as "the aesthetic movement"—that art does not hold up a mirror to nature; it is man's protest against nature's ineptitudes, his way of substituting perfect imaginative forms for crude and elemental natural ones: "Ethics, like natural selection, make existence possible. Aesthetics, like sexual selection, make life lovely and wonderful, fill it with new forms, and give it progress, and variety and change."<sup>74</sup>

Once again we do not have to agree with Wilde in order to realize that one of the major deficiencies in sociobiology is that it has nothing corresponding to Kant's *Critique of Judgment*; this means that whatever nature it is describing it is certainly not human nature. It cannot give an adequate status to the possible validity of human insight and judgment, as it constructs its worlds of imagination and love or for that matter of hatred and deceit. It is clearly not the case that all human judgments are a consequence of direct genetic determination; nor are they, in all cases, the direct working out of genetic programs. How then do we arrive at judgments (and of course at many other brain activities) which not only transcend the genetic base but also and frequently contradict it? If this curiosity of human fact, which is so powerful in creating senses of value in human life, is not accepted, then, far from healing the divorce between the two cultures, a new synthesis which aims to account for all novelty and variety as variations on a single theme drives an even deeper wedge between them. If the sociobiological ambition continues to be expressed in its present partial form, we will predictably end up with a new equivalent to

## ZYGON

symbolism, that is, with a reinforcement of the existing tendency to remove art from the domain of public intelligibility into that of private experience. It is therefore highly probable that we will revert (though in other forms), even faster than we are in any case doing, to Walter Pater's aphorism, "All art constantly aspires to the condition of music," and to Richard Wagner's belief that literature must become like music in finding an alogical language that will dissolve ideas into feelings:

There remain but two ways of development open to poetry. Either it must entirely pass over into the field of pure abstraction—of combinations of meanings, and the representation of things, by the explanation of the logical laws of thought;—and this is what, in its guise of *philosophy*, it already does. Or it must become intimately bound up with music, and with such music as that whose endless power is revealed to us by the symphony of Beethoven.

Poetry will easily find its way to this, and will recognize its strongest, inmost longing in its final culmination in music, so soon as it appreciates a want in it, which only poetry in its turn can supply. To explain this want, let us first establish that ineradicable quality of the human perceptive process, which impelled man to the discovery of the laws of causality, and because of which he involuntarily asks himself, in the presence of every impressive phenomenon—"Why is this?"<sup>75</sup>

That is the exact point from which Wilson also begins: "Deity can still be sought in the origin of the ultimate units of matter, in quarks and electron shells (Hans Küng was right to ask atheists why there is something instead of nothing) but not in the origin of species."<sup>76</sup> But that is to underestimate the true nature of human capability or what Wilson calls capacity, which includes the capability of entering into a condition of what is described as God-relatedness. We come back to the same fundamental point. Of course we have the genetically coded ability to breathe, to walk, to eat, to sweat; we know equally well that we have the ability to function chemically and electrically in our heads in differentiated ways which we label (culturally) as joy, despair, hope, anger, love; and of course those possibilities are genetically constructed and enabled; so also is the ability to shift the function of these molecules and their connections into states of consciousness, or altered consciousness, which are very different from the consciousness and its states which prevail in the serial occurrences of life. But equally, and even more widely reported than such states as *satori* or *samadhi*, there is the ability of this organism to enter into states of relatedness with what is experienced as a correspondent reality which does not appear as an object among objects, but only (so far as *we* know) in its fields of interaction with ourselves, and which has traditionally been characterized theistically, that is, as God, or some such word. That

possibility also is genetically enabled; but its truth, its beauty, and its virtue are neither contained nor diminished in the genetic explanation of what makes it possible. God, or WXYZ, or some referential word is required in order to make communicable and thus available those experiences of relatedness which are a consequence of attending to their possibility in the modes of attentiveness, intentionality, and brain behavior which we refer to by such words as prayer, worship, and contemplation.

Consequently a theistic religion can well accept that we are, in all our potentialities, tunes sung by the genes. But where Christianity differs is that it knows that within the human potential is the possibility of becoming tunes sung by God. That too is a very ancient theme—and no less realistic for being ancient than the theme of seminal constraint. John Donne wrote on his own death:

Since I am coming to that Holy Room  
Where, with Thy quire of Saints for evermore  
I shall be made Thy Music; as I come  
I tune the instrument here at the door,  
And what I must do then—think here before.<sup>77</sup>

But it is a contemporary theme as well:

For love doth use us for a sound of song,  
And love's meaning our life wields,  
Making our souls like syllables to throng  
His tunes of exultation.

Down the blind speed of a fatal world we fly,  
As rain blown along earth's fields;  
Yet are we god-desiring liturgy,  
Sung songs of adoration;

Yea, made of chance and all a labouring strife,  
We go charged with a strong flame;  
For as a language love hath seized on life  
His burning heart to story.<sup>78</sup>

Virtually all the poems on this theme accept the strength of the hereditarian determinist evidence; and yet, exactly as the Buddha knew in his own case and asserted on behalf of others, we are constructed in such a way that there are both the possibility and the responsibility to change one's course within the direction of the stream:

Pierce where thou wilt the springing thought in me,  
And there thy pictured countenance lies enfurled,  
As in the cut fern lies the imaged tree.  
This poor song that sings of thee,

## ZYGON

This fragile song, as but a curled  
Shell outgathered from thy sea,  
And murmurous still of its nativity.<sup>79</sup>

What then is needed is a more cooperative phenomenology—a more patient listening to the reports which come in of the far range of what the human animal is capable of experiencing, of being, and of becoming, all of which the genes enable and some of which they dictate. Without that more cooperative phenomenology, the poet will be compelled to be a protestant, instead of more often celebrating and making more human the vastly new vision of the universe which has opened up in the post-Einsteinian and post-Darwinian perspective.

### NOTES

1. Edward O. Wilson, *On Human Nature* (Cambridge, Mass.: Harvard University Press, 1978), p. 222; David P. Barash, *Sociobiology and Behavior* (Oxford: Elsevier, 1978), p. xiii. Cf. Wilson in Barash, p. xiii, which has "systematic" for "scientific." In Wilson's *Sociobiology: The New Synthesis* (Cambridge, Mass.: Harvard University Press, 1975), p. 4, the definition omits "in all kinds of organisms." The definition in Michael S. Gregory, Anita Silvers, and Diane Hutch, eds., *Sociobiology and Human Nature* (San Francisco: Jossey-Bass, 1978), p. 2, adds "including sexual parental behavior, in all kinds of organisms. . . ." None of the variations affect the substance of the definition. However, the more descriptive definition at the beginning of *On Human Nature* makes much more explicit the claim that societies have biological properties, a much more controversial claim: "Sociobiology . . . is a more explicit hybrid discipline [than ethology] that incorporates knowledge from ethology . . . , etiology . . . , and genetics in order to derive general principles concerning the biological properties of entire societies" (p. 16).

2. A comment made by Daniel R. DeNicola at the Twenty-sixth Summer Conference ("Evolution, Human Nature, and Values") of the Institute on Religion in an Age of Science, Star Island, New Hampshire, July 28-August 4, 1979. See his paper from that conference, "Sociobiology and Religion: A Discussion of the Issues," in the next issue of *Zygon*.

3. I hope to include such an examination in a forthcoming book on the religious exploration of life.

4. Wilson, *On Human Nature*, p. 46.

5. The reference to the life of the mosquito is from *ibid.*, pp. 55-56. The example I gave at the conference of the necessity to attend to detail was also taken from Wilson. He complained (quite rightly) that his opponents had distorted his views by omitting part of a paragraph when they quoted it without any omission marks; but he did the same thing in the final quotation in his book *Insect Societies* (Cambridge, Mass.: Harvard University Press, 1971). The quotation is from P. Huber's *Recherches sur les Moeurs des Fourmis indigènes*, published in 1810. Wilson's text and bibliography refer to that original French edition. According to Wilson, Huber wrote of an organization and the division of labor including slavery: "This great attribute, which signifies unbounded wisdom, induces us to admire those laws by which providence rules the insect societies. . . ." What Huber actually wrote was: "Ce grand trait, où brille une bonté infinie, en nous rappelant les abus auxquels une institution semblable est sujette chez plusieurs nations policées, nous fait admirer la douceur des lois. . . ." As it stands, Huber can be interpreted as saying the opposite of what Wilson supposed. Where he asked himself (in *Scientific American* [see Wilson, *On Human Nature*, pp. 80-81]), "Doesn't slavery hold any lesson for our own species?" and answered, "Probably not," Huber was answering, "Yes indeed": If, like the sluggard, we go to the ant for instruction, we may



then bring about not the abolition of servitude but what he called "servitude allied to the common interest."

6. Richard Dawkins, *The Selfish Gene* (Oxford: Oxford University Press, 1976), pp. 207, 212.

7. Wilson, *On Human Nature*, pp. 6-7.

8. *Ibid.*, pp. 11-13.

9. Mohandas K. Gandhi, *Young India*, 29. 9. 27.

10. *Bhagavadgita*, ed. S. Radhakrishnan (London: Allen & Unwin, 1948), pp. 160-61.

11. *Samannaphala Sutta* 20-22; cf. with this the recurrent image in Wilson, quoting from C. H. Waddington, of the development of a human trait resembling the descent of a ball through a rolling landscape toward the shore. "The developmental topography of human behavior is enormously broader and more complicated [than that of the mosquito], but it is still a topography" (Wilson, *On Human Nature*, pp. 60-61).

12. In *Digha Nikaya* 3.1.230 the different compounds of *kamma* are described.

13. Rom. 5:19.

14. Rom. 7:19.

15. Tertullian *De Testimonio Animae* 3.

16. Tertullian *De Anima* 39. 41.

17. Tertullian *De Baptismo* 18. 4.

18. E. Ferguson, "Inscriptions and the Origin of Infant Baptism," *Journal of Theological Studies* 30 (1979): 45.

19. For a summary see John Norman Davidson Kelly, *Early Christian Doctrines*, 5th ed. (London: A. & C. Black, Ltd., 1977), p. 370. On the earlier Greek fathers, Kelly observes: "The Greek fathers, with their insistence that man's free will remains intact and is the root of actual sinning, have a much more optimistic outlook than the West. It is easy to collect passages from their works which, at any rate in the light of later orthodoxy, appear to rule out any doctrine of original sin. Both the Gregories, for example, as well as Chrysostom, teach that newly born children are exempt from sin" (p. 349).

20. See particularly his *Selfish Gene*, p. 21.

21. The word "capacity" is important in *On Human Nature* (see, e.g., pp. 2, 33, 56, 58-59, and 187).

547.

22. In Arthur L. Caplan, ed., *The Sociobiology Debate* (New York: Harper & Row, 1978), p. 345.

23. In *ibid.*, p. 300. Cf. the program articulated by Wilson in *Sociobiology*, pp. 4 and 547.

24. Wilson, *On Human Nature*, p. 19; see also the specific discussion on pp. 55-61.

25. Barash (n. 1 above), pp. 41, 286, 125, 287, 226, and 284.

26. *Ibid.*, p. 286.

27. *Ibid.*, p. 287.

28. *Ibid.*, p. 308.

29. *Ibid.*, p. 311.

30. *Time* (August 1, 1977), p. 54, as quoted by S. J. Gould, "Sociobiology: The Art of Storytelling," *New Science* (November 16, 1978), p. 533.

31. Barash, p. 6.

32. C. Longuet-Higgins, "The Seat of the Soul," in *Towards a Theoretical Biology*, ed. C. H. Waddington, 3 vols. (Edinburgh: Edinburgh University Press, 1970), 3:237. Longuet-Higgins develops the point that even if the calculation were possible in practice, it would not actually yield the answer to the question because the goal is unrealizable: "A quantum-mechanical calculation on one particular bacterial cell would be incorrect for every other cell, even of the same species."

33. Barash, p. 41.

34. E. L. Mascall, *The Importance of Being Human*, Bampton Lectures in America, no. 11 (New York: Columbia University Press, 1958), p. 33.

35. As quoted by Barash, p. xv.

## ZYGON

36. Caplan (n. 22 above), p. xi.
37. William Jones, *The Theological, Philosophical, and Miscellaneous Works*, ed. W. Stevens, 12 vols. (London, 1801), 10:70ff.
38. See the illustrations in Athanasius Kircher, *Misurgia Universalis*, 2 vols. (Rome: Francisci Corbelletti, 1650), 2:311.
39. Matthew Young, *An Enquiry into the Principal Phaenomena of Sounds and Musical Strings* (London: G. Robinson, 1784), p. 170.
40. Tobias Smollett, *Ferdinand Count Fathom* (1753).
41. Curt Sachs, *The History of Musical Instruments* (London: Dent & Sons, 1942), p. 402.
42. Thomas Love Peacock, *The Four Ages of Poetry* (and Percy Bysshe Shelley, *A Defence of Poetry*), ed. John E. Jordan (Indianapolis: Bobbs-Merrill Co., 1965), p. 20.
43. It is true that William Wordsworth, in *Lyrical Ballads*, made a deliberate attempt to return to the language and passions of the people. In his own words, "... I have chosen subjects from common life, and endeavoured to bring my language near to the real language of men" ("Preface to the Lyrical Ballads"). The results would scarcely have met Peacock's criticisms and in some instances cannot possibly count as successful poetry: Consider the first versions of "Simon Lee" and "The Thorn."
44. Wilson, *On Human Nature*, pp. ix-x.
45. Peacock, pp. 15-16.
46. See particularly the opening chapter of my *The Sense of God: Sociobiological, Anthropological and Psychological Approaches to the Origin of the Sense of God* (Oxford: Clarendon Press, 1973).
47. Julien Offray de La Mettrie, *Man a Machine*, trans. Gertrude C. Bussey (La Salle, Ill.: Open Court Publishing Co., 1943), p. 135.
48. Wilson, *On Human Nature*, p. 1.
49. La Mettrie (n. 47 above).
50. *Ibid.*, p. 100.
51. *Ibid.*, p. 103.
52. *Ibid.*, p. 127; see also Julien Offray de La Mettrie, *L'homme Machine: A Study in the Origins of an Idea* (critical ed., with an introductory monograph and notes by Aram Vartanian) (Princeton, N. J.: Princeton University Press, 1960), p. 179.
53. La Mettrie (n. 47 above), p. 148.
54. *Ibid.*, p. 149.
55. G. W. F. Hegel, *Hegel's Philosophy of Right*, trans. T. M. Knox (Oxford: Clarendon Press, 1945), p. 127.
56. As quoted by Lawrence and Elizabeth Hanson, *Necessary Evil: The Life of Jane Welsh Carlyle* (London: Constable & Co., 1952), p. 34.
57. Walter Jackson Bate, *Coleridge* (London: Weidenfeld & Nicolson, 1969), p. 112.
58. The letter is in Earl Leslie Griggs, ed., *Unpublished Letters of Samuel Taylor Coleridge*, 2 vols. (London: Constable & Co., 1932), 1:173.
59. Bate, p. 12.
60. Samuel Taylor Coleridge, *Biographia Literaria*, ed. George Watson (London: J. M. Dent & Sons, 1965), p. 62. The Greek word *adutos* means literally "not to be entered," hence (and usually) the innermost sanctuary and shrine. See, e.g., Homer *Iliad* 5. 448, 512.
61. Coleridge, p. 68.
62. Geoffrey Grigson, *The Romantics* (London: G. Routledge & Sons, 1942), p. 342.
63. In "Coleridge and the Cambridge Platonists," *Review of English Literature* 7 (1966): 71-91, W. Schrickx pointed out that Coleridge borrowed from the Bristol Library Society, on May 15, 1795, Ralph Cudworth's *True Intellectual System of the Universe* and that he borrowed it again for a month in 1796 (p. 72). Referring to the lines from "The Aeolian Harp"—"For never guiltless may I speak of him,/ The Incomprehensible!"—Schrickx suggested a specific influence from Cudworth, "whose general thesis, neatly summarized in the running title of his work (pp. 638-39), is, *God, though Incomprehensible, Yet Not Unconceivable*" (p. 74).

64. Samuel Taylor Coleridge, "The Aeolian Harp."
65. *Ibid.*
66. As quoted by Margaret Cushing Osgood, *The City without Walls* (London: J. Cape, 1932), pp. 504-5.
67. Shelley (n. 42 above), p. 26.
68. Bodley manuscript Shelley d. 1.
69. Shelley, p. 27.
70. William Blake, *Blake: Complete Writings*, ed. G. Keynes (Oxford: Oxford University Press, 1972), pp. 817-18.
71. As quoted by William Thomas Jones, *The Romantic Syndrome* (The Hague: Nijhoff, 1961), p. 126.
72. M. H. Abrams, "The Correspondent Breeze: A Romantic Metaphor," in *English Romantic Poets*, ed. M. H. Abrams (Oxford: Oxford University Press, 1960), pp. 37-54.
73. Finley Peter Dunne, "Machinery," in *Observations by Mr. Dooley* (New York: R. H. Russell, 1902).
74. As quoted by A. Redman, *The Epigrams of Oscar Wilde* (London: Alvin Redman, Ltd., 1952), p. 69. The road that leads to "art for Art's sake" and to the autonomy of the poem—"the autonomy of the work itself as existing for its own sake," as John Crowe Ransom put it (*The World's Body* [New York: Charles Scribner's Sons, 1938], p. 343)—is effectively though briefly traced by M. H. Abrams, "Belief and the Suspension of Disbelief," in *Literature and Belief* (New York: Columbia University Press, 1958), pp. 1-30.
75. Richard Wagner, "The Music of the Future," in *Art, Life and Theories of Richard Wagner*, trans. Edward L. Burlingame (New York: H. Holt & Co., 1889), pp. 160-61.
76. Wilson, *On Human Nature*, p. 1.
77. John Donne, "Hymn to God in My Sickness."
78. Lascelles Abercrombie, "Hymn to Love," the prelude to *Emblems of Love* (London: John Lane, 1912).
79. Francis Thompson, "The Mirage," in *Selected Poems* (London: 1921), p. 25.