Donald Campbell 1975

Reintroducing Konrad Lorenz to Psychology

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Reintroducing Konrad Lorenz to Psychology[1]

The best-known image of Konrad Lorenz is that of the eminent scientist willing to go beyond the technicalities of his research in discussing a wide range of social concerns with the general public, the popular essayist *of King Solomon's Ring* (1952), *On Aggression* (1966), *Civilized Mans Eight Deadly Sins* (1973), and "The Enmity Between Generations" (1970) (reprinted in the section of this book to follow).

The Nobel Prize Award for Biology of 1973 presents another image of Lorenz: the cofounder along with Karl von Frisch and Nikolaas Tinbergen of an esoteric new scientific discipline, "ethology," or behavioral zoology, using detailed studies of innate animal behavior to describe evolutionary sequences and relationships among species. This side of Lorenz is best presented in the two volumes of his collected papers published by the Harvard University Press (1971, 1972), and is reflected

[1] See also: K. Lorenz 1975: Konrad Lorenz Responds to Donald Campbell. In: Evans, R. I. (Ed.) Konrad Lorenz: The man and his ideas. New York: Harcourt Brace Jovanovich, pp. 119-128.

in the fascinating "Evolution of Ritualization" (1966), reprinted here.

This introduction and the selected papers that follow present a third image, treating Lorenz as a psychologist of great breadth. The topics covered are cybernetic behaviorism, evolutionary epistemology, intergroup aggression, social evolution, and the political implications of evolutionary genetics. The psychologies involved include learning theory, psychology of knowledge, psychology of science, social psychology, and the psychology of individual differences. Inevitably this image overlaps with the Nobel Prize image, but it also presents some equally important achievements which have not yet received the attention they deserve. Inevitably there is also overlap with the popular essayist image. In this area I shall take the liberty of distinguishing some of Lorenz's emphases from my own because of his willingness to take strong stands on controversial issues and for the sake of my own colleagues who know my position on these issues better than they know my enthusiasm for Lorenz and may need help in reconciling the two. I hope that this discussion of our areas of disagreement will add to the validity of my introduction of Lorenz to psychologists.

In the William James Tradition

Thinking over what model of psychologist Lorenz is most like, I come up with the William James of *Principles of Psychology* (1890). This may seem a strange choice since the current membership in the William James fan club is dominated by phenomenologists and humanists. But James was a biological psychologist, enthusiastic about the implications of evolutionary theory for psychology, convinced of the purposiveness of

human and animal behavior, and committed to seeking out explanations of that purposiveness compatible with a materialist orientation. He was a Darwinian natural selectionist adamantly opposed to Lamarckian or teleological explanations, while recognizing the teleonomic facts to be explained. He was interested in understanding conscious experience and relating it to biological and evolutionary perspectives, and in doing epistemology — theory of knowledge — in full competition and contact with philosophy. Like Lorenz, he tended to underplay cultural-environmental sources of human psychology in spite of being interested in social evolution as an extension and analogue of biological evolution (James, 1880). Both have been seriously concerned with the need to find a moral equivalent for war.

The distribution of attention is, of course, different. The most Lorenzian of James is confined to a few chapters, as in his discussions of instincts. Most Jamesian of Lorenz is not his most famous work but that represented in the selection reprinted here, "Kant's Doctrine of the A Priori" (1962), and in such essays as "Gestalt Perception as a Source of Scientific Knowledge"(1959), and "Do Animals Undergo Conscious Experience?" (1963), available in the Harvard volumes. Nonetheless, James serves to illustrate Lorenz's multifaceted relevance to a truly complete psychology better than does any other model I can think of.

Note that the biological grounding of James and Lorenz does not make them typical reductionists. Neither are they vitalists, although they are open to and indeed tend to accept the facts to which vitalists such as Bergson (1911), Driesch (1914), Uexküll (1926), and Polanyi (1969) point. But they accept these facts as puzzles needing explanation, and they seek out solutions compatible with physics, chemistry, and evolutionary biology. They both find in Darwin's concept of natural selection (1859) a key to such an explanation. Lorenz's

handling of this problem is elegantly illustrated in "The Fashionable Fallacy of Dispensing with Description" (1973), reprinted here.

Cybernetic Behaviorism

Under this title I refer to the central core of Lorenz's contributions to the understanding of animal behavior, to the works that made the Max Planck Institute for Behavioral Physiology at Seewiesen-über-Starnberg a mecca for American psychologists from its founding in 1954 until Lorenz's retirement in 1973. (Under the auspices of the Austrian Academy of Sciences, he has since founded a new Institute for Comparative Behavior Research at Altenberg, near Vienna.)

The behaviorisms that are still dominant in psychology today (including the major mathematical models for learning) in my judgment are inadequate to the explanation of learned or innate adaptive behavior, or even such a coordinated act as reaching for a pencil. Cybernetics (Wiener, 1948; Ashby, 1952; 1956) provides a mechanistic model for purposive, goal-guided behavior which will, I believe, eventually be elaborated into an integrated psychological theory replacing current behaviorisms. When this cybernetic psychological theory is achieved, the work of Lorenz and the other ethologists will be one of the central pillars of the edifice.

Under this cybernetic model, for every adaptive act, the organism must have a sense-organ or perceptual criterion for its achievement (a multidimensional "homeostat," "reference signal," or "template" for the goal state). Where interaction with other animals or objects is involved, these criteria take on the character of "images," and a phenomenological dimension is added. Lorenz's concept of "releaser" belongs here. The organism must also have specific anatomical structures that

monitor the many bodily states — blood-sugar level, serum salinity, etc. — that are involved in hunger, thirst, and other so-called drives, and it must have other sense organs signaling the probable satiation of the bodily deficit. Complex acts involve hierarchically organized sets of such purposive subunits. At each level there is an instigating-signal template, a build-up of responsiveness during periods of nonactivation, and a goal-completion template, which in turn may be one component of the releasing template for the next adaptive unit in the hierarchy. Where the releasing template or the completion template require external objects, there will be active search behavior at the perceptual and locomotor levels. Where learning is involved, there will be specific "pleasure" and "pain" sensory systems (Olds, 1958) activated jointly with certain of the intermediate goal-achievement templates.

This paraphrases Lorenz's many descriptions of specific instinctive systems in animals. A similar picture emerges when two orthodox behaviorists such as Miller (1959) and Sheffield (1950) study a supposedly singular drive-and-reinforcement system as hunger. Their rats run mazes to have taste buds titillated with nonnutritive saccharin, or for the joy of mouthing and swallowing food which never reaches their stomachs because of a by-pass operation, or to have a balloon blown up in their stomachs, no doubt producing that pleasant all-full feeling if not overdone. The behaviorist's concept of "drive reduction" has a hidden teleology, and must be replaced by a number of specific anatomical cybernetic units, as Lorenz has taught us. One of his very best essays on this topic is his recent "On the Innate Bases of Learning" (1969).

There is much of potential value for social psychologists in Lorenz's fascinating reconstruction of the evolution of instinctive interpersonal rituals in different species. Note how the courtship ritual in one species of

birds seems to have evolved from the infant-feeding ritual, while in another from instinctive aggressive responses directed toward strange conspecifics. These studies are of Nobel Prize quality to evolutionary biologists because of their striking addition of behavioral evidence to studies of evolutionary sequence and speciation usually based on anatomy alone. For psychologists, who must eventually be concerned with the evolution of behavior, they have an additional value. "Evolution of Ritualization in the Biological and Cultural Spheres," reprinted here, is a charming introduction to this area, as is also Lorenz's justifiably popular *King Solomon's Ring* (1952).

Evolutionary Epistemology

By this phrase I refer to a field of study in which philosophers, biologists, and psychologists undertake to solve in a scientific spirit aspects of traditional problems in the philosophy of knowledge or epistemology. "Evolutionary epistemology" is a specific version of "descriptive epistemology," or, as Quine (1969) calls it, "epistemology naturalized."

Descriptive epistemology attempts to address the problems of knowledge — Do we know? How do we know as well as we do? Can we know for certain that our knowledge is accurate? — by using scientific knowledge such as the physics of the world to be known and the evolutionary biology and psychology of man the knower. There has always been a certain amount of such epistemology, but the purification of philosophy of the last century made it taboo. Philosophers have tended to react to such efforts as evidence of incompetence — a failure to understand what epistemology was all about. One understands their point of view especially easily with regard to the problem of induction or

of justifying scientific knowledge. It is indeed circular reasoning to assume the validity of scientific knowledge in justifying the validity of the process generating that knowledge.

However, if one distinguishes the tasks of descriptive epistemology from traditional or analytic epistemology, a fascinating and useful field of scholarship emerges, one quite consistent with the major achievements of the skeptical empiricist tradition of Locke, Berkeley, Hume, Kant, and their modern successors. Their pessimistic conclusion is that we cannot logically justify our scientific beliefs, nor can we achieve certainty in any other way. The inductive "logic" or the procedures which we use in coming to scientific conclusions always leave open the possibility of our being wrong. These conclusions hold not only for scientific beliefs, but also for visual and tactile perception insofar as these generate in us beliefs about objects and events beyond the transient uninterpreted sensations themselves. Hume's "scandal of induction" was for a time neglected because of belief in the certain truth of Newton's physics. The modern overthrowing of that theory, plus careful examination of the historical grounds on which scientific theories are selected and rejected, has lead to a new preoccupation with this problem, either explicitly accepting Hume's logic and pessimism (Popper, 1959; 1963), or reinventing it as a novel observation (Kuhn, 1962; Toulmin, 1961; 1972).

In complete compatibility with this pessimistic solution of the logical problem of knowledge, a descriptive epistemology can ask how do we go about the admittedly imperfect knowing that we do? Given our disadvantaged epistemological predicament, how can we know as well as we seem to know7? The classic epistemologists such as Hume and Kant provide conjectures on this, as do also the moderns such as Popper (1959; 1963), Polanyi (1958), Toulmin (1961; 1972), Kuhn

(1962), and others. What had been repressed in technical philosophy as a stupidity is now being practiced by an increasing brave minority within philosophy (see Campbell, 1974, for details).

Descriptive or evolutionary epistemology is an important new field. And it is by no means a monopoly of philosophers. In terms of the distinction which philosophers have usually made between philosophy and science, descriptive epistemology would have to be classified as a science. Philosophy supplies the ancient agenda of concerns, modern science supplies grounds for the solutions. Thus descriptive epistemology is a field in which physicists, biologists, psychologists, and sociologists should participate. When this discipline consolidates, Konrad Lorenz will be recognized as one of its founding fathers and major contributors. The physicist-philosopher Vollmer (1974) has already accorded Lorenz this status. One of Lorenz's most recent books, *Die Rückseite des Spiegels (The Other Side of the Mirror)* (1973), is entirely devoted to it. Reprinted in the present volume is his first such paper, "Kant's Doctrine of the A Priori in the Light of Contemporary Biology."

Our collegial friendship was formed in this area. When I published my first essay on the topic (1959), I was already aware of some of Lorenz's epistemological papers through an essay by Bertalanffy (1955) and a collection edited by Whyte (1951). Subsequently I had a translation made of the paper reprinted here and of "Gestalt Perception" (1959). The results were so uneven I spent months revising them, using a German-English dictionary at least once a sentence. So great was my investment, and the resulting neglect of my own writing, that I listed these accomplishments on my vita as "translation editor," where they made up two-thirds of my publications for 1962! I was greatly aided in the translations by intuitively sensing what Lorenz

was trying to say. The major cement to our friendship was that we valued each other's contributions to an area in which at the time no one else seemed interested, but which to us was of the utmost fascination.

In writing "Kant's Doctrine of the A Priori in the Light of Contemporary Biology," the young Lorenz creatively solved a major epistemological puzzle. It turns out that at least twenty-two philosophers and eighteen biologists, physicists, or psychologists since Darwin have also made the suggestion that the a priori categories of perception and cognition might be products of biological evolution (Campbell, 1974), a recurrent heresy that has received so little attention that almost all have remained unaware of the other advocates. Of all of these, Lorenz's presentation is the best, fullest, and most subtle.

Epistemological relativism is a recurrent problem in the theory of knowledge, and Lorenz's mode of handling it is of particular value. Like his teacher Uexküll (1934), he recognizes that each animal (and each language, each culture, each historical period, each scientific paradigm) views reality from a different and limited perspective. Each perspective is based upon presuppositions which, however useful, are of unproven and limited validity. Such differences are marvelously presented in his speculations about the concepts of space and causality in the water shrew (in "Kant's Doctrine of the A Priori in the Light of Modern Biology"). He recognizes an analogous limited perspective to human knowing, even as reflected in modern physics. This he describes as epistemological relativism in our predicament as knowers.

Many who have achieved this sophistication go on to a philosophy which denies reality, or any other reality save that of our perceptions themselves, or any common reality reflected how7ever imperfectly in different perspectives. Not so Lorenz. He combines his epis-

temological relativism with a hypothetical realism, a critical realism. His evolutionary theory leads him to find it necessary to posit a common physical space and causality which is imperfectly mapped by water shrew and man. Higher organisms often have more complete maps, combining the distinctions of their more primitive ancestors with more subtle discriminations. Advanced theories of physics may be able to encompass the perceptual categories of animals and naive men yet still be partial and perspectively relative. This is still a minority view among philosophers of knowledge, but it is a steadily increasing one, even though in the history of ideas each new7 demonstration of epistemological relativity temporarily generates new converts to an ontological relativity.

He has also made contributions to other areas of descriptive epistemology. His essays "The Fashionable Fallacy of Dispensing with Description," reprinted here, and "Gestalt Perception as a Source of Scientific Knowledge" (1959) are prize contributions to the psychology of science. They provide a much-needed correction to those who mistakenly see quantified, atomized, and instrumented knowing as replacing ordinary perception in science (Campbell, 1966). The light-hearted charm of "Do Animals Undergo Conscious Experience?" (1963) should not be allowed to hide valuable contributions to the philosophers' problems of "other minds," and the "mind-body" relationship. Note that it challenges a common belief that it is the activity of the highest and evolutionarily most recent parts of the brain that corresponds to conscious experience. It is this conundrum of conscious perception that leads Lorenz to his paradoxical title, *The Other Side of the Mirror*.

Intergroup Aggression

On Aggression (1966) is Lorenz's best-known book among psychologists and social scientists, and the most vigorously attacked. In introducing Lorenz, I feel the need to discuss this work both because of its notoriety and because of my own concern with the problem of human intergroup hostility.

Lorenz's handling of animal aggression is a beautiful example of scientific problem-solving. For coral fish he fits together the separate puzzles of bright color patterns, fighting focused on members of their own species, stable living locations in the coral reefs, and the survival advantages of spacing. Similarly striking is his handling of pair bonding, nest defense, and aggression toward conspecifics in various species of geese, along with his identification of modified aggression gestures in their courtship rituals.

In these and many other examples the case is made that intraspecific aggression — aggression toward members of the same species — can be useful and adaptive, furthering species survival. Lorenz offers this fact as a corrective to Freud's explanation of aggression as the expression of a self-defeating death wish and of more general tendencies to see ail expressions of hostility as evil, maladaptive, unnatural, and a product of abnormal environmental conditions, hence, his chapter entitled "What Aggression Is Good For," and the still more provocative title for the German edition of the whole book, *Das Sogennante Böse (The So-called Evil)*. Such titles are a part of a conversation, a reaction to overextreme statements in other directions by the earlier participants. Considering the contents of the book as a whole, and the subsequent conversations it stimulated, a more accurate title with a reverse emphasis could have been used, e.g., 'The Evil of Human

Aggression in Contrast with the Benignness of Animal Aggression in Stable Natural Environments." For Lorenz's overriding lesson is that human aggression as expressed in war, murder, and genocide is the paramount modern danger. Man desperately needs political innovations and popular understandings that will control such human aggressive tendencies. In this problem-solving and self-education, it will do harm rather than help to deny man's innate aggressiveness. Instead, we should try to understand aggression, and this includes understanding the past adaptiveness of tendencies which have gone awry and now threaten our very survival.

Many of my fellow peace-oriented liberals react with fear to the message "aggression is natural" because it implies to them "aggression is good," or they fear that it will imply this to the general public whom they are trying to educate about the dangers of traditional ethnocentric hostility toward outgroups. They fear that this message from an eminent scientist will serve to justify and vindicate these dangerous carryovers from past social systems and/or stages in biological evolution. Lorenz and they agree on the danger and agree on the outmodedness of the aggressive traditions and instincts. Lorenz does not want to provide the semblance of scientific support for these traditions. Quite the contrary. Yet it unfortunately remains true in the present climate that labeling aggression as "natural" may well have the effect of labeling it "normal" and "good." Perhaps we should educate ourselves away from this oversimplified, overoptimistic morality, back toward that distrust of human nature found in our religious traditions.

My fellow liberals have another frightened reaction to the "aggression is innate" message because it is pessimistic, implying the difficulty or impossibility of preventing wars. The scientist who affirms such a message

supports apathy and defeatism in regard to the problem of war, and perhaps jingoistic nationalism. So great are the practical political implications of an eminent scientist's authoritative pronouncements on this issue that he ought to refrain from the "aggression is innate" or "war is natural" conclusion unless the evidence is completely compelling, which it certainly is not at this time.

Does "natural" human aggressiveness lead to war, or is it human social organization that produces war? Lorenz refers to both biological inheritance and social evolution, and to both individual male territoriality and to tribal organization in regard to human warlikeness. For his popularizers, however, no such ambiguity is present. Instead, the message is clear: man's warlike behavior is due to the fact that he is a territorial animal. Lorenz, in the interview presented in this volume, now wishes he had made clearer the distinction between individual and organized group aggression. He has, in correspondence, expressed his agreement with the following statement:

The line of thought in both the 1965 paper and the present amendments must be sharply distinguished from the currently popular biological-evolutionary explanation of war. The concept of territoriality has added much to our understanding of aggression at the level of the individual fighting fish and gander (Lorenz, 1966). Realistic group conflict theory may be thought of as a theory of social group territoriality and social group aggression. But the relationship between these two levels of territoriality should be kept clear. Vertebrate territoriality as studied by the ethologists represents the behavioral syndrome of an individual male protecting a single female or harem and his offspring. Realistic group conflict theory is not the same theory and does not explain intergroup conflict as an expression of this territorial instinct in individual males. Rather, it is an analogous theory at a different level of organization. Realistic group conflict theory refers to organized groups involving many males and

many families. In terms of the behavioral dispositions of individuals involved, the two levels of territoriality are in opposition rather than coterminous. Even though efforts to mobilize human ethnocentrism often make reference to protecting home and family, group-level territoriality has always required that the soldier abandon for extensive periods the protecting of his own wife, children, and home. Individual territoriality and aggression means *intra*group conflict, and is regularly suppressed in the service of *inter*group conflict. Proposition 4 of realistic group conflict theory (1965b, p. 288) states that *real threat causes ingroup solidarity*. In an early statement, Sumner says: "The exigencies of war with outsiders are what make peace inside, lest internal discord should weaken the we-group for war. These exigencies also make government and law in the ingroup, in order to prevent quarrels and enforce discipline" (1906, p. 12). It is the "internal discord" and the "quarrels within" that are the aggressive manifestations of instinctive territoriality, if any. This is the most recurrent proposition in the many sources of realistic group conflict theory. The Sherifs (1953) make a major point of it. And with the help of reviewers such as Coser {1956), Berkowitz (1962), and Rosenblatt (1964) one can readily assemble several dozen citations affirming it. It is also a major theme of the anthropological description of pyramidal-segmental societies (LeVine and Campbell, 1972). Thus it is not mammalian or primate territoriality which explains war in this theory. It is instead an analogous function at a larger organizational level, and one which requires the inhibition of the lower-level individual mammalian territoriality. It is this discontinuity which makes the social insects rather than the higher apes the closest functional analogue for complex human social organization. (Campbell, 1972, pp. 23-24.)

From this point of view, wars are fought on the basis of social indoctrination and organization, and require the inhibition of the "natural" territorial male aggressiveness. These social traditions and institutions of group hostility have been for some centuries thoroughly outmoded, dangerous, and evil, and are made suicidal with nuclear weapons.

In "Evolution of Ritualization" and "The Enmity Between Generations," both reprinted here, and in *Civilized Man's Eight Deadly Sins* (1973), Lorenz explains socially organized intergroup aggression as due to "pseudo-speciation," a term he borrows from E. H. Erikson (1966). Socially organized man's capacity for genocide is based on social devices which make those who speak a different language and belong to a different tribe seem unhuman, a different species from ourselves. This conceptualization is a valuable contribution to the social science theories of intergroup conflict, ethnocentrism, war, and genocide. Lorenz's views on the evil of killing conspecifics differentiated only by pseudo-speciation is essentially in agreement with Kelman's (1973) recent brilliant analysis.

Social Evolution and the Preservation of Tradition

Although professionally a zoologist, Lorenz has provided some wise observations and speculations on sociocultural evolution, sampled here in "The Enmity Between Generations and Its Probable Ethological Causes," and in "Evolution of Ritualization." The historical cumulation of customs, techniques, beliefs, and rules has probably taken place under the shaping of a "natural selection" or "selective retention" process analogous to biological evolution. Given a stable ecology or selective system, and given social systems capable of loyally reproducing the selected variants, such a process would result in wise and adapted customs, including "wise superstitions," the true advantages of which the public and its leaders might be unaware of, or rationalize in scientifically unsophisticated terms. One who holds this view — as, with qualification, I myself do (1965a) — is apt to arrive at a generalized respect

for tradition. Just as belief in evolutionary theory produces in a biologist a puzzled awe for those bizarre forms of biological life whose adaptive advantage he does not yet understand, so too belief in social evolution should generate in the social scientist faced with an "incredible" traditional belief a tentative trust that underlying it was some adaptive truth he did not yet understand. While the wisdom of all evolutionary processes is wisdom about past environments, rather than present or future ones except as these remain similar to the past, it would probably improve the validity of social science if such a trusting attitude were more common. Certainly there is no justification for the commoner practice of invoking tradition only as an explanation of social malfunctions.

Biological evolution depends upon rigid mechanisms for loyally duplicating the cumulated selection of alternative genes. While this rigid retention and duplication is in opposition to mutational change, it is equally important. If either variation or retention is maximized, evolutionary adaptation is made impossible. One might expect evolutionary geneticists to favor increasing the mutation rate because this would increase the raw material for evolutionary innovation. On the contrary, they have uniformly opposed such increases, as produced by X-rays and nuclear reactions, on the grounds that these jeopardize the retention of already achieved adaptations. In their judgment, the balance between retention and variation is already tilted enough toward variation.

Similarly, one who believes that an historic socio-cultural evolutionary process has produced adaptive systems whose functions we do not yet fully understand is apt to feel that precious treasures are in jeopardy when the social-custom retention mechanisms fail. There are grounds for concern if there is emerging a whole generation of young people who do not want to

grow up to be like their parents, or if child-rearing patterns no longer lead a child to identify with its parents, or if parents are neglecting their disciplinary duties in reconciling children to self-restraint and to the existing social order, or if urban living and television are reducing stable group participation and social control. Lorenz addresses himself to these problems in "The Enmity Between Generations" and in *Civilized Man's Eight Deadly Sins* (1973). Such issues are now largely neglected, and Lorenz attempts a valuable mission in directing our attention to their dangers.

The popular acceptance of the scientific world view, with a consequent loss of credibility for supernatural sanctions, may have contributed to a possible disruption in the transmission of cultural wisdom. "The Enmity Between Generations" was published as a part of a collection of essays by eminent scientists arguing this possibility (Weiss, 1970; Polanyi, 1970; Eccles, 1970). Lorenz agrees: "The erroneous belief that only the rationally comprehensible or the scientifically provable belong to the fixed knowledge of mankind produces disastrous effects. It encourages 'scientifically enlightened' youth to throw overboard the enormous fund of knowledge and wisdom contained in the traditions of every old civilization and in the teachings of the great world religions (1973, p. 63)." But Lorenz's own emphasis on man's status as an animal may be particularly undermining to the authority of social tradition. The traditional emphasis upon man's difference from animals, his close-to-divine nature, may be a packaging of the truth that man is the carrier of a precious socially transmitted cultural civilization. Note that Monod (1971) in his chapter on "The Kingdom and the Darkness" finds himself in a similar bind, as too do Lorenz's enemies, the behaviorist psychologists.

I am in complete agreement on the importance of

the problems, and in considerable sympathy with Lorenz's conclusions. But overall these two essays make me uncomfortable, and I end up not wanting to be identified with them. As I sort through my mixed feelings I come up with several points of disagreement. The social evolutionist can assign a useful social role to the elderly scold who automatically decries every deviation from a sentimentally idealized version of the past. Nonetheless, it is distressing to see Lorenz losing his broader social-evolutionist perspective and falling into this one role. In these two essays he objects too much and too automatically to all aspects of modernity, and idealizes too much wild and archaic rural forms of life adapted to no longer existing ecological niches, producing a contradictory set of criticisms. He objects to industrialized mass production and mass-communication marketing of clothing, asserting that this produces a passive, faddish uniformity of styles and leads to the loss of traditional rural regional costumes. Yet the modern urban dweller has a much wider choice of styles, and exercises enough choice to end up with a much greater person-to-person diversity, individuality, and freedom than did the archaic villager. What a tourist sees as a valuable village-to-village variety in danger of being lost through modern means of production and distribution, was historically, for the individual within any one village, an enforced homogeneity and oppressive restriction of choice.

Furthermore, as Lorenz recognizes, both the in-group uniformity and the meticulously maintained group-to-group differences are a part of the pseudospeciation or ethnocentrism which Lorenz rightly decries. While in these two essays he fails to list tribalism or nationalism as one of his deadly sins, considering these essays jointly with *On Aggression,* I think he would agree that the most seriously deadly sin is nationalism

which uses pseudospeciation to justify genocide. Indeed, he says as much in one paragraph of *Eight Deadly Sins:*

Any clearly differentiated cultural group tends to consider itself a species apart, insofar as it does not accept the members of other, comparable units as of equal worth. In many native languages the term for one's own tribe is simply "man." To kill a member of a neighboring tribe therefore does not amount to real murder. This consequence of pseudospeciation is extremely dangerous: inhibition against killing a fellow human is largely overcome, while intraspecific aggression, elicited by conspecifics, and only by these, remains active. We hate the "enemy" with a hatred reserved only for fellow human beings and not even the most dangerous beast of prey; we can kill them [the enemy] with impunity since we do not feel that they are really human. Naturally it belongs to the well-tried technique of all warmongers to support this view. (1973, pp. 65-66.)

So strongly do I agree with this passage that I regret that it is used in this book merely to make the ease for a similar pseudospeciation in the war between generations. The sin and danger of the latter seem to me trivial in comparison. While nuclear weapons are on his list of deadly sins, genocidal nationalism was already deadly sin number one even before the atom and hydrogen bombs.

Another point of disagreement: interest in the rigid retention mechanisms making possible social evolution also brings a sympathy, however grudging, for the fanatical conformity pressures and ostracism of deviants which well-indoctrinated group members exert even on seemingly functionless matters of style. A visible deviation from group norms operates like one of Lorenz's innate releasing mechanisms, triggering scolding retaliation and ostracism just as though something of fundamental importance was at stake. While I can understand the importance of such a mechanism, I hate to

see it operating in Lorenz in these essays, in which he reacts to deviations in dress style and grooming by segments of the young like the proverbial bull to a red flag. This puzzles me particularly since he has himself conspicuously enjoyed deviating from the orthodox cleanshaven, suited-and-tied norm for scientists and businessmen.

More seriously, Lorenz's over-all message is that if things are left as they are, disaster looms ahead. Therefore, he should be, and in fact in places is, against those social traditional indoctrination procedures, conformity pressures, and ethnocentric group loyalties that are keeping things as they are. As he himself states, formerly wise traditions can become maladaptive if the selective system has changed, as, in fact, it has. He recognizes that he and the ethically concerned "hippies" agree on many of the sources of evil. Why can't he then regard their deviant uniforms as akin to the priest's collar, an outward public commitment to lead an unworldly altruistic life independent of the outmoded establishment culture which is leading us to disaster?

Still more serious are my reservations about his discussion of the "pseudodemocratic doctrine." As already shown, I share some of Lorenz's criticisms of behaviorism, but I find myself wholly identified with the environment-changing, learning-emphasizing, social-ameliorist "behaviorists" whom he scolds under the terms "pseudodemocratic doctrine" and "indoctrinability." Some specific quotations focus this concern:

It is an indisputable ethical truth that all men have an equal right to the same chances of development, but this truth is too easily converted to the untruth that all men are potentially equal. The behavioristic doctrine goes a step further in maintaining that all men would be equal if they could develop under the same external conditions, and indeed that they would become ideal people if only those conditions

were ideal, therefore people cannot, *or must not,* possess any inherited properties, particularly those that determine their social behavior and their social requirements (Lorenz, 1973, pp. 86-87.)

The fallacy of supposing that, given the proper conditioning, anything may be demanded of a person, anything made out of him, underlies many of the deadly sins committed by civilized mankind against nature, including the nature of man, and against humanity. If a universally accepted ideology, and the politics ensuing from it, are founded on a lie, this is bound to have disastrous effects. The pseudodemocratic doctrine here under discussion undoubtedly hears a considerable part of the blame for the moral and cultural collapse that threatens the Western world. (1973, pp. 87-88.)

The sins, evils, and collapse of the last paragraph go unspecified. I do not recognize them, and wonder anxiously what past social orders are being idealized? Hereditary monarchy and social castes justified by beliefs in hereditary genetic superiority? Special rights for a *Herrenvolk?*

Social ameliorist "behaviorists" like myself focus on environmental changes and learning because we see these as something a well-intentioned society can do something about, not because we deny all individual differences in ability. Free public education is one of our great goals and partial achievements. Think of what profound changes in society it would make if we took seriously that part of the equalitarian ideal which Lorenz endorses: "all men have an equal right to the same chances of development." It would produce the same sort of political goals that he seems to be decrying as equalitarian excesses. It would lead us to a "fair-start capitalism" or socialism in which one's chances for development were not biased by inherited wealth and privileged access to opportunities. Lorenz sees *horizontal* diversity of culture as an ideal. This is more threatened by special privileged economic imperialism than

by democratic or socialistic equilitarianism. Instead, what he advocates seems to me to implicitly justify a *vertical* diversification of social class or caste, a hierarchy of subcultures accompanied by politically guaranteed special opportunities for those already at the top. But he is not explicit on what social order he is advocating as an alternative to that which he scolds.

The Political Implications of Evolutionary Genetics

Nicholas Pastore (1949) once did a study comparing the politics of psychologists who emphasized the influence of heredity with the politics of those emphasizing environmental determinants of intelligence. The correlation was strong — those emphasizing heredity were the more politically conservative. Lewis Terman, a socialist who emphasized heredity, was one of the few exceptions. I suspect that if zoologists were included in such a study they would tend both to emphasize heredity determinants of individual differences and to be more politically conservative, while sociologists would tend to be opposite on both counts. Much of this is simply the tendency to exaggerate the importance of one's own specialty, and there are, of course, exceptions. Karl Pearson (1887; 1897) combined enthusiastic Darwinian evolutionary biology with an enthusiastic pamphleteering socialism, Kropotkin (1902; 1924) with anarchism, and Haldane (1938) with openly expressed pro-communist sympathies. R. A. Fisher (1930) provided a detailed genetic theory of the decline of civilizations which could make one an advocate of socialism, or contraceptives, or both! In the private-property societies of ancient and modern civilizations, those genes associated with infertility increased the dowry and other social advantages provided to children, leading these

genes to become associated with ability genes, eventually removing the latter from the population. But a general tendency for biologism to go with conservatism no doubt remains, and may be even stronger now than in the past. Today the advocacy of eugenicist social programs, such as restricting the procreational opportunities of incompetent and defective persons, appears only in right-wing political platforms. In the period 1880-1930 eugenics was often a part of liberal-democratic reform programs. Note that while Haldane (1938) scolds the Nazi eugenics policies, details the very small effects that could be expected, emphasizes the lack of adequate genetic knowledge upon which to base eugenics decisions, and raises the moral problem of who should decide, he still is far from completely ruling out all governmental eugenics policies.

A zoologist naturally tends to apply his biological perspectives to human affairs and to draw political implications. This is a tendency which the rest of us should encourage if it is done thoroughly and explicitly — we probably need detailed speculations on the effect of priestly celibacy in Ireland if the more intelligent were more often recruited into the priesthood. Speculations on the effect of contraceptives on future human sexual urges (e.g., Darwin, i960) are in order. While I prefer environmentalist cultural-motivational explanations of the slight average Jewish-American superiority on intelligence tests (Klineberg, 1944), and am particularly fascinated by the heterocultural emancipation hypothesis of the ex-Norwegian-American peasant Thorstein Veblen (1919), I think we should have historical studies raising the question of whether or not in the European Diaspora the conditions of Jewish life were such that those persons most able in the skills required of high civilization also tended to have the most children who survived to adulthood. We also need speculations such as Herrnstein (1973) has produced about the

possibility that increasing the equality of opportunity will eventually increase the genetic superiority of those in the professional and managerial roles over those in the more supervised occupations.

The present intellectual climate on the whole opposes such speculations, a tabooing so effective that we may lose some of the benefits that evolutionary genetics might contribute to social planning. This is the core of much of Lorenz's protests about "indoctrinability" and the "pseudodemocratic dogma." I see the roots of the opposition not in the populist behaviorism which he blames, but rather in the concerned intellectuals' reaction against specific political movements which have advocated doctrines of racial superiority with catastrophic results. On the U.S. political scene, black/white racist politics are such an ever-present danger that even though the Nazi threat is thirty years past, the need for political vigilance along these lines is still great. It is a regrettable cost if this vigilance suppresses a legitimate area of biological speculation and research. I do not see clearly how the dilemma can be resolved, but I sympathize with the biologist who feels that his scientific freedom of inquiry is being infringed upon.

On the other hand, I specifically disagree with many of the implications of the brief and casual comments on genetics that Lorenz makes in "The Enmity Between Generations," *Eight Deadly Sins,* and the interview presented in this book. He lists "genetic decay" as one of the deadly sins. Insofar as I can tell what he is talking about, I disagree. It is conceivable, even probable, that the widespread availability of eyeglasses has somewhat reduced an ancient tendency, operating as a selection pressure, for those with poorer eyesight to have fewer children. Nonetheless, our over-all species adequacy in the area of vision has been so greatly increased (including, for example, the ability of those over fifty to read) that our net adaptive adequacy, our survival value, has

been greatly improved by the widespread use of optical aids. A comprehensive evolutionist, considering both biological and social evolution, should therefore favor the use of glasses even if they incur a genetic cost. One might make the similar case that artificial transportation devices, from the horse on, have reduced the selection pressure on innate components in speed of running. On this we have a hundred years of comparable Olympic records, in which top speeds show a steady increase instead of decrease, and no general advantage to the rural contestants over the urban, no doubt due to improved nutrition and training. But even if there were some evidence of a genetically based deterioration in running speed, this would be no cause for alarm, since speed of running is irrelevant to adaptive adequacy in modern man's ecological niche. Because of the slowness of evolutionary change, aesthetic preferences governing sexual selection and leadership choice might well perpetuate outmoded criteria of adaptive adequacy, but the consistent evolutionist should, it seems to me, decry these atavistic tastes rather than give them the status of approved moral and aesthetic standards.

Particularly frustrating in Lorenz's discussion of genetic decay is the combination of extreme conclusions — "There is no doubt that through the decay of genetically anchored social behavior we are threatened by the apocalypse in a particularly horrible form" (1973, p. 59) — with weak anecdotes of limited relevance. Instead of a case being made for his conclusions, we are given an instance in which one criminally insane person killed three more persons after three releases as cured. Does he believe that employing the death penalty or permanent incarceration in such cases would improve our genetic stock? Or that no murderers are ever safe for release? Or that psychiatry is adequate to make the required diagnoses? I find none of these beliefs justified. At very least, he should have specified

his alternatives and argued their genetic impact. Clearly against permissiveness, he fails to make a case for punitiveness relevant to the grounds of his professed concerns.

Domestication is a genetic trend which he deplores. This seems to me misguided. Urbanization is the more appropriate term and modern man is undoubtedly better adapted to urban living and to a world-wide cosmopolitan culture than he ever was before in history. This adaptation no doubt includes genetic adaptation as well as cultural, and while hard to determine, is a legitimate issue for scientific inquiry. But to regret that this process is removing specific adaptations to specific regionally different ecological niches, as Lorenz seems to, is foolish when those ecological niches no longer exist. Genetic purity seems one of Lorenz's values, but modern studies of the genetics of natural populations in their natural environments find great heterozygosity rather than genetic uniformity or homozygosity. It is the systematic breeding of animals and plants in domestication that produces purity of genetic stock, which turns out to be a real liability both for control of lethal genes and for adaptability to environmental changes. From the point of view of genetic experience with animals and plants, insofar as I know, there are no dangers from hybridizing and no documented instances in which a valuable species-specific adaptation to a still relevant ecological niche was lost through racial mixing.

Konrad, I owe you and the reader an apology for spending so much space on issues that are a very small part of your total writings or of the four treasures being reprinted here. You will have recognized that my doing so is a sign that I too am influenced by what you call the dominance of the pseudodemocratic doctrine, and by what I recognize as the liberal intellectuals' well-grounded fears of racist politics. These very real social pressures make me unable to unself-consciously ex-

press my admiration for your great contributions to ethology, evolution of behavior, cybernetic behaviorism, descriptive epistemology, the dangers of group-organized aggression, and social evolution. Instead, I also feel the need to intrude myself in order to make clear where I stand on other controversial beliefs of yours. Were it not for the social pressures which we both agree are present (albeit with different explanations), I could have handled my disagreements by omission and could have produced a uniformly enthusiastic introduction. Such an introduction would have been fully as accurate as the present one — just distorted in the opposite direction.

As it is, however, I feel it necessary to make sure that my own reputation on the controversial issues is not confused by my expressions of great admiration for your work. So important to me is this selfish concern that, in addition to the discussion above, I feel the need to discuss an issue which you barely allude to toward the end of the interview — race differences in intelligence. This is an issue of crucial concern in U.S. psychology today, and one on which the pronouncements of psychologists are immediately picked up in racist politics. I feel that it is not enough for you to say that while races differ, these differences do not imply better or worse, since each is best adapted to some different ecological niche. Such a conclusion is patronizing and demeaning for races that now live in a common environment. It is also, I believe, wrong for the major components of past and current adaptations. In modern evolutionary theory, an understanding of race difference requires the specification of a difference in systematic selection pressures. For skin color, some of the selection pressures are now understood: in northern Europe, children are apt to absorb too little vitamin D from sunlight and in Africa they are apt to absorb too much. For sickle cell anemia, we can now specify the

increased resistance to malaria for the heterozygous condition that led to a high gene frequency in central West Africa. Sixty centuries of cultural taboo explain the failure of the Chinese to have evolved the capacity to digest cows' milk. But for the traits of general adaptability to environmental novelty, no such differential selection pressure can be specified. As with speed of running, which Olympic records show to be widely distributed across races, it is my judgment that the evolutionary biologist's first expectation should be for a high selection pressure in favor of intelligence in the evolutionary background of all groups. Any speculations to the contrary should be accompanied by detailed examination of specified selection pressures operating in other directions.

The vocabulary skills which are the core of intelligence and achievement tests are so obviously learned that I cannot find them relevant to the issue of genetic differences where the groups in question have different opportunities to learn the vocabulary employed in the tests. Equality of opportunity is not even equal for brothers and sisters in the same family, and there are enough average opportunity differences to produce a dependable IQ difference favoring first-born children. Even so, studies comparing the IQ similarity of identical and fraternal twins may be relevant to the contribution of heredity when family environment is held relatively constant. Such determinations are, however, irrelevant to interpreting comparisons confounded by environmental differences, just as irrelevant as they would be to explaining the differences between English and French children on a French-language vocabulary test. I still find relevant and compelling Otto Klineberg's (1944) studies of the 1930's. The more similar the white/black educational environment, the smaller the difference. Since no available comparisons eliminate the environmental differences, the most plausible

extrapolation is to no IQ difference at all if learning opportunities were to be equal.

My participation in the vigorous debates on race differences that are going on within U.S. psychology today has been limited but clearly on the side of the equalitarians. I have even called for a moratorium on further measurement of group differences unless accompanied by a meticulous measurement of each child's EIPQ (Environmental Intelligence Producing Quotient); that is, the vocabulary of his waking environment, the frequency of vocabulary rehearsal games, the intellectual stimulation and response to childish curiosity, the quality of toys, etc. (Campbell and Frey, 1970). The public political climate in America is such that environmentally produced differences, when publicized, are interpreted as racial and are used to justify sustained and increased differences in environmental opportunities. Unfortunately, Lorenz is wrong in judging equalitarianism to be dominant among the U.S. public. Fortunately, he is right about its dominance among U.S. intellectuals, although this dominance is currently eroding in spite of the harassment of the nonequalitarians.

One of the national experiences that is increasing the belief in hereditary social class and racial differences in ability is the poor showing of compensatory education programs. The programs never entirely remove the differences, and the effects fade rapidly. Frey and I have demonstrated that these are exactly the results that would be expected if IQ scores were entirely due to environmental opportunity differences, and are thus irrelevant to the heredity/environment argument (Campbell and Frey, 1970). Most of the evaluations of compensatory programs have involved quasi-experimental designs that underestimate the effects; indeed, make the programs look harmful if they are in fact ineffectual. I have spoken out vigorously on this bias

(Campbell and Erlebacher, 1970; Campbell, 1973). It is the few randomized experiments that produce the optimistic results. They never eliminate the gap entirely, but neither do they ever completely remove the gap in home and playground vocabulary.

I can imagine a political environment in which the discussion of genetic differences between races could be carried out in scholarly curiosity devoid of political passion. That environment would be one committed to equality of opportunity. In such an environment a person's race, or the average ability of his race, would have nothing to do with his opportunities. Instead, we have in America a structure in which a middle-class white of IQ 100 has innumerable advantages in life over a black of the same IQ. Some of these advantages still have quasi-legal status, others are imbedded in unofficial discriminations, opportunity structures, and subcultural differences. The few intellectuals who have publicly asserted a belief in race differences in intelligence have, illogically, it seems to me, tended to accompany this conclusion with policy recommendations (like special curriculums) that would increase the opportunity disadvantage and produce larger differences in the future. It would have been more logical had they recommended classifying children for such differential treatment on the basis of the tests they used to measure the average racial differences, for certainly they should believe that test scores are a better indicator of the relevant genes than skin color. In the U.S. it would be a moral gain to substitute segregation by IQ for segregation by race, and ability tracking within schools may approximate this. But such a system still does not live up to that equality of opportunity which both Lorenz and I endorse. Segregation by IQ adds additional opportunity differentials to the differentials already created by heredity and prior environment. We have at present no feasible proposals for educational systems that could

truly equalize opportunity. Let us at least avoid policies that add to the differential.

Overview

In Konrad Lorenz's magnificent career he has made creative contributions *to* a wide variety of fields. In addition to those cited by the Nobel Prize committee, there are other works described here, as in cybernetic behaviorism and descriptive epistemology, which may in the long run be judged equally important. There are also his popular essays of later years which have become controversial best sellers, widely acclaimed and widely opposed. These have offered opinions which he knew in advance would be unpopular with many intellectuals, and on some issues succeeding so well that I have gone to great lengths to disassociate myself from them, producing a marked imbalance in this essay.

Rereading the first four and one-half sections of this introduction will help right the balance disturbed by the last one and one-half. So too will a reading of Lorenz s major works and the four, essays reprinted here, as only one of them, "The Enmity Between Generations," goes into the controversial areas, and even it earns its place by its provocative broadening of perspectives.

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