

PART II

The search for the missing pieces: in biology

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Repeating what we said in the introduction, we want to underscore at the beginning of this section one important point that we all agreed upon. It is stated forthrightly in the paper by Markl below: we are not limiting our inquiries to the relevance of sociobiology for law —indeed, we aim to go *far* beyond sociobiology into the rest of biology and the behavioral sciences when we consider the relationship between law and human behavior, especially when we analyze the behavioral responses to law.

Biology encompasses many specialized and diverse scientific approaches to the still unsolved mystery of life. Genetics is just one branch of biology in which a lot of new territory was explored during the last 30 years; another branch is ethology; a part of ethology again is primatology.

To learn about biologically based behavioral traits in human beings, we have to work with all the different branches of biology involved in today's pioneering research. In some areas biologists have come up with data which the most prominent ones among them hold for truth. "We can build our own hypotheses on these findings and test their validity.

Behavior can be influenced and sometimes determined by phylogenetic factors or by experiences during ontogeny. In most cases both factors shape the behavior of any living organism. The broader the base on which we build our studies the more likely we are to arrive at a scientifically sound appraisal of the behavioral functions essential for individual and group survival.

Biological research, of course, has been the foundation of modern medicine which uses the findings of biologists to treat the individual.

Animal experiments as a basis for the study of causes and possible treatments of individual health problems have been universally accepted. A major attempt to apply findings gained in observing animals in their interaction with conspecifics (in this case their mothers and peers) was started in the 1950s by Harlow, whose well-known deprivation experiments with monkeys led to insights in mother-child relationships. Ethologists, physiologists, neurologists and other scientists agree that by studying a number of different non-human primates, general principles have emerged, in light of which we can examine human child-mother relationships. It means that with only one or a few more steps in the same direction, we can look at other relationships (including those among more than two individuals) and investigate sensory inputs and reactions in the brain as they relate to behavior like aggression or depression and their effect on legal behavior. In doing this, we can arrive at behavioral responses to rules. It will illuminate moral concepts and motivation, the function of specific laws, the effectiveness of law in general. We will learn about the role of law in the phylogenetic and ontogenetic development of the individual as well as in human social organization.

The major areas to be considered here are the closely linked ones of behavior and brain. We start with the primate record. Goodall — whom we sorely missed at the conference, but she was in the field in Gombe — emphasizes the distinction between order among the chimpanzees at Gombe (sustained partly by the patterns of dominance interactions) and law as humans intentionally practice it. Goodall then analyzes field data and gives us examples of social interaction among Gombe chimpanzees. She notes importantly that, although chimpanzees sometimes interfere in the disputes of others, they have nothing resembling sanctions.

Among chimpanzees certain behavior sequences seem to serve very important functions in maintaining social order: not only the appropriate submissive patterns, so necessary for acceptance in society, but also the reassurance gesture and the seemingly strong need to re-establish "normal relationships." This need seems to prevail in the individual even if terrible injuries are inflicted or a baby, vehemently defended by his mother, is killed by a group member. The reassurance gesture — the outstretched hand, the touch that appeases both parties involved in conflict (in human terms, forgiveness) is one of the moving episodes conveyed on film taken in the field in Gombe. Boehm's comments below emphasize that we have ceased to value or even to make sufficient use of submissive gestures in the human behavioral

repertoire. It would seem that when dominance is no longer complemented by submission and reassurance, the evolution of traits for morality may be favored in a species needing complex modes of social organization for its survival.

Itani's paper summarizes what is currently known about intra-specific killing among non-human primates; its importance stems not only from his effective summary of the data, but from its place in the context of an on-going debate about murder in human origin myths (Girard, 1980). Itani emphasizes the distinction between analogy (in which similar functions result from different mechanisms) and homology (in which functional similarity results from similar mechanisms). On the whole, we will adopt the view held by many prominent ethologists that moral traits or precursors of morality in non-human primates are analogs of some types of human behavior. With the papers by Goodall and Itani, even the myth that human beings are the only creatures to murder their own kind has been proved wrong—our vanity makes us not only the best animal, but also the most evil one. Some human beings appear to have a deep need to underscore again and again the farthest reaches of human depravity, just as others (or are they the same ones?) have the need constantly to assert human superiority over the "beasts."

With MacLean's paper, we turn to the important matter of the brain—that least explored human organ: the way it has developed during evolution, and the way it works as one of the necessary foundations of human social control and law. No one doubts that the institutionalization of law is primarily a product of the neocortex, but surely we can no longer doubt that all the rest of the brain is involved, and that some structures of the brain are far older but still appear to play a vital role in our total behavior, including our disputing behavior and dispute-settling behavior.

Richard Alexander takes an evolutionary biologist's look at the "central paradoxes of moral philosophy" and warns us that "approaches that deny biology are potentially deadly." His essay should be closely compared to that of Masters in the next section. What both have to say about biology, law and philosophy seem to be putting the philosophical basis of law into a genuinely new key—a key that includes consideration of the human biological heritage.

Bartley Hoebel's piece is rooted firmly in biology but begins the processes of bridge-building toward law. He asks whether there are neural and chemical bases of rewards that make human beings feel good about being law-abiding and living in the kind of predictable

society that an effective legal system assures. In order to do that, obviously, he has to make some assumption that can be put as questions to behavioral science, an essential step if we are concerned about what Hoebel calls "a jump from genetic to motivation." Hoebel's rather daring position is that "accomplishment of law goals" maybe {there is, of course, as yet no proof} rewarded by endogenous opiates, just as sex, drinking when thirsty and eating when hungry are rewarded by such opiates (for which there is proof). "The gravitational force that gives anthropological outcome an appearance of purposefulness could be genetically programmed brain circuitry that releases rewarding chemicals when law rules are followed — which is to say, when the perception matches the standard. Why else do we feel "good" when we behave "well"? As Hoebel says, "According to this theory, when we pick a rule, any rule, and obey it, perhaps the brain releases some opiate. That much could be innately programmed. The rules themselves could be either innate (like swallowing) or learned (washing food). He suggests that there is no master "law": "Thou shalt match behavior to behavior model, and if you fail, adapt either the behavior or the model. It is what Powers was saying in 1973 when he entitled his book *Behavior: the Control of Perception*. Hoebel adds: "Model matching is the law of laws." In these circumstances, we must discover "the evolutionary, neural and social principles by which people redefine their relationships as the conditions of life change.