Letters

Creative Deception

I am very much heartened by the Research News from Roger Lewin ("Do animals read minds, tell lies?", 4 Dec., p. 1350) that Richard Byrne and Andrew Whiten are continuing to build their imaginative "catalogue of low cunning" in primates, undaunted by their inability to answer "fundamental questions" about the usefulness of anecdotal materials posed by the unreconstructed experimentalists who are forever slashing at our soft, empathic throats with Ockham's razor. I think, however, that Byrne and Whiten should be on their guard against what I see as a certain primatocentrism. The existing anecdotal literature is not a rich store of information on "creative deception," owing perhaps to an understandable preference on the part of early writers for indications of decency rather than of deviltry in animals. "For my own part," Darwin asserted (*1*, p. 619), referring to an incident he had described previously,

> I would as soon be descended from that heroic little monkey, who braved his dreaded enemy in order to save the life of his keeper . . . as from a savage who delights to torture his enemies, offers up bloody sacrifices, practises infanticide without remorse, treats his wives like slaves, knows no decency, and is haunted by the grossest superstitions.

Nevertheless, we already have at least some fragmentary evidence on the basis of which Byrne and Whiten might be encouraged to broaden the taxonomic scope of their inquiry.

What surely must be regarded as an instance of low cunning in a cat was reported (*2*) by Darwin's protégé, George J. Romanes, who, although he "fished the seas of popular literature as well as the rivers of scientific writing," was careful to retail only observations "corroborated by . . . independent observers" that were made under circumstances in which there could not be "any considerable opportunity for mal-observation" (*2*, pp. vii–ix). Romanes attributes the following account to a Dr. Frost (*2*, p. 418).

> Our servants have been accustomed during the late frost to throw the crumbs remaining from the break-fast table to the birds, and I have several times noted that our cat used to wait there in ambush in the expectation of obtaining a hearty meal from one or two of the assembled birds. . . . For the last few days this practice of feeding the birds has been left off. The cat, however, with almost an incredible amount of forethought, was observed by myself, together with two other members of the household, to scatter crumbs on the grass with the obvious intention of enticing the birds.

According to Romanes, the cat reasoned, first, that "crumbs attract birds, therefore I will wait for birds when crumbs are scattered" and, later, "therefore I will scatter crumbs to attract birds" (*2*, p. 419). It would be difficult to argue for less "self-consciousness" in this cat than in the young baboon "that set Byrne and Whiten off on their survey." Compare the interpretation of the baboon's behavior proposed to Lewin: "a scream will bring mother to the rescue, who will chase off the female, leaving the food for me."

Romanes indexed only one instance of "deceitfulness" in a monkey, but several in dogs, and one in an elephant. His own terrier, inept at catching flies, once "positively *pretended*" to catch one, "going through all the appropriate actions with his lips and tongue," and then looked up at Romanes (who had ridiculed previous failures) "with a triumphant air of success."

When Romanes, pointing to the fly still on the window, made it clear that he had not been taken in, the poor animal was "very much ashamed of himself" (*2*, p. 414). Another telling account, by W. H. Bodley, is of two dogs, once chastised for fighting, that "used to swim over a river of some breadth . . . and fight out their quarrel on the other side . . . like two duellists crossing the Channel to fight in France" (*2*, pp. 451–452). The elephant was observed by a Rev. Mr. Townsend and his family. After slipping a chain and stealing the keeper's lunch, the animal carefully covered all traces of the crime and then, unable to "fasten the chain again round his own foot . . . twisted it round and round it, in order to look the same" (*2*, pp. 409–410).

In retrospect, there should be nothing surprising here. Cats, dogs, and elephants are "clearly intelligent," and they are known to have "the capacity to communicate," with which, as "Philosophers have long acknowledged," comes also "the ability to deceive." It may be that creative deception will be found even in certain invertebrates, such as honeybees, which, in the view of an authority untainted by "pride of parsimony" (*3*, p. 53), "intentionally and consciously communicate information" by dancing (*3*, p. 99). Although Byrne and Whiten do not expect deception in members of "highly cohesive" groups, it has reached me that efforts are now being made to determine whether a honeybee that has found food in one place will, on occasion, deliberately send its nestmates elsewhere. Who can yet say in how simple a creature the "concept of self" and the ability "to read the mind of another individual," which are inferred from deception, appeared for the first time?

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REFERENCES

1. C. Darwin, *The Descent of Man and Selection in Relation to Sex* (D. Appleton and Century, New York, ed. 2, 1874).
2. G. J. Romanes, *Animal Intelligence* (Kegan, Paul, Trench, Trübner, London, ed. 9, 1910).
3. D. R. Griffin, *The Question of Animal Awareness* (Rockefeller Univ. Press, New York, 1976).

Response: As I am more acquainted with the minds of primates than of felines, I thought it best to consult my cat, Barbeque, on the matter of Bitterman's interesting letter.

Barbeque tells me that, charming though George Romanes' tales are about the cognitive abilities of cats, and other beasts for that matter, they are in fact not to be believed: they are the product of minds anxious to see in others what they know to be so in themselves.

In preparing this reply, Barbeque conferred with some of his friends, and they decided that, for the good of science and *Science*, they should come clean. "Humans believe that we understand everything they say, but, sad to relate, we don't," he said. "We are thought to be reflective, just because we look as if we are. It's a good trick, isn't it?"—Roger Lewin

The IPPNW: A Single-Issue Organization

Constance Holden, in her generally illuminating essay on "Politics and Soviet psychiatry" (News & Comment, 5 Feb., p. 551), states, "The IPPNW [International Physicians for the Prevention of Nuclear War] has tended to adopt the position that to press for human rights concerns may unnecessarily alienate the Soviets." This neglects both the purposes and the history of the IPPNW.

The IPPNW is quite literally a single-issue organization. With physician chapters in 55 countries (with governments that are capitalist, socialist, democratic, and military and political dictatorships), we chose at the outset to focus our energies on preserving nuclear peace and preventing the annihilation of the Northern Hemisphere. The focus on the medical, scientific, and professional aspects was designed to make certain that neither the Soviets nor anyone else used the IPPNW as a vehicle for national propaganda. We deliberately removed from the agenda—as an organization—Afghanistan, East-

ern Europe, human rights, emigration policy, Grenada, Nicaragua, Viet Nam, the black urban ghettos, the 23 million without access to health care in the United States, and so forth.

But as individuals, we have brought up the critical issues of human rights in the U.S.S.R., we have placed our support behind Amnesty International, and we have organized Physicians for Human Rights. Those of us who are vigorous supporters of Amnesty International do not ask that it concern itself with the threat of nuclear war. Planned Parenthood is not expected to devote its resources to the struggle against toxic waste. The Sierra Club and Friends of the Earth take no formal position on freedom of reproductive choice. The success of these organizations depends on the sharpness of their focus on a single problem.

IPPNW received the Nobel Peace Prize in 1985 because it concentrated an enormous amount of energy on the international educational project to which it was devoted: the consequences of nuclear weapons and nuclear war. To predicate our dialogue with physicians on the approval of the internal practices of each nation in which they live would have been an exercise of paralyzing futility and an all-consuming diversion from our original goal. We agreed fully with Sakharov's statement in 1980 that "the questions of war and peace and disarmament are so crucial that they must be given absolute priority, even in the most difficult circumstances."

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Response: I see no conflict between my statement and that of Abrams. As he says, the IPPNW gives absolute priority to war and peace issues.—CONSTANCE HOLDEN

Animal Rights

Which makes a more effective entrée into high school science: a lively computer or a dead frog? From his recent (29 Jan., p. 449) editorial "*Homo photosyntheticus,*" it seems that Daniel E. Koshland, Jr., would jump for the frog, but I think that some students would plug for the computer. Aristotle is dragged into the dispute—on the side of computers—because he supposedly "emphasized deductions about science at the cerebral level, devoid of the unpleasantness of actual experiments." A more apposite view of Aristotle's brand of science was given by Peter Medawar (*1*), who characterized Aristotelian experiments as demonstrative: intended to illustrate a preconceived truth and thereby to convince people of its validity.

Perhaps the situation has changed since I endured high school biology, where experiments, when attempted at all, were in the Aristotelian mode. Even this dubious objective often was not attained. My skepticism toward the frog dissection test as a gauge of the adequacy of scientific education traces back to a still-vivid recollection from my high school course. One entire wall of the classroom was covered with glass-fronted cabinets filled with specimen jars. Each jar contained several gallons of pickled animals. I recall with certainty only crayfish and frogs, apparently embalmed at some point in antiquity. After several months it became evident that the specimens were not incorporated into the curriculum as other than props, intended to lend to the classroom a tone analogous to that achieved in executive offices that are lined with books purchased by the yard for their elegant bindings. Nevertheless, during the course of a very dull year several students, less resigned than I, finally shamed the biology teacher into agreeing to dissect a frog. The "experiment" succeeded, after a fashion; we could see that there was stuff inside the frog, but it soon became painfully clear that the teacher was unable to identify a single internal organ. End of demonstration. The rest of the frogs remained inviolate throughout the school year—and possibly to this day.

My point is that dissecting frogs is not inherently a good thing; there must be some scientific end toward which our experiments are directed. Sometimes the objectives will require that animals be used. But in other instances better alternatives may become available. To mention another of Koshland's concerns, some testing of chemicals for carcinogenicity or teratogenicity can now be accomplished with microorganisms (as in the Ames test). Animal testing will remain necessary before new drugs are approved, but rational people in a free society should ask about the relative costs and benefits of the real pain that experimental animals sometimes experience: how much suffering is warranted by a scientific breakthrough that would deliver to humanity a new shade of eyeshadow from a hitherto-unexplored range of the blue-green spectrum?

To return to introductory biology, Koshland is correct that dissection of a frog might deliver a moral shock to the young student who finds that its stomach contains flies and other insects rather than soda and potato chips. But the realities of predatory behavior can be taught far more vividly by a live frog in a terrarium; and caring for such a system would also demonstrate a host of other phenomena, including locomotion and communication—not to mention the challenge of maintaining life under artificial conditions. Elementary comparative anatomy (using fish, frogs, and other available species) could establish a basis for inferences about evolutionary relationships. However, any attempt to introduce evolutionary biology as an organizing principle for a high school curriculum—at a time when literal-minded creationism and "New Age" metaphysics vie for parental and student attention—is likely to require far more fortitude than the mere demonstration that amphibians have indoor plumbing.

For the training of future scientists and a public that must understand their research, the point is not what we can learn about the insides of a frog. Instead we must inquire what exposing the interior of a frog, or performing any other pedagogical exercise, can tell us about the nature of scientific inference. At least some students may have their attention engaged far more effectively by Richard Dawkins' WATCHMAKER program that generates variant biomorphs or by A. K. Dewdney's set of algorithms that explore hypothetical spikophyte-bendosaurus coevolution (*2*). Some science teachers might believe that serious student dissection of real biological specimens is preferable to computer simulation of the evolutionary process; yet others would see at least as much pedagogic value in the dynamic interaction made possible by the computer. But wouldn't all responsible scientists agree that the realm of experimentation, which includes both comparative anatomy and computer modeling, is superior to the world of unexamined speculation that is the common currency of the popular culture around us?

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REFERENCES AND NOTES

1. P. Medawar, *Pluto's Republic* (Oxford Univ. Press, New York, 1982).
2. Both are described by A. K. Dewdney [*Sci. Am.* **258**, 128 (February 1988)].

The vegetarian student discussed in "Apples, frogs, and animal rights" (News & Comment, 4 Dec., p. 1345) says that her beliefs against vivisection are equivalent to a religion and that her school violated her First Amendment rights by requiring her to dissect a frog (*1*). I agree: antivivisectionism is a religion. It is a fervently held coherent belief system, based on a creed about the relative position of humans and other creatures, and generating a strict code of behav-