A Matter of Change[*]

DONALD J. BARNES

'Don,' an acquaintance of mine said recently, T don't mean to question your commitment to the principles of antivivisection, but you were a vivisector for sixteen years. What caused such a quick and radical change in your beliefs?' I have been asked the same question many times, and by one person more than any other . . . myself. The answer has changed as my values have changed, but consistently and in the same direction. Let's take a chronological look at the evolution of my values in order to try to understand.

In early 1941, just a few months before my fifth birthday, my parents somehow managed to buy a 20-acre farm in Southern California. They had migrated with their two young sons from the rural south, where they themselves had quit school early to help support their families by labouring in the fields for as little as 20 cents per day. They neither liked nor understood city life, and our move to our own land promised security with independence.

The land fed us and clothed us. We grew our own fruit and vegetables and a surplus which we sold from door to door for maximum profit, as the large packers and buyers paid poorly for the products of small independent growers.

Animals were integral to our existence. We raised pigs, cattle and chickens for our meat, eggs and dairy products, churned our own butter and drank our milk as it came from the cow, without pasteurization or homogenization. We treated our animals with love and respect, but always in the knowledge that they were on earth not for themselves but to serve us. Butchering was accomplished as expediently as possible with a hatchet and a chopping block for the fowl and a well-placed bullet for the larger animals. Their deaths raised enigmatic questions in my mind but were soon accepted as necessary, for that was the ethos of the farm.

When I was about seven years old (and my brother nine), our father bought us a burro. We had wanted a horse for some time but had been convinced that a horse was economically unjustifiable, as it would contribute nothing but pleasure to the family farm. We had a tractor with huge metal wheels, almost an antique, so we couldn't even use a horse for ploughing. We soon learned that our burro was not to be simply a plaything for us. As my father pruned the branches of the fruit trees or cut down the corn stalks from the field, my brother and I loaded them on the cart and hauled them away from the field or orchard. There is much hauling to be done on a farm, and before we knew it we were performing this essential function daily. Even so, the burro and I became close friends and we spent many blissful hours exploring the surrounding countryside together.

While the burro and the other farm animals were pressed into our service, there were many other animals on our farm which were undomesticated and posed a threat to our way of life. Gophers and ground squirrels burrowed in the soft soil of the orchards, eating our vegetables and the roots of our trees. We irrigated our fields at night to minimize loss of water through evaporation. The water came from a single source and had to be channelled into irrigation ditches dug by hand or with a plough. These ditches followed a rather circuitous path in order to accommodate gravity and the many plants that required frequent irrigation. If a gopher should happen to burrow near an irrigation ditch, we had to fill the burrow with rocks and soil, for it's amazing how much water can disappear into a gopher hole. Skunks, while posing no immediate physical threat, were a constant nuisance; other creatures of the wild, such as rattlesnakes, weasels or coyotes, were seen as encroachers and potential enemies to our chickens and our egg supply. I received 25 cents for each ground squirrel I trapped or shot, and 10 cents for each gopher. I therefore learned early to kill without guilt, for wasn't I doing

[*] In PETER SINGER (ed), *In Defense of Animals*, New York: Basil Blackwell, 1985, pp. 157-167.

something to help the family?

After several years our family moved to Colorado and the life on the farm was over for ever. But now I was taken hunting and fishing, and I became proficient in both. We considered ourselves, 'good sportsmen', and I suppose we were in the sense that we always ate what we killed, never exceeded our limit, were conscious of camping etiquette, were careful with firearms when there were other people around and so on. To us, it was a perfectly acceptable way of life, even though we could have done without the meat provided by these activities.

In 1960, while studying for a Ph.D. in clinical psychology and ever mindful of the ethics involved in working with psychiatric patients, I was given a position as graduate teaching assistant at the Ohio State University. My job was to teach principles of learning to second-year college students through the use of operant-conditioning techniques applied to laboratory rats. This was no problem for me, given that my entire background consisted of using other animals for my sake, and I glibly demonstrated the effectiveness of various techniques of training, including the use of electric shock as 'negative reinforcement'.

Six years later, having completed my internship and graduated from the US Air Force Officers Training School, I was assigned to head up the laboratory when the Air Force decided to develop a capability to determine the effects of pulsed ionizing radiation upon the behaviour of non-human primates. (To the Department of Defense, a psychologist is a psychologist: it didn't matter that I was a clinical psychologist.) I was given a relatively large budget ($200,000 to $300,000 per year) and freedom to set up the programme I wanted. I had a crew of enlisted and civilian workers, most of them with college degrees. I was given the opportunity to travel to other laboratories, to speak to funding agencies, to consult with other scientists.

Realizing that the vocabulary of the clinical psychologist was inappropriate for the job, I immediately set about learning something about experimental psychology. I instituted a contractual arrangement with the Department of Psychology, Baylor University, Waco, Texas. Baylor University was to train monkeys at their primate facility in Waco and, further, to provide two or three graduate students to work as 'interns' at the School of Aerospace Medicine under my direction. I learned from these students and from their professors.

The gastro-intestinal system is affected early in the course of radiation injury. Hence we were not at liberty to use food, or 'positive reinforcement' to train the monkeys, for if they stopped 'working' we could not attribute the work stoppage to their inability to work. The animals might simply not feel like eating. We were therefore constrained to use shock avoidance, or 'negative reinforcement', in our experiments. We felt that we must provide the animals with the strongest incentive in order to avoid interpretational difficulties based upon 'motivation'. We therefore bought specially designed shock units from Behavioral Research Systems Electronics. These shock units delivered between 0 and 50 millamperes at 12,000 volts. The output from the shock units was connected to 'shock plates', metal plates under the monkeys' feet and mounted on strong springs to ensure contact with the feet. It was impossible to measure the amount of shock each animal received as skin toughness, perspiration, spring tension, the specific shock unit, etc., were all relatively uncontrolled. The training situation therefore became totally empirical in that the shock unit was turned up until the primate began to respond. In many cases this was a very high shock level, as most of the monkeys were very young and passive and tended to withdraw rather than to strike out when hurt. The more aggressive animals received fewer shocks because they responded more often and were therefore more likely to emit the response desired by the experimenter, at which point the shock would be terminated. But woe to the monkey who withdrew, who began to self-mutilate, who tried to escape: I've seen more than one monkey die from cardiac fibrillation occasioned by repeated shocking.

There are two obvious questions which must be addressed at this point: how could anyone do

such things to animals? And why would anyone do those things in the first place? Realizing full well that I will probably never be able to answer these questions to anyone's satisfaction, I'll attempt to reflect my thoughts during the time I was involved in such research.

First, why *wouldn't* I use other animals for my own means? I represented a classic example of what I choose to call 'conditioned ethical blindness'. My entire life had consisted of being rewarded for using animals, treating them as sources of human improvement or amusement. There had not been a single person with the temerity to challenge my behaviour towards other animals. Of course I was kind to animals; of course I loved my pets; of course I would tend to a sick bird, rabbit, dog or cat without question. On the other hand, I would belie my tenderness a moment later by eating a chicken, or a rabbit or a squirrel, or part of a steer. That was different in my mind; that was 'meat'. The word 'meat' is a means of distancing ourselves from the animals we eat, just as 'negative reinforcement' is a means of distancing ourselves from electrically shocking a creature who feels pain as much as, if not more than, we humans do. I returned to graduate school at the Ohio State University in 1971-72 for a year's study of experimental psychology. At first I spoke openly of the work I had been doing, but I sensed discomfort among my fellow students and some of the professors. They didn't *say* anything- I simply felt their discomfort. I stopped talking about my work. I studied with an ethologist from Britain, with physiological psychologists, learning psychologists, motivational psychologists and social psychologists from the United States and with graduate students from all walks of life. Never was the ethical question broached. The compartmentalization was incredible (now that I look back on it). We'd be discussing on the one hand the effects of early stimulation upon later development, on the other the effects of brain lesions upon visual behaviour. The whole gamut of research was implicitly defined as ethical. There was never any question. Why *shouldn 't* I have engaged in such research?

But let's take this conditioning process a step further. During my tenure as a psychologist I considered Harry Harlow a super-person. Dr Harlow, perhaps the best-known of all experimental psychologists, was responsible for conceptualizing the surrogate-mother concept in raising rhesus monkeys. He learned that if one separates an infant monkey from his or her mother, the monkey will probably grow up to be neurotic. Going beyond this simple truth, Dr Harlow did all manner of things to infant monkeys. Not only did he separate them from their mothers, but he also put them in 'pits of despair', where the animals never saw, heard, smelled or in any other way sensed another life. These monkeys became psychotic, as one might suspect if one were to give it a moment's thought . . . which I didn't. Harry Harlow created a 'monster mother' a mechanical device which threatened the infants with all kinds of harm. It is scarcely surprising that the monkeys turned out to be more fearful than their normally raised peers. The bulk of this research was paid for by the American public under the auspices of the National Institutes of Mental Health.

Dr Harry Harlow is not the only person to have carried out this type of research. Others continue to do it. The justification? To develop a model of psychopathology to be applied in work with humans. It is very difficult for me to understand why I did not question the validity of this research twenty years ago. As a practising clinical psychologist, I would never consider going to the literature on non-human animals to try to find a model for a client.

The work simply has no utility. This is another example of 'conditioned ethical blindness', although one does not even have to face the ethical issue to see the fallacies in such research.
We are now ready to examine the second question I raised above: why would anyone do the kinds of experiments I did? I was, of course, given a reason for this research. I was told that the Air Force needed to know the survivability/vulnerability of its weapons systems. In other words, it needed to know where the systems were weakest so that it could bolster up that part of the system. Much research had been accomplished to 'harden' the electronics against the effects of radiation, but the human was also a basic component of most Air Force weapons systems (i.e., airplanes). Hence, it was argued, the vulnerability of the human 'subsystem'

demanded definition.

It became my job to determine probability estimates of aircrew functioning following nuclear radiation. If the pilot (co-pilot, bombardier, etc.) became comatose following the receipt of 5,000 rads, why spend an exorbitant amount of time and money 'hardening' the electronic components to withstand 10,000, 15,000 or 20,000 rads? Also, if the human simply underwent a period of 'early transient incapacitation' and could operate the weapons system fifteen or twenty minutes after irradiation, how could we develop an automatic pilot which would get the crew member through this period of incapacitation and still enable him (sexist but accurate) to complete his mission?

These are real questions to the military planner; as an employee of the Department of Defense, they became real problems for me. I'm sure that I don't have to point to the lack of humane consideration inherent in this situation. In contrast to most biomedical research, even the human is seen as expendable to the mission; the goal is to assure that the mission is completed, that the bombs are dropped. No one expects the human operators of these weapons systems to return from their missions. What possible chance of personal consideration does a non-human have in such an environment?

The obvious solution: take the human out of the weapons system. Even though the technology to do exactly that has existed for a decade, it will not be done. Why? Because the future of the US Air Force depends upon having a person in the cockpit. The US Air Force is an entrenched bureaucratic institution. It is self-perpetuating and has erected defence mechanisms to prevent its own annihilation while developing other defensive strategies to defend the United States against invasion; both systems are sophisticated and 'hardened' against attack. In order to protect the status quo, projects which maintain it are approved; those which threaten its continuation are disapproved. If we can't take the human out of the system, we must find a way to ensure that the system works with the human in it. Hence, billions of dollars are spent on justifying the existing bureaucratic apparatus.

In this role, I accepted the problems as my superiors outlined them for me. How, indeed, does one determine the vulnerability of the human operator to radiation?

First, one must accept an anthropocentric point of view - that is, human welfare is the first priority. Second, one must, at least implicitly (as in my case), assume that the ends justify the means. There is no substitute for humans in biomedical research designed to learn about humans, but one cannot accept this fact if convinced that the problem must be solved. So a surrogate must be found for those experiments which would prove harmful to humans. The non-human primate would appear to be our closest relative; he is the obvious choice.

If there were an extrapolative index, a formula for predicting human behaviour from the behaviour of non-human primates, biomedical science would have a wealth of information. Many of the 'problems' presented to me would have been solved years and years ago, for millions of non-human primates have been sacrificed to this end. There is no such formula. But I didn't realize this simple fact and, being convinced that non-human animals exist for human purposes, blindly accepted the premise that 'close is better than nothing' and set about developing an ambitious programme to irradiate trained monkeys in order to extrapolate the results to hypothetical human situations. Over 1,000 monkeys later, several events occurred which caused me to step back and re-evaluate my position. Although I cannot point to a single causative factor in my conversion from experimenter to animal rights activist, I can recall some of the events.

I must confess that, for some years, I had entertained suspicions about the utility of the data we were gathering. I made a few token attempts to ascertain both the destination and the purpose of the technical reports we published but now acknowledge my eagerness to accept

assurances from those in command that we were, in fact, providing a real service to the US Air Force and, hence, to the defence of the free world. I used those assurances as blinkers to avoid the reality of what I saw in the field, and even though I did not always wear them comfortably, they did serve to protect me from the insecurities associated with the potential loss of status and income.

As each day passes it becomes increasingly difficult to comprehend how I was able to close my eyes to the artificiality of the research I was doing. The data we gathered on the behavioural effects of ionizing radiation were used as inputs to 'models' of the operational systems. By this stage the numbers themselves had become 'truths'. The fact that they had been obtained from non-human primates in highly artificial situations was forgotten or ignored. The very fact that they existed to be utilized as inputs to computer-modelled 'war games'justified their validity.

And then, one day, the blinkers slipped off, and I found myself in a very serious confrontation with Dr Roy DeHart, Commander, US Air Force School of Aerospace Medicine. I tried to point out that, given a nuclear confrontation, it is highly unlikely that operational commanders will go to charts and figures based upon data from the rhesus monkey to gain estimates of probable force strength or second-strike capability. Dr DeHart insisted that the data will be invaluable, asserting, 'They don't know the data are based on animal studies.' Needless to say, this confrontation proved devastating to my status as a Principal Investigator at the School of Aerospace Medicine!

In retrospect, I realize that the slow changes in my perception of the research I was doing were accompanied by changes on the empathic, as well as on the intellectual, level. For example, on several occasions during the sixteen years I did research on non-human primates, I took it upon myself to destroy irradiated animals. Although not trained as a physiologist, I found I had the facility to locate a vein while many technicians could not. Rather than cause the monkey further suffering, I began to fill in when the veterinarian was absent. On each occasion a thought occurred to me: 'Do I have the "right" to do this?' I know now that a subliminal voice answered 'No!' but I felt I had no choice. At that particular moment I did not; later it was easy to concentrate on other issues.

In 1979, just over a year before I would leave the laboratory to work for the dignity of non-human animals, my boss approached me with a request: would I talk to a young statistician who had just come into our laboratories to work with us? He had apparently become quite upset upon seeing the monkeys receive electric shock for failing to perform their 'duties' correctly and had commented on the inhumanity of the project. Could I defuse this potentially dangerous situation? Of course! I gave this fellow all the trite arguments. I told him of the 'necessity' for the research; I told him of the reason for using electric shock; I told him why we had to use monkeys. He bought the argument; in the process I began to unconvince myself.

Shortly thereafter I was ordered to radiate four trained rhesus monkeys with 360 rads of gamma radiation and to determine the effect of such radiation upon the monkeys' behaviour over the next ten hours. I objected to doing this experiment for the following reasons. First, I had become an expert on the behavioural effects of ionizing radiation in the rhesus monkey; I knew that 360 rads would not affect the performance of the monkeys during the ten hour post-irradiation observation period. Second, with even the most elegant of experimental designs, a subject population of four is statistically inadequate; even if all four monkeys behaved in exactly the same way following radiation, the results would be scientifically invalid. Third, I had fallen out of favour with my superiors by this time as a result of my questioning of the entire project and had been relegated to the laboratory. I *knew* these monkeys. I was becoming more and more particular about how they were 'utilized'. I didn't want to 'use' these animals in a meaningless project. This is not to say that I would have balked at using them in a project I considered to be important; I had not yet reached that point in my conversion. I took my objections to a staff meeting and presented my position.

The other professionals, including my immediate supervisor, agreed that the experiment would be a negative one; the monkeys would demonstrate no behavioural changes during the 10—hour post-irradiation observation period. They further agreed that the experiment could be done by analysis of existing data, by a thorough literature review. Even so, my immediate superior was frightened to authorize this procedure and would not do so. He did, however, promise to discuss the matter with his supervisor.

The farther one goes up the chain of command, the less competent technical advice is available, states the Peter Principle. This was no exception; I was ordered to accomplish the experiment for political reasons. My reaction was anything but acquiescence; steps were subsequently taken to get rid of me, as I had become a thorn in the side of the bureaucracy. I was fired.

As I reflect upon this situation, I see that values based upon an unpopular ethic are a luxury that many people cannot afford to conceptualize, let alone to embrace. I was being stirred by some disquieting thoughts and feelings, to be sure, but I didn't understand them. As far as I was concerned, I was caught up in a bureaucratic morass, being punished for questioning authority, feeling self-righteous because I knew that it was scientifically improper to waste valuable resources (animals) in the pursuit of poor science. Whatever empathy existed with the laboratory animals was still in its own cage, locked away from my thoughts.

I was hurt, embarrassed and angry. I looked for ammunition, for tools of retribution. I called in the Inspector General, alleging mismanagement and waste of government resources. I filed for reinstatement with the proper authorities. I talked to the press. I wrote to humane organizations and, in the process of composing these letters, began to realize, perhaps for the first time, that my work and the research efforts of my peers had been both inhumane and without redeeming value.

As a biomedical research scientist, I had been shielded almost completely from contact with organizations within the animal advocacy movement. It wasn't so much that I had been ordered not to communicate with individuals or organizations concerned with the rights of laboratory animals, but a bias against any antivivi-section philosophy was a 'natural' part of the laboratory environment. During my sixteen years in the laboratory the morality and ethics of using laboratory animals were never broached in either formal or informal meetings prior to my raising the issues during the waning days of my tenure as a vivisector. On at least two occasions support personnel were chastised for unnecessary abuse of their non-human charges, but the question of the cruelty of the research itself remained buried in the all-encompassing and 'beneficent' embrace of medical science.

In my anger and frustration, I had a flash of insight. The research I had been doing, and which was continuing in my absence, was not merely scientifically improper: it was inhumane. I was appalled at my own past insensitivity and determined to put a stop to those projects which I knew to be both invalid and cruel, but I had no idea who to contact. Like so many other people, I had not taken the time or made the effort to become informed about the plight of non-human animals. Two groups came to mind from distant memories: the Society for the Prevention of Cruelty to Animals (SPCA) and the Humane Society of the United States (HSUS). I wrote to the latter organization, and my letter was referred to Dr Andrew Rowan, who replied with interest and recommended that I contact Dr Shirley McGreal of the International Primate Protection League (IPPL). I did so, and a lively correspondence grew up between myself and Dr McGreal - a correspondence which would eventually lead me into the humane movement.

I won my case for reinstatement and returned to the School of Aerospace Medicine, not to work with animals, for I could no longer do that, but to do research on alternatives to the use of animals. After three months I recommended that the research be terminated. This was not

accepted, and I was ordered back to the laboratory. I resigned my position and found employment in the humane movement.

My values are very different today from what they were in 1980. In retrospect, I realize that I held tightly to my conditioned beliefs, releasing them only as they were pried from me by logic and evidence of their inappropriateness. In 1980 I could be pressed to separate research with non-human animals into 'better' or 'poorer' categories. The residual logic of'necessary medical research' remained to some extent; the anthropocentric view faded slowly away, to be replaced by a broader view of increased respect for other life forms. As a consequence, meat was omitted from my diet, leather from my wardrobe and rodeos and circuses from my options for entertainment. My feelings at the sight of a fur coat changed from grudging admiration to nonchalance, to pity, to disgust and frustration.

Change requires the reconceptualization of many, if not all, of our habits. I didn't change my views quickly, nor did I change them without struggle or resentment. I only hope that in changing my own views I have become able to bring about similar changes in the views of those who unthinkingly continue to experiment today.