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Of Rats and Psychologists A Study of the History and Meaning of Science

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ABSTRACT. The relationship between psychology and rats is explored in connection with the pre-scientific lifeworld, where important motivational roots, historically changing cultural practices and far-reaching societal consequences of rat psychology are found. The pre-theoretical meanings of the rat entail its inimical Otherness opposing humanity, its unrelenting parasitic cohabitation with people, and its reflection of the inhumanity of the person. A historical analysis shows how, in coming to terms with the rat-induced Black Plague, humanity developed the practices of surveillance, analysis and control that culminated in the modern scientific transformation of the rat from a threat into a docile servant. The triumph over the rat-like in the human and in the rat itself aimed at by psychoanalysis and experimental psychology reveals humanity's attempt to overthrow its own evil by means of modern disciplinary structures. The societal ramifications of this psychology of one-way surveillance, analysis and control are found to contain a dehumanization in which the psychologist's hidden rat-likeness threatens to destroy human subjectivity and freedom. In order to curtail the alienating trends in the historical trajectory of modern psychology, a science entailing reciprocity and mutual recognition between the scientist and humanity, leading to an owning of the rat-like as a part of existence, is suggested.

In the January 1986 *APA Monitor*, the American Psychological Association celebrated the newspaper's 15th anniversary. On the front page of the publication stands an exuberant rat wearing a party hat, carelessly drinking champagne and blowing a party horn. One might think 'How cute' and recall the benevolent fondness, even homage, that psychologists often have seemed to show toward their favorite little creatures. Robert Yerkes's childhood pet, an albino rat, was so dear to him that he had it stuffed and kept the little idol all his life (Roediger & Blaxton, 1985). Perhaps rats are owed even more gratitude for serving as experimental research subjects ('participants?') than we humans. The rat has found a most celebrated place in psychology. Yet there is something incongruous about this white rat in party gear; there is something disturbing about the relationship between psychologists and their mascots.

'Animal rights' advocates, who, in recent years, we find inside the *Monitor*, have been attacking psychology laboratories and destroying records and equipment (Fisher, 1986), might quickly reply: 'The picture is mixed to say the least. Look at all the horrible things that are done to these poor creatures, all in the name of *science*. This good humor and supposed affection is a thin veil indeed for a most cold and calculating viciousness!' The laboratory scientist might retort, 'What are truly vicious are the diseases and social problems that afflict humanity and even animals themselves, and if we can use a species, which we ourselves have shaped and reared for the very purpose, to overcome these real problems in life, our relationship with these animals is a justified and happy one.' It is true that we owe breakthroughs in such areas of basic research as learning (Skinner, 1938; Watson, 1924) and the physiological substrate of motivation (Olds & Milner, 1954; Schachter, 1971) to experimentation with rats. Yet the battle between psychology and those outside of it continues.

Our purpose here is neither to review nor to attempt to resolve the question of 'animal rights' but rather to reflect further on the relationship between the human, particularly the psychologist, and the rat. If something of this relationship is suggested in the fact that rats are so frequently employed in research, it is certainly obscured by the results, theories and applications of these studies, which far transcend the meaning of the relations between experimenter and subject per se. Rather than follow the usual teleology of our science and focus on its results, theories and applications, I hope to gain a broader insight into the nature of our work. I will reverse the usual direction of thought and consider the human's relationship with the rat apart from as well as in the scientific endeavor. First, I outline some of the rationale behind this work as it is suggested in the philosophical writings of Edmund Husserl. Second, I consider the relationship between human and rat in everyday, pre-scientific life, where I will attempt to intuit the rat's meaning. Third, I delve into a historical analysis of the changes that have occurred both in the life of humanity and in that of the rat, particularly through their interactions in modern Europe. Fourth, I focus, in light of this more general history, on the rat in the science of psychology and, adopting a futuristic perspective, explore some of the meanings implicit in the trajectory of modern psychology's encounter with the rat. Finally, I attempt to draw some conclusions about psychology's mission in humanity.

The Task of Reflection

Being concerned with, let alone attributing importance to, the meaning of rats may appear to be of dubious value and justification if not a downright bizarre affair. Therefore let us begin by articulating the context that provides a sober rationale for this admittedly strange pursuit. It is the

philosophy of Edmund Husserl which so urgently calls for a reflection on the meaning of the constituents of scientific activity in their connection with the everyday world.

The modern era has been characterized by a thoroughgoing absorption in science, fueled partly by the conviction that science would provide answers and solutions to humanity's deepest problems and needs. However, recent writings, dubbed 'postmodern', have assumed a cynical distance and attempted a 'deconstruction' of modern discourse, unmasking its naïve presuppositions and pretensions. For instance, the disinterested observer, objective data ('given') and universal truth have been disclosed, respectively, as a politically motivated agent, value-laden *capta* ('taken') and limited, historical notions.

This general trend, which has reached a great height in the contemporary philosophy of science, was forecast by Husserl half a century ago when he recognized, without cynicism, that his lifelong inquiry into the foundations of science stemmed in part from a cultural-historical crisis in which the sciences were playing a role. Husserl attempted to focus on the difficulties peculiar to modern humanity and to reveal the aim of its historical trajectory. Turning to science as an expression of modernity, he hoped both to recognize its roots in human cultural history and to subject the scientific character of the sciences 'to a serious and necessary critique without sacrificing the primary sense of scientific discipline' (Husserl, 1954, p. 5). On the one hand, he found science expressing some of humanity's most noble aspirations, and, on the other hand, he found science falling short of its own goals and thereby leaving humanity in its state of crisis and dissatisfaction.

Husserl views our cultural crisis as stemming from the poverty of answers to the greatest concerns of modern humanity, namely those pertaining to the meaningfulness of human life, particularly the values, directions and goals of our world-building activities. In his critical, historical reflection on what was originally sought by modern humanity through science, Husserl attempts to disclose the hidden teleology of our era. At the most general level of his analysis, he claims that the impetus of the modern spirit is the quest for *rationality*, which to him means an autonomous, free and thoroughly responsible confrontation with the world in which 'all conceivable questions—questions of being and of value and norm, questions of what is called "existence"—find their place' (Husserl, 1954, p. 298).

However, science has developed in such a way that it has systematically fallen short of the full scope of this quest. Why? Husserl believes that in the second half of the 19th century, our culture let itself be determined by the positive sciences in such a way that, 'blinded by the "prosperity" they produced', it turned away indifferently from the decisive questions of how we are living and where we are heading (1954, p. 6). This failure is not

simply due to the tendency to become enthusiastically absorbed in the great achievements of science. On a more fundamental level, inasmuch as the physical sciences have become the prototypical model for all science, matters no less important than the everyday world of human meaning have fallen outside of the scope of the quest for truth. A particularly crucial case in point is that natural science per se precludes the interrogation of the scientist qua historical human presence. Hence the limited constitution of science has played a role in its lapsing into the irrationality and irresponsibility of an activity lacking proper reflection on itself and its role in the history of the concrete, surrounding world.

Mathematical natural science is a wonderful technique for making inductions with an efficiency, a degree of probability, and a computability that were simply unimaginable in former times. As an accomplishment, it is a triumph of the human spirit. As for the rationality of its methods and theories, however, it is a thoroughly relative one. It even presupposes a fundamental approach that is itself totally lacking in rationality. Since the intuitively given surrounding world, this merely subjective realm, is forgotten in scientific investigation, the working scientist is himself forgotten; the scientist does not himself become a subject of his own investigation. (Husserl, 1954, p. 295)

This state of affairs has led to an ambivalence on the part of humanity toward science. On one hand, science is idolized as the ultimate good and, on the other, it is viewed with disappointment, as alien and even dangerous. Husserl notes that the change in public opinion from love to hate, which he saw in the 'hostility' of the younger generation toward science during World War I, is inevitable because science as it has been conceived excludes in principle

. . . those questions which man, given over in our unhappy times to the most portentous upheavals, finds most burning. . . . In the final analysis, they concern man as a free, self determining being in his behavior toward the human and extrahuman surrounding world and free in regard to his capacities for rationally shaping himself and his surrounding world. (Husserl, 1954, p. 6)

Here science has left us with a general lament which has not diminished after another 50 years of scientific progress. In fact, the international tensions and potential nuclear apocalypse which looms on the present horizon are bound up with scientific progress. Inside the same January 1986 issue of the *Monitor*, the psychologist Keith-Spiegel faces the public's disillusionment with psychology:

. . . the public has taken seriously our promise to be helpful, and yet the world remains unstable, dangerous, and dirty. Society has been led to believe that we are more competent than we are, because in some cases we have promised more than we have delivered. (Quoted in Fisher, 1986, p. 20)

For Husserl (1939/1954), the inability of science to relate to humanity's deepest concerns stems primarily not from a lack of competence but rather from the narrowness of its specialization. The very expertise of the scientist consists of employing concepts and methods that are traditionally handed down and taken for granted without any rigorous reflection on their historical and personal meaning in connection with extra-scientific life. As a person becomes a psychologist, for instance, he/she enters a specific, limited life vocation that takes stock of everyday humanity only through the spectacles provided by the received discipline. Competence entails the skill of thinking by means of such concepts as 'psychophysical function', 'learning', 'personality', 'development' or 'independent variable', and using such tools as mental tests, statistics, laboratory animals and sophisticated instrumentation. However, in becoming so specialized, all that does not fall into the sphere of relevance preconstituted by the discipline ceases to occupy the psychologist's activities. Hence the irrationality of a person whose very expertise casts a shadow on his/her own relation with all that rests beyond the specific scientific discipline.

Husserl calls not for an abandonment of the scientific spirit but for its extension and radicalization, which takes the form of an investigation of the relationship of scientific theories and practices to what he calls the 'lifeworld' (*Lebenswelt*), which is 'always constantly presupposed as the ground, as the field of work upon which alone the scientist's questions, methods, and thought make sense' (1954, p. 295). It is this lifeworld which motivates the scientist, and 'through his praxis he is always giving it a new face' (Husserl, 1954, p. 321). Husserl calls for a description of this motivation and transformation so that the meaning of science may be brought clearly into view. This requires that we perform on traditionally defined science a kind of figure-ground reversal. Rather than attempting to explain the natural and human world from the standpoint of specialized methods and abstract theory, we must attempt to comprehend the specialized methods and abstract theories from the standpoint of their meaning in the concrete, pre-scientific lifeworld.

We are aware that psychologists, as a matter of course, use rats as subjects in experiments. The rationale for this practice is also given within the specialized discourse of the modern psychologist. The practice becomes, as Husserl notes generally, a premise, a building block underlying work at higher levels, most notably the total, coherent integration of a theoretical system. The utilization of rats, as a singular activity, is less a matter of interest than a part of an edifice growing ad infinitum, upon which generations of scientists have undertaken unending work. This work is directed forward from theory to diverse applications that transform humanity without questioning the role that rats are playing in this ongoing transformation. Husserl says that if we are to have a genuine science that lives up to its noble aspiration of free self-determination in light of the

understanding of the meaning of our existence, we must return our gaze to the lifeworld in its fullness, examine the pre-scientific nexus. Here, the rat and humanity were originally intertwined, and we may trace the motivations, trajectory and far-reaching implications of the scientific utilization of rats in the light of its overall lifeworldly meaning. Husserl says 'merely fact-minded sciences make merely fact-minded people' (1954, p. 6) and calls us to broaden our science so that we might comprehend the *meaning* of science itself. Only in this way can science achieve its aim of radical rationality.

The Meaning of the Rat

The theme on which people's attitudes toward the rat vary is that of uncanny emotion. The spectrum ranges from shyness and caution to horror, disgust, loathing, terror and dread. It is in this context that rats have become the target not only of aversion, but of all manners of persecution and extermination. Although science has informed us that these small creatures carry deadly diseases which may infect us, these attitudes appear prior to and more fundamental than any such knowledge. 'It is a curious fact that long before there could have been any knowledge concerning the dangerous character of rodents as carriers of disease, mankind dreaded and pursued these animals' (Zinsser, 1935, p. 191).

This dread is rooted in the profound relation between humans and rats. 'Rodentia' comes from the Latin *rodere*, meaning to gnaw, which suggests the basically sharp, cutting and destructive orientation of this creature. Though small individually, the rat is collectively the largest order of mammals, able to adapt to 'a variety of habitats commensurate with man' (Olds & Olds, 1979, p. 90). If the human is a builder, the rat is a destroyer.

The rat is not usually thought of as a domestic animal and much in our relations with the rat is an extreme antithesis of our encounters with dogs, parakeets, goldfish and so on. Yet the rat is as dependent on and as closely related to the life-space of humanity as are many domestic animals (Barrett-Hamilton & Hinton, 1912). Paradoxically, the human's building has cleared the way for rats by reducing the numbers of all the rat's predators: foxes, stoats, weasels, otters, kestrels, buzzards and other birds of prey (Olds & Olds, 1979). Following people to all corners of the globe, this unwelcome and dogged shadow is different from other species who share our abode by virtue of its index of unruliness and destructiveness, which seem unlimited.

The rat is (experienced as) an inimical species, living a kind of anti-life. Not only do rats carry many human and animal diseases, but a single rat will eat 40 to 50 pounds of indian corn in a year, ravage seeds and sprouts, and mangle merchandise such as books, leather, harnesses and cloth. Rats kill poultry and eat the eggs. They consume or damage over 10 percent of

the world's food supply each year and contaminate the water supplies of both man and domestic animals (Olds & Olds, 1979). These cosmopolitan wanderers, whose versatility rivals human's, will destroy wild birds, plants, flowers and even buildings—the wood, pipes and walls—right down to the very foundations. They seem to destroy what humans build through a kind of anti-work.

In buildings, their powerful incisors cause considerable damage to pipes . . . their gnawing and burrowing habits have caused buildings to collapse from extensive damage to joints, partitions, walls and foundations, and roads and pavements to subside. (Olds & Olds, 1979, p. 90)

Rat's work on dams has unleashed floods which are easily braved by these excellent swimmers. The rat has even been known to eat human babies. The inevitable conclusion: 'There is nothing that can be said in its favor'. (Zinsser, 1935, p. 202)

The rat's closeness to the human is not limited to its spatial proximity nor to the same target of labor. For all its alienness, strangeness and antipathy, its inimical Otherness, the rat presents a striking mirror-image of the human. Western European folklore portrays rats with intelligence rivaling humans' as they skillfully observe the human scene and cooperate as fellows in outwitting humankind (Burton, 1957). Science tells us that the rat has a similar glandular and neurological make-up to the human. Like humans, rats are omnivorous and eat their own kind in stressful conditions. Rats have the same gender ratio as humans; the males are larger and females fatter. Rats breed in all seasons, especially the spring, inbreed readily and hybridize easily. Mother rats care for their young while helpless and dependent; the male takes no part in the rearing of pups. Rat family groups huddle together, groom each other and the young need parental touch to live (Olds & Olds, 1979). When the young rodent has attained maturity, it is evicted from the family burrow and seeks a new home of its own, sometimes in an altogether different community (McNeill, 1976). If we transpose the three-year rat lifespan onto a 90-year human scale, the rat would go through puberty at 16 years and menopause at 45. Rats adapt to all climates as humans do. Virtually alone with humans in the animal kingdom, rats make war on their own kind, are individualistic until they need help, fight bravely when alone but only against weaker enemies, and organize to fight in hordes (Zinsser, 1935). While it might be said that rats and humans share the honor of being the most successful predators on the globe, neither species has achieved social, commercial or economic stability. According to Zinsser, while even bacteria nourish plants, and even insects' destruction of one form of life is helpful to another, neither rats nor humans are of any use to other species.

Most animals are content to lead peaceful and adjusted lives, rejoicing in vigor, grateful for this gift of living and doing the minimal of injury to

obtain the things they require. Man and rat are utterly destructive. All that nature offers is taken for their purposes, plant and beast. (1935, p. 208)

The pitiless extermination of the black rat by the brown rat has no parallel in nature except for the interracial persecutions of the human. In wars of both species, the victors have been merciless: 'The physically weak have been driven before the strong—annihilated or contrained [sic] into slavery or doing without bounties that were provided for all equally' (Zinsser, 1935, p. 209).

Human beings, of course, as they often proclaim, have also done great and wonderful things on earth; by no stretch of the imagination could these have been the work of rats. If rats share something in common with humans, it is the *inhumanity* of humanity, expressing the despicable underside in a pure and unadulterated form that trails humans wherever. This inhumanity, this shadowy hindside, refuses to be flushed out of the sewers of civilization because it is inextricably bound up with it. The rat is the dark side of the human, sharing with humans the same circadian rhythm but precisely in reverse—the rat's activity takes place at night. Almost blind, the rat is at home in this darkness as it keeps pace with the human. Human and rat, though pitted against each other in continual hostility and often in deathly battle, are unable to destroy each other completely. This anonymous, faceless, selfish hoarding element of existence so purely embodied in the rat is the hidden side, the blind spot, of the human's own being. We would rather not recognize these features of ourselves. We push them to the margins, leave them in the dark, as we define ourselves in terms of justice, mercy, reason, creativity and individuality.

Berger (1980) has pointed out that in humans' general relation to animals, the latter have undergone a physical as well as a more complex cultural marginalization. The animal, according to Berger, is the Other with whom the human originally lived in dialogic fellowship. The animal's gaze at the human is attentive and wary, and though animals can be killed, eaten, tamed or cultivated, none—even those who offer companionship—*confirms* humans. The animal remains Other. The marginalization of animals in contemporary consumer society can be seen in their having been transformed into toys and pets. 'It is part of that universal but personal withdrawal into the private, small family unit, decorated and furnished with mementoes from the outside world, which is such a distinguishing feature of consumer societies' (Berger, 1980, p. 12). Our world-building has sought to annihilate the Otherness of the world, as unsympathetically as that Otherness could destroy us. Yet there are no toy rats in the child's nursery. Real rats, dark wild rats, remain the only truly dangerous wild animal still on the loose in the urban, human environment. Toy rats may be purchased in novelty stores and used by people, as a possession and

expression of the owner, to scare other people. Rats are that *inimical-Other-which-is-also-ourselves*.

Sartre (1952) sharply brings out the relationship between humanity and the evil that humanity attempts to disown, marginalize, cast away from itself and not recognize as a part of its existence. In our self-proclamation as creators, builders and affirmers, we become blind to our intrinsic destruction.

All construction entails an at least equal amount of destruction. Our unstable societies fear lest a false movement cause them to lose their balance. They therefore ignore the negative moment in our activities. We must love without hating the enemy of what we love, affirm without denying the contrary of what we affirm. . . . We rapidly cart away the dead, we stealthily recover waste, every day we mask, in the name of cleaning up, all the destruction of the day before. We conceal the pillaging of the planet. (Sartre, 1952, p. 24)

We are as much a society of consumers as builders, and perhaps more so. The hungry malleable mass of de-individualized humanity blindly devours what the corporate advertisers, the contemporary builders, offer (Miller, 1983). The dark side of humanity does not merely rest in its blind consumption but is redoubled in that fugitive sense of individuality that can only be recognized as *evil*.

[Man] will define himself by traditions, by obedience, by automatism of the Good, and will give the name *temptation* to the live, vague swarming which is still himself, but a himself which is wild, free, outside the limits he has marked out for himself. His own negativity falls outside himself, since he denies it with all his might. Substantified, separated from any positive intention, it becomes . . . Evil. . . . Whom does one strike in the person of the 'dirty, greedy, sensual, negating' Jew? One's self, one's own greed, one's own lechery. Whom does one lynch in the American South for raping a white woman? A Negro? No. Again one's self. Evil is a projection. The evil-doer presents to us in broad daylight and objective form the pure temptations of our own freedom. If you want to know a decent man, look for the vices he hates the most in the other. You will have the lines and force of his fears and terrors, you will breathe the odor that befouls his beautiful soul. (Sartre, 1952, pp. 29–30)

Thus even beyond the separated, negated, unassimilable, rejected, oppressed and exploited humanity—foreign workers, ethnic minorities, the poor, criminals, the captives of war—we have the rat, a more alien Other secretly mirroring our Self.

The Rat in the Modern Disciplinary Order

The rat plays an interesting role in human history, particularly in the modern disciplinary order in which science and psychology have taken

form. Although it was science that made the tardy discovery of the lethality of the rat, it was the latter which, after returning with the Crusades, carried the plague to western humanity. The black rat, *Rattus rattus*, reached Europe in the 13th century from India, while the brown or 'Norway' rat, *Rattus norvegicus*, came from China or Siberia in the 18th century. The bubonic plague is a result of the bacterium *Pasteurella pestis*, which resides in the stomach of the flea *Xenopsylla cheopis*, which prefers to live in the fur of the black rat but carries the bacterium to humans when the rat dies. The death of the rat mirrors our future.

In fact, the plague had struck Europe previously in the 8th century, but without the presence of rats as an ecological base, it quickly vanished (McNeill, 1976). Only in 1346 did the plague become chronic in Europe. But none of this classification and analyzed causal sequence was known to premodern humanity, who in confusion thought many things, for instance, that God was punishing its sins by sending a black cloud whose noxious air they were breathing (Ziegler, 1969). We can appreciate only with difficulty the uncertainty and disorder that the plague introduced into the lifeworld. Not only was one-third of Europe killed, requiring extensive economic and social readjustment, but the uncertainty of life attending the experience of imminent death led to a breakdown of the previous order of society. The many reports of looting, sexual promiscuity and rape were unknown in such proportions through the Middle Ages. Although most historians consider these reports to be exaggerated, such behavior did increase to some extent during the plague (McNeill, 1976), and, perhaps more important, the reports themselves express the fear of what was emerging in the face of the Black Death. Most important for our consideration, it was in the process of coming to terms with the Black Death that humanity's relation with the Otherness of the world at large, and indeed its own dark side, took on its modern form.

In tracing the birth of the prison, Foucault (1977) reports on an *order* published at the end of the 17th century establishing the measures to be taken to overcome the chaos in a town where the plague had struck. First there was to be a strict partitioning; the town was closed and those who violated the prohibition to leave, as well as all stray animals, were killed. Each street was kept under continual surveillance by a syndic who would himself be killed by higher authorities if he strayed from his post. Everyone stayed behind locked doors and the syndic was the sole possessor of the keys. No outside meeting or communication was allowed. Inspection—roll call, reports and records—functioned unceasingly. The slightest movements were supervised by a series of hierarchically organized monitors, who sorted out every source of confusion, misdemeanor and contamination by strict observations and analysis of the records on each individual—'of what characterizes him, of what belongs to him, of what happens to

him. Against the plague, which is a mixture, discipline brings into play its power, which is one of analysis' (Foucault, 1977, p. 197).

Never before had people been treated this way as a matter of course in everyday social life. The fate of the rat with which we are familiar in modern psychology was first designed and instituted for human beings. Foucault describes this human life with 'everyone locked up in his cage, everyone at his window . . . showing himself when asked' (1977, p. 196). The high authorities observe and, when necessary, punish the district monitors, who do the same to the syndic, who does the same to the parents, who do the same to child caretakers, who do the same to children. 'All this constitutes the compact model of the disciplinary mechanism' (Foucault, 1977, p. 197), which radically transformed the social order and ushered in the modern mode of social existence, that is, a socialization process involving hierarchies of powerful authorities which shape individuals using methodical observation and analysis.

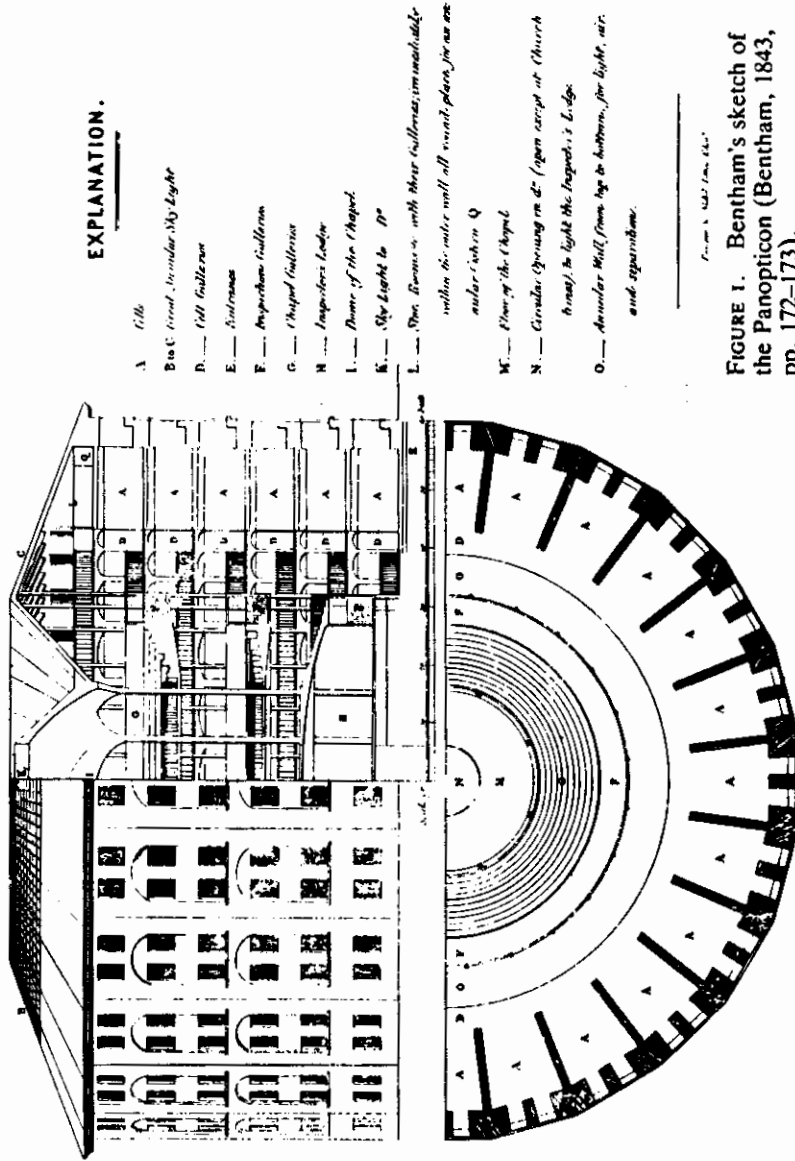
Hierarchical order as a means of preventing anti-social behavior does not show itself *only* in 17th-century European humanity.

Normally, in a colony of rats, a hierarchy is established, where the strongest member dominates the weaker ones and tends to organize the social life of the colony . . . [when the hierarchy is upset or overcrowded] the whole social order degenerates. The rats start to fight for food; they lie in wait for each other and as soon as one makes its way to the food bin, it precipitates a rush from them all, other feeding bins being ignored. (Ricard, 1969, p. 19)

Whereas the former emblem of the Inimical Other amidst humanity, the leper, gave rise to rituals of exclusion ('The Great Confinement'), the plague gave rise to *disciplinary* projects. The disorderly plague found its corrective in the medical and political disciplines. 'Rather than the massive, binary division of one set of people against another, it called for multiple separations, individualizing distributions, an organization in depth of surveillance and control, and intensification and ramification of power' (Foucault, 1977, p. 198). Ultimately it would not be a project of rejecting and excluding the Inimical Other but one of transforming, of *cure*. In the face of the various forms of confusion and disorder infecting humanity, and for which the plague is not only a metaphor but an original representative, humans have undertaken such disciplinary projects as we find in the penitentiary, the military, the hospital, the asylum, the approved school, and indeed the laboratory, whose foundations and partitions the rat would be incapable of gnawing through.

It took 100 years of *practice* before the modern regime of discipline was crystallized in the form of a social apparatus that can be considered the paradigm of modern human existence. In 1791, shortly after the brown rat arrived in Europe and annihilated its black, lice-infested brethren, Bentham proposed an ingenious architectural design entitled the 'Panopti-

A General Idea of a PENITENTIARY PANOPTICON in an Improved, but as yet, (Jan 1791) Unfinished State.
See Postscript References to Plans, Elevations, & Sections (being Plans referred to as N. 1. & 2.)



con' as a prison (see Figure 1), knowing well that it could easily be adapted to shape human behavior in the army, the school and a virtually infinite spread of human (did he imagine *animal?*) situations.

Bentham's *Panopticon* is the architectural figure of this composition. We know the principle upon which it is based: at the periphery, an annular building; at the center, a tower; this tower is pierced with wide windows that open onto the inner circle of the ring; the peripheral building is divided into cells, each of which extends the whole width of the building; they have two windows, one on the inside corresponding to the windows of the tower; the other, on the outside, allows the light to cross the cell from one end to the other. All that is needed, then, is to place a supervisor in the central tower and to shut in each cell a madman, a patient, a condemned man, a worker, or a schoolboy. By the effect of backlighting, one can observe from the tower, standing out precisely against the light, small captive shadows in the cells of the periphery. They are like so many cages, so many small theaters, in which each actor is alone, perfectly individualized and constantly visible . . . [making it] possible to see instantly and recognize immediately. (Foucault, 1977, p. 200)

However, since no light falls on the tower, the supervisor who sees every move of each individual cannot be seen. The celled individual is in a state of constant visibility that lacks all reciprocity and communication. Disease can be observed without spreading; convicts can be monitored without plotting insurrection; workers' productivity can be unobtrusively checked to eliminate laziness and theft; children can be evaluated with no copying, chattering or time-wasting. 'The Panopticon is a machine for dissociating the see/being seen dyad; in the peripheral ring, one is totally seen, without ever seeing; in the central tower, one sees everything without being seen' (Foucault, 1977, p. 203). The Panopticon became a generalized model of functioning in modern society. The criminal act was no longer punished (leaving the criminal free, though perhaps minus a hand or tongue); the individuality of the criminal became 'rehabilitated', the patient 'cured', the worker 'trained', the soldier 'regimented', the schoolboy 'educated' and the animal 'exhibited' in the zoo (the Jardin des Plantes opened in Paris in 1793).

The life sciences, as projects of analysis and control in all these domains, emerged in the last half of the 19th century, 100 years after the institution of the Panopticon, during a period following its proliferation that Foucault calls the *epistemological thaw*. The scientific knowledge that flourished at the end of the 19th century is founded upon and is the pinnacle of achievement of this diversified and powerful disciplinary order that entails an invisible spectator who observes, classifies, manipulates, tests, measures, records and calculates, bringing all dark corners of existence into the bright luminosity of a strictly controlled situation. In our times, there are many physical structures operating on the vastly mutable principles of the

Panopticon, for instance police interrogation under bright lights and the social scientists' one-way mirror. But the humanly engineered situation that most perfectly replicates Bentham's original design, apart from the prison itself, is the animal laboratory. Here, we find rows of cages, one on top of another, lining the walls with instruments to record each individual's movements, right down to vital functions, around the clock. It is no wonder that we find the rat there, the rat who originally provided the ecological base of the plague in the shadows of European culture. The rat can no longer remain in hiding. Indeed, in the 20th century, we *know* more about the rat than about any other species except the human (Munn, 1933).

Although bacteriology was still in its infancy in the 1890s, it was in this epistemological explosion that international teams of bacteriologists were deployed to track down the cause of the plague. The bacillus *Pasteurella pestis* was discovered independently by French and Japanese bacteriologists in Hong Kong in 1894. Before 1904, most of the details about the flea's and rodent's roles in the disease were known. As for the rat in the new situation of science, this previously fearsome and hideous creature has been shaped by humans into a purified and luminous white strain; literally engineered and turned inside out so as to be rendered an absolutely docile servant of humanity; its life, death and ultimate meaning are dictated by the human, who would now be fully sovereign.

It may appear that the rat, gnawing away in the Middle Ages at the very foundation of human existence, motivated the modern age, with its scientific *modus operandi*, as an attempt to outstrip the outer world's chaotic and irrational destruction. But if we take another step back, we realize that a crucial role was played by the Crusaders, whose ravaging of the East was not so different from hordes of wild rats. It was only when the Crusaders returned to Europe with rats that shared the spoils of their victory, that the element of destruction boomeranged on Western Europe in the form of the plague. So historically, the culprit in bringing the plague and its consequent chaos to Europe was not the rat, which was merely following in the footsteps of lethally wandering men.

No longer the Inimical Other it once was, the rat has been turned white and absorbed into humanity, becoming the emblem and means of the modern attempt to annihilate the ills of the world. Before considering whether the Rat has truly been eliminated, let us turn to psychology, for here we most clearly see the transformation of the rat's Otherness and inimicality into humane benevolence.

Psychology of the Rat

Halfway through this century, the highly esteemed Frank Beach, in his Presidential Address to Division 3 at the Annual Convention of the

American Psychological Association, admonished his colleagues for dedicating over 50 percent of their research to an animal, the albino rat, that represented only 0.001 percent of the types of living creatures that might be studied. He also expressed great dismay over the concentration, in some years over 80 percent of the psychological publications, on one subject-matter, learning. He pointed out that while Browning's Pied Piper rid Hamelin Town of a plague of rats by luring them into the river with the music of his magic flute, 'Now the tables are turned. The rats play the tune and a large group of human beings follow. . . . Unless they escape the spell that *Rattus norvegicus* is casting over them, experimentalists are in danger of extinction' (Beach, 1950, p. 117). What accounts for this strange state of affairs?

The origins of the first use of rats in the laboratory are obscure, but they go back over 100 years (Barnett, 1975, 1981). The first recorded use of rats in scientific research seems to be in 1856 by J.M. Philipeaux (Waynforth, 1980). Munn (1933) traces the history in psychology. The fever seems to have first spread to Clark University, where, in 1894 (the very year *Pasteurella pestis* was isolated), rats were installed in the biology laboratory. In 1895 Stewart used *white* rats because they were easier to *handle*. Small and Klein followed suit in the Psychology Department at Clark, with Small publishing the first paper in 1899, on the psychic development of the young white rat. The practice quickly spread to the University of Chicago, where Adolf Meyer introduced the white rat with Donaldson, who created his first colony by selecting albinos from a population of Norway rats. From Donaldson's colony came the famous Wistar, one of the most popular denizens of the psychology lab.

These animals—docile, luminous and pure—have become the premier subjects for psychological experimentation; in 1977, despite Beach's warning, over 80 percent of the animal experiments in the United Kingdom were on rats or mice and over one million rats were used (Waynforth, 1980). Why? The usual answer is that rats are bred easily, small, handleable, housable, economical, reared easily, convenient and well adapted to laboratory existence. Beach (1950) believes the use of rats and the emphasis on learning was purely a historical accident, on the part of Small, that is perpetuated by the sheer force of habit and tradition. Despite the consistency of this explanation with the theories of human behavior generated by the experiments on rats which Beach is discouraging, our previous analysis suggests that the motivation of experimental psychology also runs deeper and must be viewed in a cultural-historical context.

Let us look back to the turn-of-the-century schools of psychology. In a panoptical existence, humanity is observed, but at first only its outer behavior is easily objectifiable from the standpoint of the Observer. As human behavior in social reality necessarily became more *disciplined*, people's thoughts and fantasies, or 'covert behavior', became more and

more disembodied, discontinuous with waking life, even deranged and dissociated, perhaps in the extreme cases extinguished and altogether annihilated. Animal desire and rage came to reside in the shadowy corners of human life. This split in human existence—controlled social behavior on the one side and forbidden private intentions on the other—is reflected in the two dominant schools of psychology in the first half of the century—behaviorism and psychoanalysis. While the former attempted ever more disciplined ways to control the now white rat's behavior, psychoanalysts stalked the dark rat scurrying through the obscure shadows of the world left in the wake of panoptical civilization—dreams, 'clever mistakes', neurotic symptoms and so on, not to mention art, religion, jokes and even science itself!

The cornerstone of psychoanalysis is the observation of free associations. Freud first formally exercised the technique in 1909, in his work with Ernst Lanzer, the famed 'Rat Man'. The patient would lie on the couch and express his or her psychic activity under the gaze of the analyst, who would remain unseen by the patient. In this way Freud instituted a more perfect panoptical spread of those fugitive phantasms that Ernst could not escape. Ernst had been engaged, while attempting to work his way respectably through law school and the military, in a desperate struggle to prevent an irrational fear from coming true. Namely, Ernst feared that his father and a cherished woman in his life would be subjected to a Far Eastern torture, suggested to him by a cruel superior officer in his regiment. They would be undressed, turned over, and have pails of rats turned over on their exposed buttocks so that the rats would gnaw their way into his loved ones' anuses. This torture would be performed impersonally. Freud, with panoptical brilliance, penetrated the sewers that plagued Ernst's psyche and found with uncommon insightfulness the meaning of the rat. I will not elaborate here the analysis Freud gave except to note that he also showed an unusual sympathy for the rat and to list the eight meanings of the rat that he gleaned in his brief analysis: money, social (venereal) disease, prostitution, the penis, marriage, children, the persecuted and Ernst himself, who suffered a traumatic and almost deathly punishment at the hands of his father for biting someone as a child. It was Freud's task to educate this man, whose perfect outer manner concealed a sex-crazed, filthy, deadly and selfish little rat.

Psychoanalytic psychology is in one sense a last-ditch institution of discipline, which catches the loathsome residue of humanity never integrated by the family, school, workforce, military and so on. Freud's dauntless attack of reasonable luminosity, whose intent was to bring under control or re-educate Ernst's rat-like characteristics, was not an easy one. The patient is not inclined to submit to the panoptical gaze of this invisible seer; the patient resists.

The patient attempts to escape, by every possible means. First he says nothing comes to his head, then that so much comes that he can't grasp any of it. Then we observe that . . . he is giving in to his critical objections, first to this, then to that; he betrays it by the long pauses that occur in his talk. At last he admits that he really cannot say something, he is ashamed to. . . . Or else that he has thought of someone else and not himself. . . . So it goes on, with untold variations, to which one continually replies that telling everything really means telling everything. (Freud, 1917/1924, p. 289)

The Rat Man resisted violently, breaking the fundamental analytic rule of self-exposure, getting up off the couch and, glaring back at the supposedly invisible Freud, treating the great man and his family to the most vile and hurtful verbal abuse he could muster. Freud, who withstood this attack courageously and without retaliation, watched the Rat Man pace back and forth, striking himself in the manner of a flagellant in a plague-ridden medieval town, convinced of his sin. In the end, of course, Freud's analysis, not to mention his openness, compassion and respect, won the day, broke down the patient's awesome resistance and restored the Rat Man to the life of a normal citizen. The sad but revealing end to which the 'cure' of Ernst Lanzer led was his death in the Great War no more than a few years later. In approaching destructiveness as an individual (intrapyschic) problem, psychoanalysis had left in place sociohistorical forces which devastated individuals—ironically, 'healthy' humans even more than the 'sick'! The Rat remained.

The other major approach to the education of the rat was inaugurated by J. B. Watson, whose awareness of the Clark research at the turn of the century led him to his first encounter with rats in 1901. His doctoral dissertation was published in 1903, entitled *Animal Education: The Psychic Development of the White Rat*. Watson's 1907 monograph on maze-learning is commonly recognized as the origin of behaviorism (Boring, 1950), though his formal prolegomena emerged in the 1913 paper 'Psychology as the Behaviorist Views It'. *The American Journal of Animal Behavior* began publication in 1911. The methodological inventiveness of his school, though less subtle than Freud's, is no less panoptical in form (see Figure 2). Here, the quest to isolate, observe and control is restricted to the visible.

Beach was wrong to believe that the learning maze became the prime target for experimental psychology by accident, for learning was synonymous with environmentally controlled behavior, which was the obsession of the behaviorist school of psychology. Donaldson (1915/1924) quickly asserted that the similarity of human and rat allows work with the latter to be transferred to the former. Munn expresses the peculiar kind of resoluteness and ambition that attracts the psychologist to the rat: 'Where it is possible to control the daily economy of the animal from birth until

The Watson Circular Maze (Watson, 1914a, p. 100, 1914b) is a maze mounted on a round plate. Seven bright lamps hover evenly above the maze, illuminating every corner from the starting box, around the perimeter, to the center. If the rat looks up at the locus of observation, the lights blind it (not to mention that it will often freeze and defecate). The darkness in which the observer resides is further assured by covers over each lamp which prevent the space above the maze from being illuminated. This space contains two mirrors capturing the rat-in-maze perfectly for a *camera lucida* attachment, that allows for the automatic recording of all the animal's movements. The investigator may consequently be completely absent, available to neither hearing nor smell, and yet observe everything.

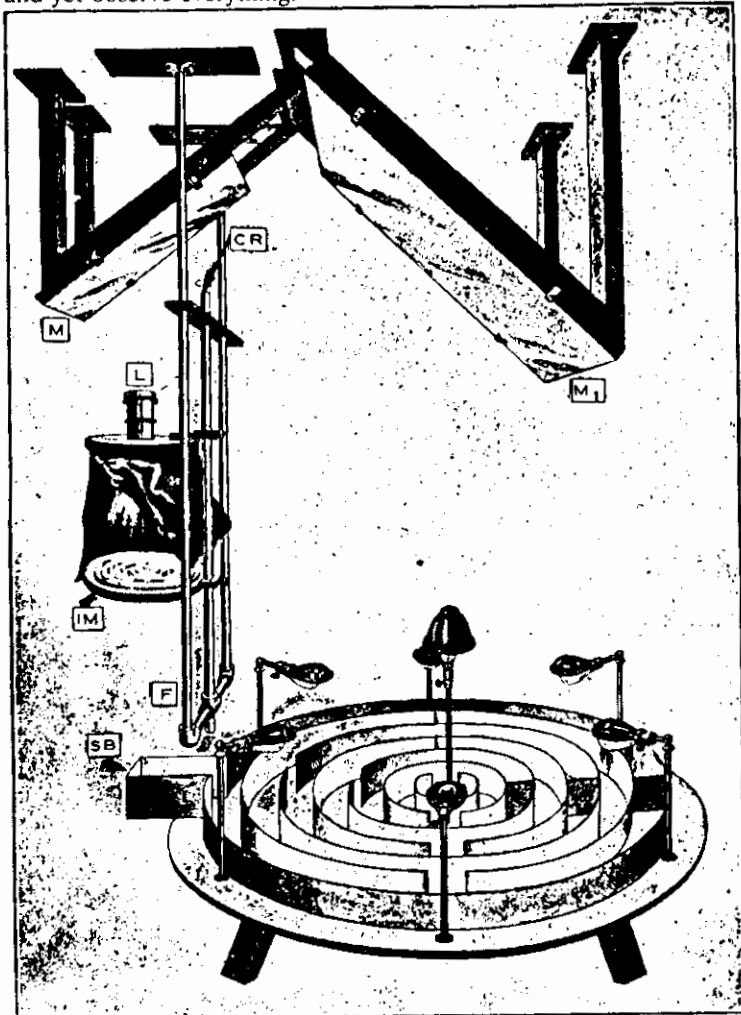


FIGURE 2. The Watson Circular Maze with the *camera lucida* attachment (Watson, 1914a, p. 100). (This figure, from *Behavior: An Introduction to Comparative Psychology* by John B. Watson, is reprinted by permission of Holt, Rinehart, & Winston, Inc.)

death . . . techniques of observation can achieve great accuracy' (1933, p. xii). But from the very beginning, this dream of control had not merely the disinterested spectator's aim of accuracy as its goal. Watson's famous proclamation makes it clear that the psychologist's foray into the lower species is not out of love for animals or even knowledge in general but rather a step along the way toward the control of humanity.

Give me a dozen healthy infants, well formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant, chief, and, yes, even beggar-man, thief. (Watson, 1925)

However, even in this controlled situation, as in psychoanalysis, the persistent resistance and unruliness of the manipulanda was a problem. Indeed, wild rats were not used in experimentation on account of their tendency to attack the investigator (Olds & Olds, 1979). The albino, with a coat to match that of the experimenter, has evolved by human selection over the last 70 years, according to the criteria of tameness, not attacking smaller animals, not fleeing humans and not struggling or biting when handled (Olds & Olds, 1979). Waynforth stresses that correctly disciplined behavior on the part of the investigator requires close monitoring (analogous to supervision in psychoanalytic training institutes), for only with proper and frequent handling will rats become docile and less likely to bite and scratch the investigator, who then has less chance of 'becoming agitated and spoiling his work. A nervous investigator often transmits his nervousness to the animal and so the animals should be approached slowly and steadily, at least with an outward show of confidence!' (1980, p. viii). Waynforth's caution is rooted in the observation that 'stress produces variability which contaminates results' (p. viii). The following quotations from his book demonstrate some of the vicissitudes in the struggle between the psychologist and the rat resisting its White Death.

The natural instinct of the rat will be to pull away from the investigator, who must therefore hold it firmly. The rat will not only pull away in one direction but will be constantly on the move. . . . With docile rats there is little trouble in executing procedure, but with agitated and vicious rats (e.g. starved and diabetic) the palm of the hand must be placed on the rat's back with reasonable force so that the rat is squashed against the surface and cannot show much movement (this must done quickly and with determination). (pp. 4-5)

Even when held firmly, the rats often put up a struggle, and in this case the investigator should momentarily apply pressure on the trachea with the ball of his thumb. This slight throttling will discourage the rat from any further struggling. (p. 5)

In the United Kingdom, the Cruelty to Animals Act of 1876 prohibits the

use of live animals for the sole purpose of attaining manual skill. It is necessary, therefore, to use dead animals, and a useful degree of dexterity will be gained by using freshly killed rats. (p. ix)

As Waynforth documents, experimentalists have devised an impressively effective arsenal of instrumentation in winning their victory over the rats' resistance, from anesthetics to clear plastic restraining tubes with spaces that allow penetration and the collection of milk, semen, urine, feces and other analyzable substances in the rat. The furthest reaches of their success can be seen in striking fashion on the pages of the Olds's *Color Atlas of the Rat* (1979), in which no corner of the rat is left in darkness.

The transposition of these procedures to human beings in the laboratory has been easier than one might expect, with human beings showing less resistance than rats and even psychoanalytic patients. In one of the first and most famous attempts, Watson and Rayner (1920) showed that the child's emotional behavior can be completely controlled in the laboratory environment. Their dramatic demonstration on the little boy Albert shows that nothing less than the human fear of rats itself can be produced and controlled ('conditioned') by the experimenter. Whereas rats themselves blindly resist, the unimpeachable knowledge and power generated in the experimental laboratory has led human beings to submit to virtually anything in the pure, white laboratory. Milgram's famous experiments on obedience appeared to show that people (over 65 percent) would go so far as to kill each other if the experimenter ordered them to keep increasing the electric shock punishments required for the experiment (Milgram, 1963).

Orne and Holland (1968) have questioned the interpretation of these results with regard to their internal authenticity (i.e. did the subjects really believe they were hurting their partner?) and their external validity (i.e. would people be so obedient outside the 'trustworthy' scientific context?). Their points are well taken, for in the laboratory even death is good and white. Yet Orne's (1962) work shows at least as dramatically that human subjects display a virtually unlimited docility under the hypnotic spell of the scientist in the laboratory. After making his subjects handle poisonous snakes, work for hours on tedious mathematical problems (ripping up each answer sheet into over 30 pieces as soon as it was completed) and pouring a beaker of supposedly burning acid on another person, he concludes that he could not find a task that human subjects would resist in the laboratory! While, on the one hand, Orne's work casts doubt on the generalizability of experimental results beyond the laboratory, on the other hand, it raises profound questions about the ways people conduct themselves in the face of science, namely an unlimited trust and submission.

Laboratory psychology has changed the face of the lifeworld already by transposing the laboratory mode of existence onto non-laboratory human life. *People* magazine featured an article on the battle between the

Behavior Research Institute and the Massachusetts Office for Children, which has claimed that the Institute's 'therapy' with autistic children is more like 'tortures of the Dark Ages . . . closer in spirit to Marquis de Sade than Mother Theresa'. When children behave appropriately, they are treated to "the Big Rewards Store", a wonderland of children's amusements filled with jukeboxes, talking cola dispensers, cotton candy machines. . . . It's when they fail to match the contract that the Fun House turns to a House of Horrors' (Plummer, 1986, p. 69). For mumbling at the wrong time a 'student' is fined or misted with water. It's for the greater infractions, presumably masturbation or self-mutilation, that 'students' are put in a small booth, shackled with cuffs, encased in a helmet, given an ammonia pellet beneath the nostrils and blasted with white noise and cold water vapor through the helmet. The *Boston Phoenix* referred to the Institute's director as 'Dr Hurt', and other professionals have likened him to the Reverend James Jones leading a flock of naïve and desperate followers to their death. Yet the Institute boasts of accepting students 'no matter how disgusting' and claims to get results. Parents are happy to keep their children out of state institutions where they would be sodomized, beaten and straitjacketed (Plummer, 1986).

For all their outspoken antipathy, behaviorism and psychoanalysis were in perfect synchronicity at the turn of the 20th century as they each perfected their roles in the modern world, attempting to 'educate the rat' under the name of psychology. Each in its own way subjected the dark region of humanity to the most indiscreet and unscrupulous panoptical gaze, producing a knowledge and power that have overcome resistance and shaped humanity.

The Future of Totalitarian Scientism

We now leave the past of psychology, or rather move outside of psychology in order to achieve a more lucid apprehension of its participation in human history, particularly the teleological structure implicit in the trajectory we have traced. The writing of George Orwell may be fiction, but its motivation is political and its vision entails a sober insight into the direction of 20th-century humanity. After recalling the surrealistic yet no less brutal experiments of Milgram and Orne, and the application of 'learning principles' at the Behavior Research Institute, we are hardly in a position to consider the imaginative extension of scientific practice irrelevant to the real.

George Orwell was no lover of rats. Rats, in fact, appear in almost all of Orwell's works, constituting a consistent metaphorical thread of the Horrible (see *Down and Out in Paris and London*, *Burmese Days*, *Keep the Aspidistra Flying*, *The Road to Wigan Pier*, *Homage to Catalonia*,

Coming up for Air and *Animal Farm*). Orwell may have borrowed the image from Swift's *Gulliver's Travels* and Camus's *The Plague*, either of two works with a similar political interest to his, the latter being an allegory of Nazi occupation in France, the central image of which is a disease caused by rats. It is Orwell's interest in human social organization that attracts our consideration. Totalitarianism is seen by Orwell in all aspects of modern culture, indeed as a tendency inextricable from modern culture (Miller, 1983). Science is a most obvious example. In Orwell's view, we have lost touch with reality and replaced it with the world view of Experts, 'theory' then getting mistaken for truth. Paradoxically, the danger of science is a function of its success. In his essay 'What is Science?', Orwell rejects the belief that the scientist's view is superior to the layman's. However, the danger of totalizing science, as Orwell sees it, is not merely intellectual but is one that implies the whole form of human life. 'When neurosis, for example, becomes thought of as no more invulnerable to the tools of science than diphtheria, it is only a matter of time before big brother seeks not only to cure but to dominate' (quoted in Slater, 1985, p. 92). Orwell has borrowed the theme of Zamyatin's work, depicting the rebellion of the human being against a rationalized, mechanized world in which people are numbers and individual freedom and responsibility is threatened (Deutscher, 1974). It is in the novel *Nineteen Eighty-Four*, published the same year that Beach predicted the extinction of experimenters unless they lay off rats, that Orwell most clearly expresses the nightfall of the evil history of the modern age through the eyes of 'the last man' as he struggles for a free and dignified humanity in a world of peculiarly modern oppression. Recent commentaries find a host of ways in which the future Orwell feared has indeed come true (Howe, 1983).

The setting of *Nineteen Eighty-Four* is significant not merely on account of the fact that a totalitarian regime is attempting to control people's actions, for instance to exclude love from marriage, to win an ongoing war over Africa and Asia, and to force people to love Big Brother. More significant is its means of achieving social order, an extensive panopticon. Every movement is scrutinized except in darkness. Metal plaques pick up human movement, sound, and so on, which is simultaneously received, transmitted and recorded by telescreens. However, there is no way of knowing when or how often the Thought Police plug into an individual's wires, which introduces an omnipresent and yet uncertain possibility of being observed. The observer is not seen; Big Brother, the ultimate observer, is never seen. In a statement reminiscent of Munn's (1933) above concerning laboratory observation of rats, Orwell says:

A party member lives from birth to death under the eye of the Thought Police. . . . Wherever he may be, asleep or awake, working or resting, in

his bath or bed, he can be inspected without warning and without knowing whether he is being inspected. (1949, p. 212)

The analogy to the observations of modern psychology becomes more evident as Orwell elaborates; small eccentricities or any nervous mannerism that could be the symptom of an inner struggle is certain to be detected—even a turned back can be revealing to the experts of inference. The protagonist, Winston, does not love Big Brother as one should, nor does he, despite his uncertain presumption of continual observation, conform to the sovereign regime's dictates.

Perhaps the Party was rotten under the surface, its cult of strenuousness and self denial simply a sham concealing iniquity. If he could have infected the whole lot of them with leprosy or syphilis, how gladly he would have done so. Anything to rot, to weaken, to undermine! (Orwell, 1949, pp. 126-127)

Since no communication is allowed, he attempts to keep a diary, which is also strictly forbidden, punishable by death or 25 years of forced labour. In this we see Winston's desire to unify within himself, where it is impossible socially, the dyad of seer/seen, which the state is attempting to dissociate and control. However, he is haunted throughout by a fearful premonition about the antagonist O'Brien, namely 'we shall meet in a place where there is no darkness'.

If hope for humanity lies anywhere, in Winston's view, it lies with 'the proles', whose actual lives remain largely an uncommunicated mystery. Interestingly from our point of view, these proles live in slums at the margins of the city, in houses with doorways 'curiously' resembling rat-holes, with filthy water and people swarming about in astonishing numbers. The women display 'a kind of wariness, a momentary stiffness, as if at the passing of some unfamiliar animal'. Winston is not able to make much out of this 'sordid swarming of life', but thinks that the proles had stayed human, had not become hardened inside, had retained primitive emotions, and were the only ones who remembered history. Of this history, Orwell says:

In the earliest twentieth century, the vision of a future society unbelievably rich, leisured, orderly, and efficient—a glittering antiseptic world of glass and steel and snow white concrete—was part of the consciousness of nearly every literate person. Science and technology were developing at a prodigious speed, and it was natural to assume that it would go on developing. . . . If the machine were used deliberately for that end, hunger, overwork, dirt, illiteracy, and disease could be eliminated within a few generations. (Orwell, 1949, pp. 189-190)

The very existence of the proles, even as seen from the outside without any communication, suggests that this aim was not yet achieved in human history.

Indeed, in Orwell's *Nineteen Eighty-Four* there remained two great societal problems: first, how to discover, against a person's will, what he or she is thinking; and second, how to kill several hundred million people in a few seconds without warning. It was to address these two problems that the human and natural scientists were respectively deployed.

The scientist of today is either a mixture of psychologist and inquisitor, studying with extraordinary minuteness the meaning of facial expressions, gestures, tones of voice, and testing the truth-producing effects of drugs, shock therapy, hypnosis, and physical torture; or he is a chemist, physicist or biologist only concerned with such branches of his specialty as are relevant to the taking of life. (Orwell, 1949, pp. 194-195)

Here, science clearly opposes humanity despite the aspirations that were originally so attractive. It has become a mere facet of totalitarianism.

The crucial development in this story occurs in the proles' sector when Winston meets Julia, who takes pleasure in criminality. The two commit an offense even more forbidden than writing a diary, namely love, communication of their own thoughts—which are not in keeping with the state's official dictates. Julia 'would not accept it as a law of nature that the individual is always defeated' despite the fact that 'in a way she realized that she herself was doomed' (Orwell, 1949, p. 137). In any case, she and Winston acted together in defiance, 'making love when they chose, talking when they chose, not feeling any compulsion to get up' (Orwell, 1949, p. 144). While lying in bed at the height of their intimacy and defiance, they are disrupted by a rat sticking its filthy nose out of a hole in the wall and *watching* them. Julia throws a shoe at this intrusive observer, but its presence is neither easily dispelled nor understood. Winston exclaims 'Of all the horrors in the world, a rat!' Julia informs Winston that there are many, that the brown ones eat children, and then she comforts him. As he snuggles into her arms he describes a recurrent nightmare he has had in which 'He was standing in front of a wall of darkness, and on the other side of the wall there was something unendurable, something too dreadful to be faced' (Orwell, 1949, p. 146). This dream was, above all, as Winston says, a self-deception, because though he knew what was behind the wall of darkness, he always woke up without discovering what it was. He could have dragged it into the open, but with a deadly effort he tore it from his brain. It related to what she had been saying but as she soothed him, the 'black instant was half forgotten'. In discussing their future, Winston and Julia know that they are certain to be 'apart, in individual interrogation' and 'without power of any kind'. Their most important aim is never to stop loving each other or to cease resisting betrayal.

... though one did not know what happened inside the Ministry of Love, but it was possible to guess: tortures, drugs, delicate instruments that registered your nervous reactions, gradual wearing down by sleeplessness,

and solitude, and persistent questioning. Facts, at any rate, could not be kept hidden. (Orwell, 1949, pp. 167-168)

But, Winston thought, the inner heart might remain impregnable.

The story's finale occurs in the Ministry of Love, where such outcasts as thieves, drug peddlers, drunks and prostitutes are treated by the state. As Winston is taken into his windowless cell with concealed floodlights, he passes a man groveling on the floor with broken teeth (no more *rodere*). 'In this place, he knew instinctively, the lights would never be turned out. It was the place with no darkness' (Orwell, 1949, p. 233). One prisoner had committed the crime of denouncing Big Brother in his sleep without even knowing it, and he was proud of his little daughter who, listening at the keyhole, heard him and squealed to the police. Her propriety was a testimony to his disciplined child-rearing. Another individual, tortured under dazzling lights by a white-coated man reading dials, leaves no doubt that here science lays bare the last detail of life. Indeed O'Brien, a veritable applied psychologist, informs Winston that he has been watched like a beetle under a magnifying glass for seven years with no action unnoticed and no thought uninferred. The monitor's conclusion is that Winston has lost 'control' and 'self-discipline'; has refused to submit. The aim of the Ministry of Love expresses perfectly the aim of Foucault's modern discipline.

Not merely to extract your confession, nor to punish you. Shall I tell you why I have brought you here? To cure you! I shall make you sane. We do not merely destroy our enemies; we change them. (Orwell, 1949, p. 256)

Winston, who still hates Big Brother, is taken to room 101 and strapped tightly to a chair, unable to move his head. Here one is subjected to what would be the worst thing in the world, which is different for each person. A guard approaches Winston with an object like a fencing mask, with two compartments, and O'Brien says, 'In your case, the worst thing in the world happens to be rats,' which are what lie on the other side of the wall of darkness, the unendurable, in his nightmares. O'Brien reminds Winston that they rip babies to the bone and attack the sick and dying with an uncanny knowledge of human helplessness. When the mask fits over the head, leaving no exit, and when the lever is pressed, 'These starving brutes will shoot out of it like bullets . . . leap onto your face and bore straight into it. Sometimes they attack the eyes first . . . and sometimes they burrow through the cheeks and devour the tongue' (Orwell, 1949, p. 288). A nauseous Winston blacks out, becomes insane, a screaming animal for an instant, and emerges from the darkness with the solution, his salvation, proclaiming frantically: 'Do it to Julia! Do it to Julia, I don't care. Tear off her face, strip her to the bones. Not me!'

Both Julia and Winston had betrayed each other. All they cared about was themselves. Winston had gone through the final, indispensable healing

change, and his soul was snow white. The war was over and India had been virtually vanquished by Big Brother. Winston had given up his stubborn, self-willed exile from the loving breast, won the victory over himself, and loved Big Brother, 'the rock against which the hordes of Asia dashed themselves in vain!' (Orwell, 1949, p. 299).

Having recognized much of the character of the scientized world in his futuristic portrait, it remains for us to consider the place of rats in Orwell's vision.

First, we should note that science in general and psychology in particular do not eliminate or eradicate the dirty, dis-eased and troubled element of human life. That aspiration is bound for disillusionment. The swarming mass of disgusting undesirability remains in the margins. While an impeccable though sterile orderliness and discipline is established in the party, the proles still live in filth and fear, like terrorized animals, like rats. Paradoxically, the only possible humanity lies outside the strictly disciplined social life. The proles seem rat-like from the point of view of the established order which they threaten. They continue to live as sovereign subjectivities for themselves rather than for the party, in whose context every Otherness means filth calling for stricter discipline. Viewed more closely and within their own frame of reference, the proles might not manifest the arrogant self-centeredness of the rat. The woman prole sings a mournful and beautiful song. Their rat-likeness is a mere 'appearance' (as Orwell calls it) in the order so opposed to them. In other words, they may be given rat-like status by the state, which systematically exiles genuine humanity and relegates compassionate expression and freedom to latent possibilities marginal to mainstream culture. In this ghetto, at the height of rebellion, Winston and Julia *find themselves*. In embracing each other as criminals, they paradoxically find love. However, there is also a real rat observing them, and this brings us to the second rat-like presence which in *Nineteen Eighty-Four* has hitherto been a mere rumbling under the floorboards.

Second, when we look within the established social order, we find a vicious inquisitor hidden behind the wall of darkness, in the normally invisible panoptical tower, presiding over this culture whose discipline has only *seemed* to purify evil. Winston rightly realizes that beneath the righteous strength of the Establishment, there resides its antithesis, an evil so terrible that he cannot bear to face it. In the place where there is no darkness, the human engineer finally shows his tools, reveals his ways, and we find a foulness more awesome than anything residing in the ghetto. The scientist deliberately uses the rat, whose ferocity has become an extension of the scientist himself—a tool, to control humanity. The proles' rat-likeness is mild and weak, a mere appearance, in comparison with that of the scientist, whose more invisible and insidious fearsomeness has driven the proles to the margins where they only faintly mirror their social order.

Unmasked, the scientist's powerful incisors show his desire to consume human infants (cf. Watson and Rayner [1920] above, whom Little Albert never recognized as the real source of his fear), and he is about to bore into the eyes and eat out the tongue of humanity so that it may never see and speak for itself again, except perhaps in the darkness of some marginal defiance. Scientism is therefore rat-like in the sense that it refuses any Other subjectivity admission to dialogue, and instead arrogantly and relentlessly reifies the totality of existence. Winston's eyes, in this place where there is no darkness, cease to be a gaze and are reduced to docile tissue. Communication, which entails the mutuality of a consciousness and an Other consciousness, is impossible in an order that splits the seer/seen dyad. The scientist presides alone as the seer and humanity becomes like a bug under a magnifying glass and an inscrutable light.

Third, and finally, we are provided with insight into the comportment of humanity in the face of psychology. In the psychologized human, we again find the rat. As Winston, the last man, stares at the psychologist—a black rat, utterly intolerant of any Other—he finally has the opportunity to see the seer, to see behind the wall of darkness. He might like to unify the split seer/seen dyad, but to open the door and face the rat would bring a kind of 'Black Death', i.e. a total loss of consciousness, which cannot be endured. Within the psychologist's light—the Ministry of Love—there is no dialogue, no contest; the resolution of the split is impossible. Winston's acceptance of the splitting of the seer/seen dyad leads to the final transformation of his mode of existence, the end of the last man, which we might call White Death, i.e. functioning purely for the state. Threatened with annihilation by the vicious one-way sovereignty of total human engineering capability that is presiding over life and death, Winston betrays Julia. He becomes a white rat, an instrument of the established order, where love of the Other is forsaken. He will keep his eyes for surveillance and his tongue for squealing like any other docile, disciplined informant of the party. Thus he survives as a conscious being but only under the condition that his is a false consciousness, operating not for himself nor for any agency other than that of the party. Part and parcel of this loss of agency is the abolition of all dialogue with any Other subjectivity that has now been accepted as a law of existence. A selfish fear for his own survival, an unwillingness to accept his own death, eclipses his capability for loving the Other. Perhaps with his newly disciplined individuality, Winston will even be trusted so much by the party as to become the manager of a drug rehabilitation half-way house for proles (cf. Nurse Ratched in Kesey's *One Flew Over the Cuckoo's Nest* [1962]). Far from being eliminated in the state of totalistic scientism, the rat has simply been whitened, multiplied and redeployed. However, essentially unapproachable and unendurable, the dark, hidden Rat (the scientist) rests at the heart of the established order. The conclusion: the rat which kills humanity remains at the center of scientism.

The Possibilities of Humanity and Human Science

Perhaps psychology has approached the rat the wrong way. Perhaps the prole need not be viewed as scum. Will the rat gouge out our eyes and tongue—even if it is not starved or made diabetic?

In order to answer this question, we look beyond the horizon of modern Western European culture. Let us go back to the 15th century, when the plague was ravaging Europe and before disciplinary structures were deployed. Let us look to the origin of the plague, to India, to the Rajasthan region, following Crease (1985). Karni Mata, a holy woman, had four sons when one of them, Jakhan, died. Karni Mata appealed to Yama, the God of Death, but to no avail. So she said to him, 'From now on, you will never have any of my children again. Instead, when they die they will take the form of rats, and will be called "Kabas".' Karni Mata then decreed that when a Kaba died, a new child of her Charan caste would be born. The Charans still believe that human existence is an endless recycling of rats and human beings. To care for their ancestors and future offspring, they built a temple housing thousands of rats in the very center of the town of Deshnoke. Carved rats cover the marble mantle over the sanctum, above a tray of grain. The Charans worship there barefoot, letting the rats crawl over them, and the children play with them, picking them up by their tails. The caretaker of the temple, Vijay Dan, says: 'Nobody ever got plague or disease in this temple. In Bombay, in New York, you have rats, and they are dangerous. But there are no rats in this temple—there are only Kabas, holy men, and they feed on milk and sweets' (Crease, 1985, p. 129).

It is difficult, as a westerner, to understand the meaning or rationality of this spiritual practice. However, that the plague spreads to humans when the rat dies leads us to wonder if Karni Mata had insight into the unity of death and birth in her vision of the inimical Otherness of the world being inextricable from the human life cycle itself. Rather than banishment or discipline, she engaged in welcoming embrace, hospitality and celebration. It seems a paradox to us that life would thereby be enhanced (as paradoxical as the idea that the kernel of possible humanity resides in the ghettos). How different, in this context, is the meaning of the rat. Yet, to a westerner, the Kabas in the Temple of Karni Mata have by no means lost their loathsomeness. There is no clean white world achieved this way. Many rats have unnaturally short, bitten-off tails; others have bitten-off ears, missing skin and large open sores. They squirm and fight amongst each other and eat their own dead. They create a soft, eerie clicking sound with the gnashing of their teeth, appear in holes of partitions everywhere, and scurry out of the tea cups before afternoon tea; the soles of visitors' feet remain blackened with rat excrement for days after they leave the temple. And yet a Charan believes it is good luck to be bitten by a Kaba.

Needless to say, it would be absurd for us to attempt the life of a Charan,

but perhaps it is not too late for us to rethink our relationship with death, with the dark side of life. Van den Berg (1961) has pointed out that while death was accessible and communicable in the Middle Ages, we moderns have made it incommunicable. Then death was there; the sick sat on the roadsides with a loud presence that confronted every passerby as epidemics raged. Diseased people died in their homes and were taken care of and loved through the end. The children saw death and the graveyard was in the center of town. Now we send the dying away to hospitals, give them morphine so that even they will not be present at their own death, restore the faces of the dead with cosmetics, cover the coffin with living flowers, place them in a graveyard far away, and make sure that death does not show itself enough to disturb life. Van den Berg tells the story of Antoine Arnaud, born in 1560, who by 1603 had borne 14 children in the last 15 years. In 24 years, of her 19 children, 10 had died, the last one bringing her own death. 'The doorway of death was kept open for every child by its brothers and sisters—and by its mother. . . . Death was everywhere, visible' (van den Berg, 1961, p. 91). Van den Berg's questions hurt: 'Who would want plague and cholera to come out of their hiding places and resume their travels? Who would like to recover the child's affinity for death?' (p. 91). Of course no one does—we all want insecurity and death removed as far as possible. Yet, thinks van den Berg, no one knows why. He suggests that it may be better to look back on a single moment of happiness, a moment of extreme meaning, than upon a long and healthy life. He goes so far as to say that a long life and a life rich in happiness may not be so compatible. Happiness is inextricably intertwined with loss, perishing and unhappiness.

Happiness is an odd thing. The person who is seeking it does not find it; but he who is not might have it. He who is close to it gets no permission to enter; but he who roams aimlessly walks in freely. He who settles down to enjoy happiness once found will discover an emptiness; but he who does not expect anything will keep it. . . . If we try to make happiness stronger, it crumbles in our hands; but these same hands are too small to enfold it if we only want to hold it. He who wants to purify it, who wants to remove everything from it that is not purely happiness, will not be able to hold onto it; before the first stain is removed, happiness will have gone. . . . Happiness exists by the grace of a certain amount of unhappiness. . . . The souvenir which embodies our dearest memory is so precious to us because it contains the negation of that moment, its perishing, its end. Things are dear to us because they perish. The slightest breeze could blow away the lock of hair the mother has saved as a remembrance of her child—it is very dear to her. . . . The honeymoon is caught in the raindrops sliding down the window of the train compartment. . . . And the people we love, those few who are with us for a while, how could we love them if they did not grow old and die? It is the light of death that makes them near to us. (van den Berg, 1961, pp. 93–94)

In van den Berg's view, we have ceased to understand these things in our singular desire to annihilate our troubles, and hence we have ceased to understand each other and ourselves. Psychology is a result of this state of emergency, and its foremost task is to recollect and embrace the whole of life. However important, though, this can be but a small compensation for a modern humanity whose great inventions have all but replaced its authentic presence in the world.

Perhaps the human scientist would do well to take Winston's hope to heart, that is, that the future of a genuine humanity lies with the proles, in the ghettos, at the margins who might show us a new way. The faceless and, in fact, defaced collective residing outside the clean white social order, residing in its cracks even, does not need to be cured. Psychology's subjects call for unconditional recognition of their autonomous subjectivity, to be understood, to be empowered. In psychoanalysis and experimental psychology, there is not only an oppressive violation of humanity, but an implicitly emancipatory and self-critical intention. In this resides the fundamentally contradictory teleologies of the 20th century. As psychologists are quick to point out when ethical debate becomes heated or reaches a deadlock, they have displayed a most vigilant ethical conscience and are themselves their own harshest critics. Within psychology there is a deep concern about the pain and suffering of humanity, deception, invasion of privacy, inflicting unasked for self-knowledge and so on, as well as serious thought as to how psychology might best serve humankind. Yet, with a utilitarian ethic, psychologists remain in the driver's seat, and humanity, perhaps more than ever before, is vandalizing the psychologists' laboratories, destroying instrumentation (the means of control) and records (the means of surveillance), and taking the psychologist to court for malpractice. Along with whatever admiration or even respect laypeople show for psychologists, much of the perhaps not-so-naïve public looks at the psychologist with the wary eyes of a frightened rat, expects to be invaded by this greater rat's analysis, tricked, manipulated and otherwise misreated. Despite psychologists' genuine care and 'good intentions', there has evidently been a serious betrayal of humanity. Psychology has all too readily become an extension of the modern panoptical machinery, uncritical of the origins, affiliations and meanings rather than siding with humanity against its mass oppression.

Yet any prescription risks absurd facileness. I am tempted to extend Merleau-Ponty's insight that 'every idea secretes an ontology' to the notions that every evaluation secretes an axiology and every action secretes a politics. We need a psychology of affirmation, not control; a psychology of witness and recognition, not test and measurement; a psychology of deep commemoration, not superficial prediction; human presence, not a proliferation of instrumentation; privacy, not intrusion; a psychology of embrace, not engulfment. There must be a way of fostering the Other's

power instead of docility, a tolerance for ambiguity and compassion in the face of difference rather than merciless monologue, fearful sterilization and normalization. We need a kind of deprofessionalization that achieves a reunification and interchange of the seer and the seen. The psychologist, rather than imposing a world-view that essentially invalidates that of those he/she supposedly serves, must instead see, hear and feel the point of view of the others, understand him/herself in the Other's world.

As we approach the turn into the 21st century, it is difficult to recognize what changes are imminent. In psychology, it may be that rats are already out and computers are in. Some think computers are more like humans than rats are. Computers are certainly cleaner than rats—they are more efficient and productive, and they don't bite. Perhaps the cover of the 1986 *Monitor* will someday be viewed as a farewell party or a last, sentimental glance back at the days when this 'young science' was so foolishly concerned with primitive models. One might try to imagine what sort of computer could be donned in party gear on the cover of the 2021 *APA Monitor* for its 50th anniversary. It would surely be possible to program it to spill a little champagne, so that the 'human element' is still wittily retained. Would anyone lament the loss of the days when there were, at least, real-life rats and humans in psychology?

Husserl's question of half a century ago seems even more relevant than before: 'Can we live in this world, where historical occurrence is nothing but an unending concatenation of illusory progress and bitter disappointment?' (1954, p. 7). Genuine progress and happiness only follow from the recognition and encouragement of human beings themselves. Can we, as scientists, give up our long quest for control and face the complexities of the human and surrounding world with its many concrete subjectivities and full dramatic meaning? No theory, regardless of its elegance or sophistication, and no efficacious strategy for intervention will suffice when what is necessary is an encounter with the real.

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References

- Barnett, S.A. (1975). *The rat: A study of behavior*. Chicago, IL: University of Chicago Press.

- Barnett, S.A. (1981). *Modern ethology*. New York: Oxford University Press.
- Barrett-Hamilton, A.H., & Hinton, M.A.C. (1912). *History of British mammals*. London: Gurney & Jackson.
- Beach, F.A. (1950). The Snark was a Boojum. *American Psychologist*, 5, 115-124.
- Bentham, J. (1843). *The works of Jeremy Bentham* (J. Bowring, Ed.; Vol. IV). London: Russell & Russell.
- Berger, J. (1980). *About looking*. New York: Pantheon.
- Boring, E.G. (1950). *A history of experimental psychology*. New York: Appleton-Century-Crofts.
- Burton, M. (1957). *Animal legends*. New York: Coward-McCann.
- Crease, R. (1985, November). The rat temple of India. *New Look*, pp. 125-130.
- Deutscher, I. (1974). 1984: Mysticism of cruelty. In R. Williams (Ed.), *George Orwell*. Englewood Cliffs, NJ: Prentice Hall.
- Donaldson, H.H. (1924). *The rat: Data and reference tables*. Philadelphia, PA: Wistar Institute of Anatomy. (Original work published 1915.)
- Fisher, K. (1986). Scrutiny attends more public role. *APA Monitor*, 17(1), 20-21.
- Foucault, M. (1977). *Discipline and punish: The birth of the prison*. New York: Pantheon.
- Freud, S. (1909). *Three case histories*. New York: Collier.
- Freud, S. (1924). *A general introduction to psychoanalysis*. New York: Washington Square. (Original work published 1917.)
- Howe, I. (Ed.). (1983). *Nineteen-eighty-four revisited*. New York: Harper & Row.
- Husserl, E. (1939). The origin of geometry. In *Transcendental phenomenology and the crisis of European sciences*. Evanston, IL: Northwestern University Press, 1954.
- Husserl, E. (1954). *Transcendental phenomenology and the crisis of European sciences*. Evanston, IL: Northwestern University Press.
- Kescy, K. (1962). *One flew over the cuckoo's nest*. New York: Viking.
- McNeill, W.H. (1976). *Plagues and peoples*. Garden City, NY: Anchor Press.
- Milgram, S. (1963). Behavioral study of obedience. *Journal of Abnormal and Social Psychology*, 67, 371-378.
- Miller, M.C. (1983). The fate of 1984. In I. Howe (Ed.), *Nineteen-eighty-four revisited*. New York: Harper & Row.
- Munn, N.C. (1933). *An introduction to animal psychology: The behavior of the rat*. Boston, MA: Houghton Mifflin.
- Olds, R.J., & Milner, P. (1954). Positive reinforcement produced by electrical stimulation of the septal region of the rat brain. *Journal of Comparative and Physiological Psychology*, 47, 419-427.
- Olds, R.J., & Olds, J.R. (1979). *The color atlas of the rat—dissection guide*. New York: Wiley.
- Orne, M.T. (1962). On the social psychology of the psychological experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 411-427.
- Orne, M.T., & Holland, C.H. (1968). On the ecological validity of laboratory deceptions. *International Journal of Psychiatry*, 6, 282-293.
- Orwell, G. (1949). *Nineteen eighty-four*. New York: Harcourt, Brace & World.
- Plummer, W. (1986). Some call it torture but a New England school says its therapy is taming autistic students. *People*, 25(5), 63-69.

- Ricard, M. (1969). *The mystery of animal migration*. New York: Hill & Wang.
- Roediger, H.L., & Blaxton, T.A. (1985). Testing psychological trivia. *Bulletin of the Psychonomic Society*, 23(4), 433-436.
- Sartre, J.-P. (1952). *Saint Genet: Actor and martyr*. New York: Pantheon.
- Schachter, S. (1971). Some extraordinary facts about obese humans and rats. *American Psychologist*, 26, 129-144.
- Skinner, B.F. (1938). *The behavior of organisms*. New York: Appleton-Century-Crofts.
- Slater, I. (1985). *Orwell*. New York: W.W. Norton.
- Small, W.S. (1899). Notes on the psychic development of the young white rat. *American Journal of Psychology*, 11, 80-100.
- van den Berg, J.H. (1961). *The changing nature of man*. New York: W.W. Norton.
- Watson, J.B. (1903). *Animal education: The psychic development of the white rat*. Chicago, IL: University of Chicago Psychological Library.
- Watson, J.B. (1907). Kinaesthetic and organic sensations: Their role in the reactions of the white rat. *Psychological Review Monographs*, 8, 2.
- Watson, J.B. (1913). Psychology as the behaviorist views it. *Psychological Review*, 20, 158-177.
- Watson, J.B. (1914a). *Behavior: An introduction to comparative psychology*. New York: Holt, Rinehart, & Winston.
- Watson, J.B. (1914b). A circular maze with camera lucida attachment. *Journal of Animal Behavior*, 4, 656-659.
- Watson, J.B. (1924). *Behaviorism*. New York: W.W. Norton.
- Watson, J.B., & Rayner, R. (1920). Conditional emotional reactions. *Journal of Experimental Psychology*, 3, 1-14.
- Waynforth, H.B. (1980). *Experimental and surgical technique on the rat*. New York: Academic Press.
- Ziegler, P. (1969). *The Black Death*. New York: John Day.
- Zinsser, H. (1935). *Rats, lice, and history*. Boston, MA: Little, Brown.

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