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The Mechanists

IT IS ODD, after seventy centuries of city life, that we continue to be uneasy about it and uncertain as to what is wrong. The situation is like those psychological illnesses in which the patient shows a devilish capacity to obscure the real problem from himself. A demon seems to make false leads, so that deliverance requires more of the same, confusing problem and symptom. It is as though traffic, smog, disease, violence, crime, uncaring strangers, dirt, drug addiction, and unemployment collectively provide distraction from something that perhaps cannot be dealt with.

The city's central role in harm to world biomes, especially when dressed as success rather than failure, surely has more subtle roots than bad strategy or inept philosophy. Can we make a radical leap beyond explanations citing unjust laws, torpid administration, miseducation or graft?

Let us suppose, with some evidence, that the city is typically a sink of psychological problems. In the individual these are partly caused by city life, but in the longer view they cause the city. Where can the cycle be broken, and what are its processes? To gain a start, the psychological dimension may be characterized as a disease of attention—that is, the focused operations of human consciousness between directed sensory experience and memory, between the perception of

men. Within it, the earlier a defect occurs, the more general and irreparable its effect. Damage to a single cell may do little harm to a four-month-old embryo, whereas in the one-month-old embryo it could lead to severe anomaly by affecting all the thousands of cells descending from the one damaged. A good pathologist can tell the age within days at which a fetus was injured by looking at the adult many years later.

This principle also extends to the brain and therefore the fine-tuning of the mind. The psyche has its own phases and is more vulnerable in the early months of life. Like the muscles of an arm, which require use to begin on schedule and continue or they wither, perceptual and sensory needs are locked into a calendar in which distortions and the want of use can have lasting effects.[10]

Many psychologists do not concur in the picture of irreversibility suggested above. The field of developmental psychology is a widely recognized and active discipline. Large amounts of data exist, and yet the results generally seem abysmally lacking in wisdom for living on a planet, in a natural world, and in guidance for being an intelligent land animal—primate or mammal—or for nurturing the developing mind as one species among many. My impression is that, as in other social sciences, there is a majority denial of norms for the human environment. A typical textbook does not deal with the nonhuman living world at all, yet G. Stanley Hall, of an earlier (and perhaps wiser) generation, wrote:

> City life favors knowledge of mankind, physics, and perhaps chemistry, but so removes the child from the heavens and animate nature that it is pathetic to see how unknown and merely bookish knowledge of them becomes to the town-bred child. Biology, that has given us evolution, is perhaps farthest from recognizing the necessity of developing a genetic pedagogy that shall very slowly pass over to the adult logical stage which cross-sections it only when it has completed its own. How undeveloped the development theory still is is here seen in the fact that it has not yet drawn its own

> obvious but momentous lesson for education where it has its most fruitful field of application. When this science knows life histories as well as it does morphology it will have the material with which to begin aright. We no longer deform the child's body, and have in more and more ways recognized its rights, but we still arrest and even mutilate the soul of adolescence by prematurely forcing it into the mental mold of grown-ups. Instead of the ideal of knowing or doing one thing minutely well, like the ant, bee, or wasp, we should construct, even if at certain points it be done tentatively and out of glimpses, *aperçus,* hints, a true universe, and pass from the whole to parts and not *vice versa.* Love of nature always burgeons in the soul of youth, but its half-grown buds are picked open or stunted, and disenchantment too often leaves the soul only a few mouthfuls of wretched desiccated phrases, as meager and inadequate as those of poetry in a conventional age that has drifted far from her. . . .
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> The sentiments on which the highest religion rests are best trained in children on the noblest objects of nature. Natural theology once had, and is destined in new forms to have again, a great role in the intellectual side of religious training. So, too, in many summer meetings, twilight services on hills or exposed to vesper influences, perhaps out-of-doors, are found to have wondrous reenforcements. Worship on a hill or mountain, at the shore, out at sea, under towering trees, or in solemn forests or flowery gardens, amidst harvest scenes, in moonlight, at midnight, at dawn, in view of the full moon, with the noises of the wind or streams, the hum of insects, the songs of birds, or in pastoral scenes, is purer and more exalting for these pagan influences set to the music of nature from which they all took their origin, than it can ever be in stuffy churches on noisy city streets upon the dull or familiar words of litany, sermon, or Scripture. Here, again, so-called "progress" has broken too completely with the past and forgotten the psychogenesis of religion, which has thus grown anemic, superficial, and formal. It is the old error of amputating the tadpole's tail rather than letting it be absorbed to develop the legs that make a higher life on land possible.[11]

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In the crisis of urban/industrial life, the issue of genetically programmed development and the inherent needs of the infant for certain aspects of the external, nonhuman world is

most acute. In this framework we can be more precise about what the growing mind misses and what connection there might be between the absence of natural things and the distortions of human behavior that engulf the modern city like an epidemic.

An outer and an inner natural history are intertwined. Stanley Milgram, writing of the tuning down of the psyche as an act of self-protection—and therefore noninvolvement—explains it as a "natural" means of coping with a heavy human-contact burden. Human nature is limited in its capacity to respond hospitably to strangers and has an inbuilt, predictable shutting-down response to high human density.[12]

But Milgram's argument does not go far enough. It does not cover an outer domain of impoverishment in the city that has helped create the predisposition to perceive people as alien. All children experience the world as a training ground for the encounter with otherness. That ground is not the arena of human faces but whole animals. Nonhuman life is the real system that the child spontaneously seeks and internalizes, matching its salient features with his own inner diversity. He seeks these correspondences, implicit in language, games, and the tales told by his caretakers. A metaphor is to be invoked later in his life, when he awakens to the richness of the Other in himself. After his twelveth year, he begins to evoke, as though caricaturing, one or another of these elements of himself. His shared humanity is a shared foxiness, frogness, or owlness.

The city contains a minimal nonhuman fauna. Adequate otherness is seldom encountered. A self does not come together that can deal with its own strangeness, much less the aberrant fauna and its stone habitat. City-bred mothers are incompetent models of the metaphor, and fathers are travesties of its administration. The world to the child—and adult—is grotesquely, not familiarly, Other.

In this scenario, childrearing is not simply the victim of the urban debacle, but the causal root of the adult's inability to make the city any different. Charity and kindness in such a place become the province of impersonal agencies.

The following observations are elements of the malaise of modern loneliness and alienation as an urban affliction:

Helplessness. Human anxiety begins here, said Sigmund Freud. Infantile fantasies of power are, he said, compensations for the baby's physical incapacity to do anything for itself and for the stress of occasional loneliness, hunger, and inner and outer discomfort. To be helpless is, to the modern mind, the worst of all fates. Savages, says Eric Hoffer, are subject to the whims of nature. The ideology of progress is mainly one of increasing our domination over nature.[13] The culture is saturated with the necessity of increasing, and the fear of losing, control. The quest for power, says Karen Horney, is the trait of our time.[14] The idea is desperately in the air—control of weight, smoking, drinking, violence, inflation, the economy, communism, imperialism, world markets. . . . But the idea of control is merely the last act, the rationalized and articulated expression of a widely shared, frighteningly acute sense of need. The dream of omnipotence is an infantile dream that should diminish, rather than grow, with personal maturity. Unchecked, says Anthony Storr, it becomes an obsession, leading on to an overpolarized world view in which everything is either good or bad.[15] According to Louis J. Halle, such a view is the womb of all ideology of "us against them."[16]

Among plants and animals, as seen by the child and perceived through tales told and mimicked in game and play, there are thousands of metaphors of parts of himself. In each episode the rest are the Other. In the drama of nonhuman life, helplessness is never total, for the eaten is also the eater. How can this be, you might ask—how can he who is destroyed

then become the destroyer? The answer is that perceptually a species can seem to be an individual. The blue jay may be eaten today by a hawk, but tomorrow he is seen again, eating a beetle. It is not a matter of compromise, nor of wins weighed against losses, but a different kind of structure from the either/or form of ideology. To internalize the blue jay is to grow out of the fantasy of omnipotence as the cure for helplessness.

To an infant girl, the world is both marvelous and terrible. But as mother she will shed this ambiguity if she herself learned the lesson of the blue jay as a child. If not, and she is split between being guiltily evil and arrogantly divine, how can her child learn otherwise? How can she know where and how the child is to learn the totemic secret of animal purpose? Her intuition that the natural world is a treasury of avatars invites all sorts of frauds and distortions, and her own aching sense of helplessness in mass society is accompanied by her grieving for something lost.

Helplessness is the disease of powerlessness in a frightening world of vague and contending forces. It is a world where one's own security is perceived as a lifelong struggle against others for status and domination. Nature, in this thwarted and anguished image, has lost its magical capacity to reveal that an ultimate symbiosis holds the universe together. Failing to serve one purpose, nature can serve another. It becomes the enemy for those who cannot face their own unconscious assumption that all other people are hostile.

Artifactual reality. Does the world grow or is it made? Philosophically it is not difficult to show that the question is somewhat trivial because beneath the surface of things the distinction fades. But there is a time in the life of each individual when the separation and grouping of things is the paramount intellectual activity. This name-tagging, category making is a species trait, but the categories themselves tend to be some-

what arbitrary. For example, a basic scheme may place all things as either "of the earth" or "of the water," or it may separate them as "spiritual" and "natural." Claude Levi-Strauss believes the separation of things into "cultural" and "natural" to be a fundamental and universal human activity. Perhaps a cultural form of this is the classification of "living" versus "nonliving," but not all peoples believe the nonliving to be without some inner life or spiritual autonomy. It is the distinction of the desert civilizations and especially of the scientific West to make the absolute division between what is made and what grows, though the niggling truce between science and Christianity allows for God to have made the first generation of living things.

The truism that man has created God in his own image can take evidence from the increasing importance of the creator-as-maker as historical man surrounded himself with a world he made. We may ask, going back beyond history, what the effects are, on a thinking being who evolved in a world where almost everything glimmered with life, of being thrust abruptly (in an evolutional or geological sense) into a man-made world where things are presumed to be dead clay, without inner fire. The question has been asked before, but mistakenly addressed to adult reality, as though, for the individual, philosophy came before perception.

The made world of modern man is related to the child in somewhat the same way that the hospital is to the infant. Infants in understaffed orphanages suffer profound psychological deformity for lack of the touch of living flesh: the nonmothering results in retarded development or even death. Normal mothering does not simply produce survival or an enlargement of the infant's strength and powers; it moves the infant to a new plateau. The satisfactory culmination in the first three years of a good symbiosis with the mother endows the child with the emotional and intellectual potential

for entering into a new set of relationships with a wider structure, social and ecological. At about age three the child goes out into the world. His nine-year mission is to build confidently from his good-mother symbiosis a lively relationship with a new and even more complex earth player, to slowly master new patterns of nonhuman life that will, in time, serve his identity shaping when he enters the adult social world as an adolescent.[17]

And what difference can it make if those nine years are played out in a fabricated environment? The absence of numerous nonhuman lives, a variegated plant-studded soil, the nearness of storms, wind, the odors of plants, the fantastic variety of insect forms, the surprise of springs, the mystery of life hidden in water, and the round of seasons and migrations —how does the lack of these really hurt the child?

First, life in a made world slowly builds in the child the feeling that nonlivingness is the normal state of things. Existence is shaped from the outside or put together. Eventually he will conclude that there is no intrinsic unfolding, no unique, inner life at all, only substance that, being manipulated, gives the illusion of spontaneity.[18]

Second, when he goes back into society after adolescence, having missed the initiation into the world of final mysteries and its poetry, he will believe either that (a) all life, including people, is, in fact, machines (I suspect this idea will prevail if his original mother has been inadequate) or (b) the only truly living things are people; this opens the door for all the dichotomies that separate the human from the nonhuman on the basis of soul, spirit, mind, history, culture, speech, rights, right to existence, and so on.

Third, he becomes either a spectator or an exploiter. The world may be interesting and useful or dull and useless, but it is not one that feels or thinks or communicates, that has special messages for him, or that has independent purposes

of its own. The world's inability to feel is his own mechanical response projected upon it. He is like the infant whose emotions are crippled because he was suspended too long in an inert world.

The philosophical consequences of this artifactual perspective dominate the history of Western mind: God the *maker* who works from the outside rather than as an indwelling spirit; the Greek atomists and their intellectual reductionist descendents; the machine paradigm of the universe, from Galileo to Buckminster Fuller, including the model of the human body as machine from Vesalius to the men in space; and, finally, relativistic thought from self-help psychology to the existentialism of absurdity, which concludes that the only reality is whatever you make of it, including the self.[19]

But it is not the philosophy as such that counts. It is how our daily lives are lived. We continually take the world into ourselves as the means of self-understanding. If we treat our food as chemicals, it ceases to nourish and begins to poison us. If we treat living things as chemical-physical compounds, the message nutrient that they furnish to the mind is "You are only an accumulation of compounds—behave accordingly." If we replace the soft earth with pavement, we will learn in our child's heart that the planet is a desert and a dead rock.[20]

Chaos. One of the threads that connects otherwise diverse theories and studies of child development is the common observation that the task of youth is to discover structure in the world: meaningful constancy, predictable patterns, regularity, rhythm, familiar systems, stable relations. The child wants to find a coherent world that remains true during his own changes.[21] Progress and civilization seem to bring "order" out of the wilderness. We have all seen the geometry of the humanized world from the air, a striking contrast to the raw tumult of the mountain wilderness. The city seems to epitomize this symmetry-making of the human will.

And yet it is not so—and it is on this point more than any other that ecological insight conflicts with modern thought. Urban civilization delivers a topographical simulacrum of order to the perceiving child as a substitute for a middle ground of tangible, durable patterns that are truly complex and, in a special way, nonhuman. The streets of the medieval city retained much that fit the child's needs: animals on foot; place defined by uniqueness; the visible flow of water, food, and waste; human activity in religious and craft neighborhoods. The regular patterns of the modern geometrical or "cartographic" city do not create order, but repetition. Their inhuman scale is still not nonhuman. The child is not ready for the order implicit in the centralization of power and the mechanization of life that are indicated by that scale.

The adult can get along well enough, for much of the structure in his life can be abstract. Yet his earlier yearning for good spatial orientation, for neighborhood and creaturely mystery he remembers. He wants them for his own children. His exploration of those feelings, if undertaken by reading, is perverted by the nature of literature itself—we are back to kerygma, the preaching, proclaiming, prophesying mode in which the Hebrew inventors of literature denounced the myth-oriented cities of their time. Literature tells us that this yearning is only fantasy and nostalgia for something that "never" existed. It tells us to put no trust in our grieving for place, nature, continuity with the earth, or the significance of the seasons. Only the illiterate go on dumbly loyal to a lost reality, for the educated know that it is merely an infantile dream and that the true function of art is to create a luscious disorder.

The city child is asked, in effect, to proceed directly from his symbiosis with his mother to a mastery of social relations. He is to skip the genetic interlude in this task, in which he indulges for eight or ten years in nature, and go

directly to the real job of life. During this time his frustration and inarticulate desire will be anesthetized by portrayals of the nonhuman as entertainment, not in the oral traditions of poetry, for that is a complement rather than a substitute for his submersion in otherness, but in an array of images—toys, pictures, zoos and gardens, decorations, Disney films, motifs and designs—a stew of nature so arbitrarily presented that the results of his years of trying to fix it in his heart will only lead to despair.[22] No wonder the child of thirteen years turns with such keen interest to machines. Man-portrayed nature has proved incoherent.

By my concentration on the child's need for nonhuman nature I do not mean to imply that the child from three to twelve is not also busy becoming a social being. His growth in relation to siblings, peers, parents, and others is widely studied and well known. What is less clear is the way in which this socialization is related to his experience with the nonhuman, the otherness that catalyzes his social relationships and prepares him for adolescent fixation on communal and religious ideals. I suspect, for example, that the substitution of animal toys and pictures as a kind of appeasement damages the individual's *social* relations, that it convinces him at some deep level that the given state of man is without pattern or purpose, that men have unlimited capacity to fabricate things, or that social organization is not a realization of human potential, but the outfall from belief, that is, the by-product of ideology.

For such an individual, the nonhuman elements of the self must be regarded with suspicion. One's bowels, like snakes or grasshoppers, must be regulated. One must take charge of the inner and outer world, either as a tyrant and spoiler or as God's steward. The symbolic use of nature for conceptualizing human affairs vanishes, except in trite parables. Arbitrary meaning, after all, is no meaning at all.

For such individuals, chaos becomes essential to the rage for order. Making a new order destroys a previous one, however provisional. George Steiner speaks of modern society's "nostalgia for disaster," "the perpetuity of crisis," "burning of the garden," "the dreams of ruins," our combining the "Judaic summons to perfection" with our "loathing of an impossible goal."[23] I take Steiner's meaning in ways that he may not have intended, for he describes with terrifying lucidity that will to devastation by those who are vexed over the imperfections of society, but whose real anger is resentment of being crippled—or, more accurately, a wrath evoked by the socially crippling deprivation of an orderly universe during the only years when that order can be internalized.

No wonder that, for us, the civilized landscape as seen from an aircraft looks more organized than the wilderness. Its blocks and circles and bold outlines are like child's blocks. The sense of oneself in space is a mature right-brain phenomenon. This ranges from the movements of the body in dance to geographic consciousness. The schizoid's confusion about where he is at any moment finds its analogy (or an expression?) in the urban loss of orientation by sun, stars, wind, terrain, or vegetational clues. Location given only by grid coordinates, as in the names of the nearest street junctions, would be intolerable to hunter-foragers. The antecedent of this spatial confusion is the desert, where the land all looked alike and one's place became a matter of tribal affiliation and ideology. Indeed, each of the great episodes with which this book deals has made its contribution to this disease of dislocation.[24]

What is said above may appear inconsistent with the psychological concept of environmental independence as a measure of maturity in the child. One psychological test measures the subject's ability to maintain verticality despite visual clues. The child dependent on such clues is said to perceive globally

and to be more infantile than one who knows up from down regardless of sensory tricks. But the contradiction is only superficial. A mature sense of identity does not rely on such orientation at any given moment, but is the outcome of developmental processes making constructive use of space, not being stuck in it. Hence the mental quirks of displaced peoples, prisoners, or travelers are in part the result of a strong self built up by assimilated diverse relationships, so that the individual has a continuing sense of location, not a dependent need of reinforcement. The city geometry delights only the untrained eye, to which the subtle patterns of the vast biome are simply invisible, the wilderness in disarray, a kind of pandemonium.[25]

Facing the decay of religious belief, says Steiner, we today tend to recreate it as best we can, including heaven and hell. But if we lack that training in looking at nature which enables us later to perceive in it the metaphors of our social concerns, and thus to value it for its poetic significance, we are left only with its literalness and with oppositions, for the final work of metaphor is to interrelate the unlike. This confusion in which the value of the nonhuman world is seen in terms of representation instead of metaphor allows us to carve our ideas into it. Instead of a guide to thought, it serves as a medium for the expression of will.

Our fear of helplessness, the perception of the cosmos and even ourselves as nonliving, and the threat of a meaningless and disordered world are all familiar complaints of the alienated modern man and, as I have suggested, are all associated with characteristic phases of psychological development. Insofar as they comprise or express our sense of a menacing disintegration, they serve a neurotic quest for control. From the self-abnegation and bodily humiliation of Christian flagellants, to the pious compulsions of fanatic cleanliness and sani-

tation, and finally the yearning for power over physical nature made possible by industrialized technology, we are engaged in a desperate flight from inchoate diversity and our own feelings of anonymity and fragmentation. Today we seek to fabricate a world in which we hope to heal our stunted identities and rear children in a hopeful and meaningful setting. But our rural/urban landscapes, generated by an ideology of mastery, define by subordination, not analogy. The archetypal role of nature—the mineral, plant, and animal world found most complete in wilderness—is in the development of the individual human personality, for it embodies the poetic expression of ways of being and relating to others. Urban civilization creates the illusion of a shortcut to individual maturity by attempting to omit the eight to ten years of immersion in nonhuman nature. Maturity so achieved is spurious because the individual, though he may become precociously articulate and sensitive to subtle human interplay, is without a grounding in the given structure that is nature. His grief and sense of loss seem to him to be a personality problem, so that, caught in a double bind, he will be encouraged to talk out his sense of inadequacy as though it were an interpersonal or ideological matter. Indeed, the real brittleness of modern social relationships has its roots in that vacuum where a beautiful and awesome otherness should have been encountered. The multifold otherness-with-similarities of nonhuman nature is a training ground for that delicate equilibrium between the play of likeness and difference in all social intercourse and for affirmation instead of fear of the ambiguities and liveliness of the self.

a fantasized substitute, and that thereafter such realistic patience is a measure of maturity. Ethologically the matter is more interesting, since a great many kinds of vertebrate animals often defer to more powerful competitors. This is especially true of hierarchically organized social carnivores and primates. Clearly, deferred gratification is not the product of unique human reason at all, but a widespread form of animal behavior, and, in us, is probably a legacy from our animal heritage. Its failure or breakdown may indeed be immature, but is symptomatic of behavioral pathologies more complex than rational understanding or educational failure. The modern appetite for change defines protean man.

5. The Mechanists

1. John B. Calhoun, "Environmental Control over Four Major Paths of Mammalian Evolution," in J. M. Thoday and A. S. Park, eds., *Genetic and Environmental Influences on Behavior* (New York: Plenum, 1968).
2. Claire and William S. Russell, "The Sardine Syndrome," *The Ecologist* 1, no. 2 (August 1970).
3. Garrett Hardin, "Nobody Ever Dies of Overpopulation." *Science* 171: 527, 1971.
4. Stephen Boyden, "Biological View of Problems of Urban Health," *Human Biology in Oceania* 1, no. 3 (February 1972). Boyden calls this the "principle of phylogenetic maladjustment." He emphasizes that much of this maladjustment is chronic, mild, and difficult to diagnose. He sees three major aspects: crowding and the rapid evolution of parasitic viruses; physical debility due to inadequate exercise and the effects of drugs, alcohol, and tobacco; and the chemicalization of the environment by the introduction of more than ten thousand new compounds per year, many of which have possible psychological as well as physiological effects.
5. Robert Browning, "Up at a Villa—Down in the City," *Complete Poetic and Dramatic Works* (New York: Houghton Mifflin, 1895).
6. Patricia Draper, "Crowding Among Hunter-Gatherers: The !Kung Bushmen," *Science* 182 (1973): 301.

7. For differences in "interpersonal press" in persons per room as opposed to buildings per acre, see Omer R. Galle, Walter R. Gove, and J. Miller McPherson, "Population Density and Pathology: What Are the Relations for Man?" *Science* 176 (1972): 23–30. Although I have criticized its picky subdivisions, the article supports the thesis that city life increases psychiatric disorders and interferes with individual growth and development.
8. David E. Davis, in A. H. Esser, *Behavior and Environment* (New York: Plenum, 1971), p. 133. Jonathan L. Freedman, in *Crowding and Behavior* (New York: Viking, 1975), says that "feeling crowded" is subjective, hence is unrelated to actual density (p. 93); and a further bandying of words: While there is "no relation between crowding and pathology, . . . having to interact or deal with large numbers of people generally seems to have negative effects" (pp. 103, 123).

   There is much evidence on the relationship of density, stress, and their chain of effects on the immune system, the production of cortisone and lactic acid, calcium levels, adrenaline, and every aspect of human life-cycle behavior. Some of these factors are reviewed in Galle, Gore, and McPherson, "Population Density and Pathology," p. 23. The only explanation I can imagine for the continued publication of books and papers claiming that there are no detrimental effects of population density on human well-being, by writers who are apparently sincere, is the structure of the modern university, which rewards all publication, and the nature of modern statistical evidence, which enables an author to support any hypothesis depending on how the "problem" is stated. Moreover, such argle-bargle is congenial to an audience seeking evidence in support of a doctrine.
9. Paul D. MacLean, "The Paranoid Streak in Man," in Arthur Koestler and J. R. Smythes, eds., *Beyond Reductionism* (Boston: Beacon, 1968). The theory is that the limbic system (parts of the nervous system associated with emotional response to external signals) is triggered independently of higher mentation; yet those emotions need explanation and arouse irrational thought. "The paranoid demon" is "a general affect characterized as an unpleasant feeling of fear attached to something

that cannot be clearly identified," but which is "explained away." This response is based on the composite of reptilian, old mammalian, and new mammalian brains in the human head and leads to group exploitation of such widespread uneasiness by ideology. The authors suggest that the cause of such general nagging feelings may be the effects of overpopulation, especially the spatial squeeze and loss of personal identity.

10. I am aware of the supposed recovery potential of individuals to early brain damage, but the evidence is usually supported by rather minimal self-care criteria. The ideology of human independence from biological constraints is usually evident.
11. *Adolescence* (New York: D. Appleton & Co., 1904), pp. 229–31. Hall also lashes out against nomenclature and morphology as tedious substitutes for life history and evolutionary studies. He is right for the wrong reason. These subjects are inappropriate for the adolescent, who is characteristically interested in synthesis and process. Naming and structure are appropriate for the juvenile. Our error in education is to present the high school or college student with a whole package of biology as though all aspects of nature were suitable for his stage.

    The "typical textbook" referred to earlier is an otherwise excellent manual: Howard Gardener, *Developmental Psychology: An Introduction* (Boston: Little, Brown, 1978).
12. "The Experience of Living in Cities," *Science*, 13 March 1970, p. 167: 1461.
13. "A Strategy for the War with Nature," *Saturday Review*, 5 February 1966.
14. Karen Horney describes the quest for power and possessions as a form of protection against the feelings of helplessness and insignificance. Its satisfactions are without enduring enjoyment, for life is seen as an ordeal, its delays intolerable. Linked to implacable anxieties from infancy, it plays out "solutions" that cannot solve the problem (*The Neurotic Personality of Our Time* [New York: W. W. Norton, 1937], p. 166). A juvenile expression of the infantile fantasy of omnipotence is magic. It embodies the unlimited capacity to destroy (or cause to vanish) and to create—to bring into existence from nowhere. This connection is traced out in Arnold Modell's *Object Love and*

Reality (New York: International Universities Press, 1968) p. 168. To spring from nowhere and to disappear into nowhere suggest a world without transitions, that is, with faulty connections. Modell (pp. 28–40) and others have discussed the "transitional object"—such as the child's favorite blanket or toy—as an object to fill the gap between the self and the Other, a growing sense of separateness inadequately shielded by a parallel awareness of relationship. It could easily be assumed by a reader of that psychiatric literature that such a "security blanket" is normal for three-year-olds. But the children of Australian aborigines living in the bush do not cling to such objects and apparently do not need them. (Fred Myers, personal communication, May, 1981). I conclude from this that the transitional object in modern urban children is an early sign of the stresses within a culture centered on linear and broken, rather than holistic and integrative, patterns of reality. To speculate a step further, one may wonder to what degree such objects may become fixated on, as in a lifelong teddy-bear syndrome, and, indeed, whether the perpetuation into adult life of this form of dependence does not take on many shapes. To love another fully, says Modell, one must accept the separateness of objects and receive information about them from them (p. 61). The persisting transitional object expresses an infantile fear of identity in general and blocks recognition of true separateness or otherness by perceiving a representative object in a vague, comforting, omnipotent merging.

15. Anthony Storr (*The Dynamic of Creation* [New York: Atheneum, 1972] p. 177) notes that the breakdown of metaphor is characteristic of schizophrenia. This literalness or concreteness of perception grows from an *inadequate* separation of self and world. This seems odd, as we think of schizoid as a split that divides. But the contradiction is not real, for it is the terror of separateness that is at work. If the infant does not have a confident relationship with its mother, it cannot begin to separate from her, to take its first steps toward selfhood. As the growth calendar impels it into the arena of wider relationships, especially with the nonhuman world, the clinging identity-with continues its stranglehold. Freud described this peculiar fear as "uncanniness." Harold Searles (*The Nonhuman Environment,*

New York: I.U.P., 1960. pp. 174–177) has noted that recovery from acute schizophrenia is marked by the patient's ability to cope with strangers, strange places, and novel things. Compassion for the nonhuman arises from a sense of a shared situation in the universe. Paul Santmire puts the same duality somewhat differently. The division is between those who "flee" to the wilderness—a paganistic regression or fear of the future—and those who employ the "freedom of historical experience" against nature by dominating and destroying it—hence the "cults of rusticity and manipulation." Like the Russells, he sees the cultists as the psychological results of insecurity. Santmire, however, seeks the solution within Christianity, diagnosing the difficulty as "a failure to meet the challenge of historical experience"—that is, the acceptance of a God-given stewardship over the earth (*Brother Earth* [New York: Thomas Nelson, 1970] pp. 50–58).

16. *The Ideological Imagination* (Chicago: Quadrangle, 1972, p. 125). The full expression of ideological thinking—although it began with the pastoral philosophy of mounted tribes and the Hebrew pseudopastoralists of the Old Testament—is in the secular urban society: minimal enculturated religious conviction, maximum extension of pubertal abstract idealizing, and that "grazing posture" or provisional commitment to policy. Hannah Arendt observed the connection between this kind of puerility and terrorism ("Ideology and Terror: A Novel Form of Government," *Review of Politics* 15 [1953]: 303–27). Ideological thought is also at the root of all phrasing of man-nature relationships as alternatives. In this connection I prize D. H. Lawrence's remarks on the ideologists: "They are simply eaten up with caring. They are so busy caring about fascism or the League of Nations or whether France is right or whether marriage is threatened, that they never know where they are. They inhabit abstract space, the desert void of politics, principles, right and wrong" (quoted by Aldous Huxley, "D. H. Lawrence," *Collected Essays* [New York: Harper & Bros., 1959]). As for the "grazing posture" of contemporary life, see Lewis H. Lapham, "The Melancholy Herd," *Harper's,* July 1978, pp. 11–13.
17. This is the theme of Joseph Chilton Pearce's *Magical Child* (New York: Dutton, 1977).

18. Of this machine environment, Harold F. Searles says, "Over recent decades we have come from dwelling in an outer world in which the living works of nature either predominated or were near at hand, to dwelling in an environment dominated by a technology which is wondrously powerful and yet nonetheless dead, inanimate. I suggest that in the process we have come from being subjectively differentiated from, and in meaningful kinship with, the outer world, to finding this technology-dominated world an alien, so complex, so awesome, and so overwhelming that we have been able to cope with it only by regressing, in our unconscious experience of it, largely to a degraded state of nondifferentiation from it. I suggest, that is, that this 'outer' reality is psychologically as much a part of us as its poisonous waste products are part of our physical selves" ("Unconscious Processes in Relation to the Environmental Crisis," *Psychoanalytic Review* 59 [1972]: 361).
19. The attempt to change the world to meet one's own needs without reference to a "reality principle" is described as psychotic by Edith Jacobson in *Psychotic Conflict and Reality* (New York: International Universities Press, 1967), p. 18. What psychiatrists tend to mean by "reality" are the rather mundane things, such as not being able to change things by wishing. But if you conceive of reality in a Newtonian physical-chemical-energetic flux, reality is reduced to stuff; the psychiatrists' reality of forms and weights and size and doorways and being there and not being there vanishes, and "everything" becomes possible. The megalomania for deconstructing the planet earth is supported by the logic of such abstract "reality" and the "necessity" of "conquering nature." The most widely celebrated contemporary view that the world is a machine can be found in the works of Buckminster Fuller. Perhaps his penultimate statement is that we are a space colony on a "mother ship," that all biology is technology, and that "the universe is *nothing but* technology" ("Worlds Beyond," *Omni,* January 1979).
20. The "mechanistic world picture" is a Renaissance idea, Enlightenment theme, and industrial ethos. One of the characteristics of such a view is that we ourselves are, like the solar system or the atom, a kind of machine. The behavior of stressed and caged people, like that of other animals, has

always resulted in swaying, rocking, stereotyped movements, but as an active psychological model it was enormously stimulated by the environment of machines. The psychotic child who imitates machines is not unusual in the medical literature and shows that, in certain situations, a machine can be incorporated into the process in which the child internalizes aspects of external "beings" in the construction of a self.

Persig, in the most interesting part of his novel *Zen and the Art of Motorcycle Maintenance* (New York: Bantam Books, 1977), claims that the mechanistic model of life is derived from Aristotle's "dessicating, eyeless voice of dualistic reason" and Platonic idealism. The Sophists lost out, with their view of man as participant rather than observer (pp. 345–75). John Rodman believes that the alternative to the Aristotelian-Platonic core of modern self-consciousness was Empedoclean and Pythagorean ("The Other Side of Ecology in Ancient Greece," *Inquiry* 18 [1976]; 115–25). Others, like Jane Ellen Harrison, describe the division as between Olympian or classical, as opposed to Homeric or preclassical (*Mythology* [Boston: Marshall Jones, 1924]), or as Ionian cosmology versus "polytheistic liveliness" (David Miller, *The New Polytheism* [New York: Harper, 1974]). Perhaps these are merely different views of the same phenomenon, but it should be added that the matter was largely theoretical until Thomas Aquinas and others selectively rediscovered Greek thought—preferring those parts consistent with Christian abstraction and dualism—and the Renaissance mechanists and inventors created the means of acting upon it. My colleague James Bogen objects, with some justification, to blaming Plato for what the Protestant ethic and modern technicity have wrought. Yet, if one is to play the game of antecedence of modern ideas, ninety cents of the buck will stop with Plato and Aristotle.

21. A central thrust of puritan thought is the fallen or chaotic state of the world and its disgusting livingness—its quivering, pulsating, wet physiology. The fear of chaos, says Anthony Storr, is actually the fear of an *inner* disorder. It is a defense against the schizoid or depressive state, impulsive control, driven by disgust with spontaneous bodily functions. Out of it grows excessive attention to external precision and cleanliness,

highly useful in an electronic, sanitized world (*The Dynamics of Creation* [New York: Atheneum, 1972], pp. 92–98).

22. Such images do play a role in normal development, but not as an end in themselves. In all totemic societies, and probably in the evolution of art, these man-made images of nature serve as a kind of transitional object, midway, as Levi-Strauss says in *The Savage Mind* (Chicago: University of Chicago Press, 1962, pp. 1–34) between percepts and concepts. In his study of transitional objects, Arnold Modell has made it clear that such objects serve as a transient link between the psychological need to create an environment and the necessity of discovering the environment, reconciling the two. This gently guides the individual away from fantasies of omnipotence and anxieties of separation toward a love affair with the world (*Object Love and Reality*). The idea that art has its own ends has come into its own with the Renaissance. This independence of the most powerful tool of human imagination from the fostering of a unifying cosmology is one of the major features of the urban mind and helps distinguish the postindustrial city from all ancient cities. It also helps us to understand the frantic pursuit of "culture" by educated people, who experience the ambiguity and frustrations of its esthetic satisfactions on the one hand, and its isolating effects on the other.

In spite of what I have said, I also recognize that participation in any art may have value for the individual as a creative way of resolving tensions and giving access to the unconscious so as to reduce the effects of repression (Storr, *The Dynamics of Creation*, p. 236–39).

23. In my view, Steiner's *In Bluebeard's Castle* (New Haven: Yale University Press, 1971), is the best book on human ecology of the twentieth century, although it is not ostensibly on man's relationship to nature at all. Read in that context it conveys a sense of an immense mindless yearning for destruction that is irresistible and inevitable. Like other literati, he speaks of the "dehumanizing" effects of the assembly line, the "bland mendacity" of the money market, and the massacres of 1915–1945, but I believe he is describing a desperate, profoundly human hysteria in the face of the accumulations of history and civilization. When we finally achieved the demythologized and desa-

cralized world extolled by the Hebrew-Christian-Muslim puritans, "control" over all the plants and animals—which was perfected in domestication, the final repudiation of everything organic in the very structure of our built environments—we reacted with the utmost material violence, not because of some failure to contain anarchic impulse, but because the humanism of literature and history is so discordant with the kind of being we are.

24. Harold F. Searles has observed that schizoid disorientation—the confusion of the sick individual as to where he is at any moment—would be tolerable to Hebrews in the desert, as it would to the rank and file in an army or a modern person in an underground train or in a jet aircraft. Perhaps this is the "homogenized" landscape against whose lack of orientation Eliade speaks of the necessity of sacred places or, again, the earthly home that to puritan thought is alien ("Non-differentiation of Ego Functioning in the Borderline Individual and Its Effect Upon His Sense of Personal Identity," paper presented at Sixth International Symposium on the Psychotherapy of Schizophrenia, Lausanne, Switzerland, Sept. 28, 1978; "A Case of Borderline Thought Disorder," *International Journal of Psycho-Analysis* 50 [1969]: 655.)
25. The tendency of the modern city—and agribusiness countryside—to become more uniform, as centralized mass production standardizes construction and land use, seems at first glance to be a side effect of progress, lamented by many. But is it only a by-product? If the general effect of urban life is to aggravate our sense of estrangement and our schizoid fears of the Other, such homogenization may soothe the harried psyche. Ask yourself whether, having traveled for weeks in a foreign land, you are not delighted to run across a motel or restaurant belonging to a familiar chain. If the world appears increasingly ominous and gloomy, as J. H. Van Den Berg says it does in "a defective state of mind" (*A Different Existence* [Pittsburg, Pa.: Duquesne University Press, 1972], pp. 8–9), then perhaps we react by trying to make it more familiar.

    Can we experience both the denial of the nature of the outer world and an exaggerated sense of responsibility for it? The connection is a weak identity structure that cannot cope with one's own malevolence and a poor differentiation between inner and outer in which one projects feelings of helplessness onto the outer world. The first results in the illusion of the peaceable kingdom, denying the reality of predation (or self aggression), the second in a sense of guilt for all the "badness" in the world. Some of us conservationists and environmentalists are uncomfortably close in our more excessive expressions of the world's decay and our more pastoral notions of how things should be.

6. The Dance of Neoteny and Ontogeny

1. Kenneth Keniston says, "The *extent* of human development is dependent upon the bio-social-historical matrix within which the child grows up; some developmental matrices may demonstrably retard, slow, or stop development; others may speed, accelerate, or stimulate it. . . . Human development is a very rough road, pitted with obstructions, interspersed with blind alleys, and dotted with seductive stopping places. It can be traversed only with the greatest of support and under the most optimal conditions" ("Psychological Development and Historical Change," in Robert Jay Lifton, ed., *Explorations in Psychohistory* [New York: Simon & Schuster, 1974], p. 149–64).
2. The infantilizing effect of domestication on animals has other effects far beyond the animals. Being incorporated into the human social system as its lowest-ranking members, their subservience becomes a kind of object lesson teaching a hierarchic scale of authority and right. Toward the animals themselves, the human feeling for their otherness evaporates in material values and sentimental affiliation. See Calvin Martin, "Subarctic Indians and Wildlife," in Carol M. Judd and Arthur J. Rays, eds., *Old Trails and New Directions: Papers of the Third North American Fur Trade Conference* (Toronto: University of Toronto, 1980).
3. Daphne Prior, "State of Surrender," *The Sciences.*
4. *The Time Falling Bodies Take to Light* (New York: St. Martin's Press, 1981). See his concept of enantiodromia, p. 131.
5. *Countertransference* (New York: International Universities Press, 1979), p. 175.
6. The fear of strangers in the child peaks at about three months,