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### ART AND ECOLOGICAL CONSCIOUSNESS

The forces of nature that man has brought under a measure of his control have again become alien; they now approach us menacingly by avenues opened by science and technology. This does not mean that we have freed ourselves from nature's old scourges, earthquakes, volcanic eruptions, floods, and other "acts of God." The recent tidal wave in the Bay of Bengal left over half a million dead. What we face now are destructive forces of a completely new kind—man-generated, cumulative, and of almost cosmic proportion.

A wildly proliferating man-made environment has shrunk living space, dimmed light, bleached color, and relentlessly expanded noise, speed, and complexity. We have contaminated our rivers and lakes through the unrestricted dumping of human and industrial waste, and poisoned our sky, sea, and land with radioactive waste. We have shaved barren our mountains, hills, and fields and exterminated their birds, fishes, and beasts. And it is not only the destruction of the physical environment that is involved.

Aldous Huxley's comment that by mistreating nature we are eliminating the basis of half of English poetry expresses a deep truth. The world around us—the mobile, luminous richness of the sky, the infinite wealth of colors and shapes of animals and flowers—provides the essential basis for all our languages, verbal and visual, and constitutes the means of attaining a higher, richer sensing of life.

We have had many warnings. Again and again, men in the past have lamented the destruction of their environment and the consequent loss of poetry and beauty. They saw and felt the ruthless impoverishment of life. A hundred years ago John Ruskin said:

In that half of the permitted life of man, I have seen strange evil brought upon every scene that I best loved, or tried to make beloved by others. The light which once flushed those pale summits with its rose at dawn, and purple at sunset, is now umbered and faint; the air which once inlaid the clefts of all their golden crags with azure is now defiled with languid coils of smoke, belched from worse than volcanic fires: their very glacier waves are ebbing, and their snows fading, as if Hell had breathed on them; the waters that once sank at their feet into crystalline rest are now dimmed and foul, from deep to deep, and shore to shore. These are no careless words—they are accurately, horribly, true. . . . Ah, masters of modern science . . . you have divided the elements, and united them; enslaved them upon the earth, and discerned them in the stars. Teach us, now, but this of them, which is all that man need know—that the Air is given to him for his life; and the Rain



to his thirst, and for his baptism; and the Fire for warmth; and the Sun for sight; and the Earth for his mean—and his Rest.<sup>1</sup>

A few years later William Morris observed:

. . . And as yet it is only a very few men who have begun to think about a remedy for it in its widest range: even in its narrower aspect, in the defacements of our big towns by all that commerce brings with it, who heeds it? who tries to control their squalor and hideousness? . . . cut down the pleasant trees among the houses, pull down ancient and venerable buildings for the money that a few square yards of London dirt will fetch; blacken rivers, hide the sun and poison the air with smoke and worse, and it's nobody's business to see to it or mend it; that is all that modern commerce, the countinghouse forgetful of the workshop, will do for us herein. . . . Yet there are matters which I should have thought easy for her; say for example teaching Manchester how to consume its own smoke, or Leeds how to get rid of its superfluous black dye without turning it into the river, which would be as much worth her attention as the production of the heaviest of heavy black silks, or the biggest of useless guns.<sup>2</sup>

Disregard for nature's richness leads to the destruction of living forms and eventually to the degradation and destruction of man himself. And although an increasing number of people realize the urgent need for change, we are all carried along by the uncontrolled dynamics of our situation and continue to develop ever more powerful tools without a code of values to guide us in their use.

Some of our wise predecessors recognized that there are limits to our interference with nature—to the remolding of ourselves and the world around us. Heraclitus knew that "the sun will not overstep his measure; for if he does, the Erynes, the maids of Justice, will find him out." The fate of Icarus demonstrates the fate of man's overweening ambition to change the world. Some three hundred and fifty years ago, Galileo observed that if we tried to construct mammoth ships and palaces, beams and bolts would cease to hold together. Trees cannot grow beyond certain heights nor animals beyond a certain size and still retain the proportion and materials that give them stability and efficiency.

Such limits also exist in the rate of growth or of development. There is an old Chinese fable about a farmer who, impatient with the natural rate of his crop's growth, went to the field every day and gave each sprout a good hard pull to speed its maturation. When the loosened plants all died, he came to understand nature's scale limits—*tao*, nature's way.

Every physical form, every living form, every pattern of feeling or thought has its own unique identity, its boundaries, its extension and its wider context; it contains or is contained by another pattern; it follows or is followed by another pattern. The unique identity, discrete shape, and nature of a space-occupying substance are shaped by the boundary that separates it from and connects it to the space outside. An organic form lives and grows only through its intricate transactions with its environment. An optical event becomes a visually perceived figure only when seen against its ground. The quality, feeling, and meaning of a sound is cast in the matrix of the physical processes that generated it; it is not independent of its surrounding silence or the other sounds that frame it. In the same way the physical, biological, or moral individuality of man is the function of his active relationship with the physical and social environment.

But the world is not made of discrete fixed entities. The boundaries that separate and connect them are fluid. The world's infinitely complex fabric is in a process of never-ending transformation; biological forms, social groups, human feelings and understandings undergo continuous changes. They may merge into larger, more encompassing, more complex configurations or fall apart into smaller, simpler constituents.

Perception psychologists, investigating the dynamics of visual figure-ground relationships, discerned a dynamic hierarchy of gestalts—perceptual patterns moving toward larger, more inclusive patterns. Our present relationship to our environment is at the threshold of such a process of reorientation. New circumstances have now forced us to see that we can no longer think of ourselves as separate and independent from our environment; rather, together they form a new, higher gestalt.

What are these new circumstances? First, there are the obvious, immediate, and real environmental tragedies. Until the recent past man had to concentrate his major efforts on safeguarding himself from the inimical forces of the natural world—beasts, cold, sickness, and hunger. At this historical junction, the real beasts are man-created; we face ourselves as the enemy. Nearly two centuries of industrial civilization have defaced and poisoned our environment. Shaped with the blighted spirit of cornered man, our



cities are our collective self-portraits, images of our own hollowness and chaos. And if not properly guided our immensely potent technology may carry within itself curses of even more awesome proportions. The not yet understood, uncontrolled dynamics of scientific technology could do more than poison our earth; it is capable of wreaking havoc on man's genetic future.

But man-made circumstances could also bring immense positive potentials. In the nineteenth century, inquiry into man's social nature and the study of Darwinian theory led to the belief that biological and social evolution were closely linked; little attention was paid at this time to the question of how social evolution was involved in the transformation of human consciousness from an early primitive level to its present more advanced one. During the past two decades this aspect of the evolutionary process has re-engaged the interest of some of the freer and more speculative scientific minds. Simultaneously, there have been momentous developments in genetics, computer and control technology, and economic production. In technically advanced countries, development has reached the point where the traditional purposes of human work—keeping men housed, clothed, and fed—can be transcended, permitting men to take responsibility for the shaping of human consciousness.

Some scientists have read our new situation with confidence, concluding that mankind has entered an important new higher stage of evolutionary development. "We are privileged," wrote Julian Huxley, "to be living at a crucial moment in the cosmic story, the moment when the vast evolutionary process in the small person of the inquiring man is becoming conscious of itself." He has discerned two critical thresholds in this evolutionary process. The first was when, thanks to the evolution of deoxyribonucleic acid (DNA) and genes, material organizations become self-varying and self-reproducing, and the biological phase began to operate. The second was when, thanks to the evolution of conceptual thought, symbolic language, and the cumulative transmission of experience by tradition, mental or mind-accompanied organizations became self-varying and self-reproducing, and the human phase emerged.

Today, we are in the critical stage of the second phase. We are taking the first timid steps toward what could be called "self-conscious evolution." We are beginning to understand that, through social communication, it is within our intellectual and emotional power to shape a sounder evolutionary future. The increasing magnitude and complexity of interacting lives must make us realize that our future depends upon an understanding

and control of our common system—a self-regulating, interdependent, dynamic pattern that moves from yesterday into today and from today into tomorrow.

But as the new arrives too fast and too forcefully, and as inherited mores, feelings, and concepts that served both as guides and shelter in our smaller and calmer world are swept away, many of us feel hopeless and helpless. No longer secure in our relationship to the world, our self-confidence is lost. We are unable to respond with imaginative courage to the challenges that face us. Instead of using all our inner resources, sensibilities, intellect and heart in a common focus, we react with blind one-sided intensity. Our thoughts ignore and discredit our feelings and thus lose contact with the energy and richness they can provide. Our feelings in turn are repressed and our sensibilities petrified.

Inbuilt in our unguided imposing technological material accomplishments is the danger that the life of the majority may be drained of its spirit, belief, and personal meaning. To inject human sense into the external achievements of the man-shaped modern world, this world must touch the individual with all the warmth of sensory intensity. The world of the single individual is sense-bound. His contact with the outside world is through sensorial experiences which in turn give the individual his sense of himself.

A cornered man is compelled to look into himself and gauge his own strengths and weaknesses. He must examine closely the nature of his relationship with his fellowman and with the world. Our unresolved and troubled lives compel us to reassess ourselves, and nowhere is our questioning of goals and means more evident than in the visual arts. Perhaps the responses can indicate what went wrong and where we should look for answers.

In spite of the bewildering stream of conflicting claims and counterclaims in twentieth-century art, there is a common denominator. It relates not so much with what is present as with what is missing: cohesion, completeness, the link between art and life, between man and man, and between man and environment, which provided the vital source of all the great art of the past. Artists have come to recognize that their creative imagination and sensibilities are neither self-generated nor self-contained: they belong to the larger environmental field of nature and society. After the fervent involvement in the revolutions of expressive idioms, in the extensions of morphological dimensions, and in the altering of the rules of the game in form-making, the search has assumed new



dimensions. Instead of further probing into matters of form, artists today are asking fundamental questions about the role and purpose of art, and they are beginning to find some answers.

The individual human body has an inbuilt self-defense, a physiological mechanism that protects it from extreme imbalance. Complex, automatic self-regulating devices are constantly either eliminating useless toxic matters from the body or converting what is useful into needed substances. We have begun to see that our extended body, our social and man-transformed environment, must develop its own self-regulating mechanisms to eliminate the poisons injected into it and to recycle useful matter. Environmental homeostasis on a global scale is now necessary to survival. Creative imagination, artistic sensibility, can be seen as one of our basic, collective, self-regulating devices that help us all to register and reject what is toxic and find what is useful and meaningful in our lives.

The underprivileged, the young, and the imaginative artist have expressed their anger eloquently at cowardly inertia and short-sighted selfishness. "Look into the mirror. The cause is you Mr. and Mrs. Yesterday," Eldridge Cleaver accuses us all. "They stole my imagination," laments Mick Jagger of the Rolling Stones. For they know in their hearts that without the courage to enter today, we can hardly hope to survive; and without imaginative power, we cannot make this move.

Sometimes these voices express the needs and hopes of the richer, expanding world. Jimi Hendrix exclaimed, "I want to hear and see everything, I want to hear and see everything," and he added, "Excuse me while I kiss the sky." In a symposium in 1965, Lucio Fontana, an artist with rare confident imagination, commented, "As a painter, while working on one of my perforated canvases, I do not want to make a painting; I want to open up space, create a new dimension for art, tie in with the cosmos as it endlessly expands beyond the confining plane of the picture. With my innovation of the hole pierced through the canvas in repetitive formations, I have not attempted to decorate a surface, but, on the contrary, I have tried to break its dimensional limitations. Beyond the perforations a newly gained freedom of interpretation awaits us, but also, and just as inevitably, the end of art."

It must be remembered that what has happened in art is itself a part of a very broad movement in which science has made the major contribution. Through its dynamics of rigorous logic twentieth-century scientific understanding has come to conclusions not

unlike those of the artists. Scientists recognize that in the most precise ranges of observation the observer and the observed interact. When observed and measured with maximum precision, the environment in both its largest and its smallest realism cannot be considered an independent objective world anymore.

It is quite understandable that many are sincerely convinced that the application of scientific method to all our problems will provide solutions to the complex equations of contemporary life. Mustering their new energies and their extended tools of the human mind—computer game theory, theories of servo-mechanism, systems approaches, and the like—men face the overwhelming problems of today with unwavering confidence in their capacity to overcome them. At the same time, such confidence is belied by the fact that the most sophisticated systems applications of technical know-how yet devised are those that have been used to invent means of tearing and burning the flesh from our brothers in areas of the world that, technologically speaking, have never had the chance to live in the twentieth century. But one need not go to distant lands to see that modern man has more cause to fear for his life in the big cities of rich countries than medieval man had in his deepest forests.

Our outdated socioeconomic system would seem to cancel our newly-forged tools to build a sounder and richer life. There is an entry in Ralph Waldo Emerson's notebook, written in the mid-nineteenth century, that has an almost symbolic bearing on our plight. Traveling in the outer Cape in Massachusetts, Emerson met some citizens of one of the smaller communities, who complained bitterly about their inability to have a lighthouse built. Their fellow citizens objected to the project on the ground that by warning approaching ships, the townspeople would be deprived of the goods they salvaged from the vessels that were periodically wrecked on the lightless rocks. The lack of moral intelligence that has led to the adulation of objects rather than of lives is a major factor in our failure to realize our potentials. The resistance today of the status quo is not against the scientific technological tools and methods themselves, but against their use in uncompromisingly social applications.

Our potent new tools, both conceptual and physical, contain within themselves an important aspect of new human perspectives. The more powerful the devices we develop through our scientific technology, the more we are interconnected with each other, with our machines, with our environment, and with our own inner capacities. The more sensitive and embracing our means of seeing, hearing, and thinking become through



radio, television, and computer technology, the more we are compelled to sense the interaction of man and his environment. Our new tools of transportation, communication, and control have brought a new scale of opportunities to inter-thinking and inter-seeing: the condition of a truly embracing participatory democracy.

The advancement of creative life and, by the same token, of human knowledge is produced by the interaction of the whole community. Through the communication of the knowledge and insights of creative men in many fields, we have the opportunity to make all that is valuable in man a shared possession—a new “common” property of all who seek a higher quality of life.

The notion of the “common” has always been alive for those who kept their human sense unsullied. A party of colonists asked Tecumseh, the Indian, if he would sell them his land. “Sell the country?” he asked in astonishment. “Why not sell the air, the clouds, the great sea?” Emerson once reflected, “The charming landscape which I saw this morning is indubitably made up of some twenty or thirty farms. Miller owns this field, Locke that, and Manning the woodland beyond. But none of them owns the landscape. There is a property in the horizon which no man has but he whose eye can integrate all the parts, that is, the poet.”

A new “common”—the potential complex, total system now being made possible by our scientific technology—can be explained by comparing it with the growth pattern of an individual human nervous system. It has been observed that the development of the brain increases the range and scope of perception. This increased perceptual range leads in turn to a need for greater control within the brain, that is, a greater ability to coordinate the widened range of information. This coordinated, interconnected capital of perceptual knowledge then offers a richer resonance to forthcoming perceptual experiences. In our own extended social and environmental system, we have not yet reached this necessary dynamic symmetry. Either our sensory feelers—our tools of knowledge and power—are growing unchecked exponentially without the coordination and control essential to a deepened and widened sense of life, or our concentrated powers of control and communications network are growing bigger than our individual receptive capacity.

It is difficult to accept as one this world of ghettos, criminal wars, urban violence, and inner erosion that coexists with bioengineering, genetic engineering, the pill, distant sensors, cyborgs, and an ever-increasing communications network. Lost without a frame

of reference in the new dynamic scale, modern man responds to his bewildering world either with the unquestioning conviction of a chiliast confidently awaiting the coming of a new technological millennium or with the desperation of a Jeremiah expecting the end of the world with each new step of technological development.

Where can we find a new set of coordinates to guide us through this wildly paced life that destroys so many with its reckless speed? How can we fashion links between the constantly broadening parameter of the experienced world and the diminishing dimensions of its particles? How can we find a living symmetry between increasingly powerful social control and our individual freedom? To achieve redemption for a crime one must be conscious of the crime committed. Without an ecological conscience, we have very little hope for change. But our imaginative powers and moral intelligence can help us find this consciousness.

Artistic and poetic sensibility and an ethical conscience have served us well in the past. The first massive blows of industrialized civilization were borne by men who still possessed the uncompromising sense of life as an indivisible whole composed of man and nature. In the late eighteenth and early nineteenth centuries in England, where the impact of industrialization left its first ugly scars, Shelley and other poets agonized over man's corrupting touch on the richness of the natural world. Blake raged at the menace degrading labor held for the human spirit, and wrote of “those dark satanic mills.” In this country, Thoreau, for whom trains were symbols of spreading mechanical civilization, observed dryly that “a few were riding but the rest are run over.” The painters, Turner and Constable, seeing nature defaced by smoke and dirt, projected from their inner resources the missing crescendo of light and color, space and movement. Their intense awareness of the sensorial qualities of life would not permit them to accept either the nineteenth-century mechanical models of scientific analysis or the profit-guided society as an adequate framework for their need for breadth, freedom, and self-variation of life.

In the twentieth century era of displacement, disillusionment, and social upheavals the artist has had to face different challenges. He has had to cut through the ego-tangled scene to reach the free horizons that held a promise of the new “common” of man-environment. Clearly, the artist's sensibility has entered a new phase of orientation in which its prime goal is to provide a format for the emerging ecological consciousness. The tasks he assumes differ from previous tasks in kind as well as in scale. The values



he uncovers become the values of us all, giving sharpness and definition to the need we sense for union and intimate involvement with our surroundings. Thus the artist has moved from a marginal role to a more central social position.

First, the artist now has the opportunity to contribute to the creative shaping of the earth's surface on a grand scale. Major environmental plasticity, for example, has become a fact of great import. Until now man was tied to the earth's crust: he could move only on the land or swim in or skim across the water. Except for the rare vantage points of high mountains, our globe was given to us only in limited horizons. The new technology has freed us from the ancient bondage of gravitation and opened up vistas of liberating dimension. Today, the artist's creative performance has a new challenge with a new arena and new spectators. We all are now at the threshold of a new scale consciousness, a complete reorientation; we are shifting frames of reference and thus perspectives. There is no more convincing picture of these expanding boundaries and their consequences than that given by a great troubled poet of the nineteenth century, and confirmed by the concrete real-time experiences of one of our astronauts. "He who one day teacheth men to fly," wrote Friedrich Nietzsche, "will have shifted all landmarks: to him will all the landmarks themselves fly into the air; the earth will he christen anew—as 'the light body.'" Astronaut William Anders in a newspaper interview gave this report of his experience:

The earth looked so tiny in the heavens that there were times during the Apollo 8 mission when I had trouble finding it. If you can imagine yourself in a darkened room with only one clearly visible object, a small blue-green sphere about the size of a Christmas-tree ornament, then you can begin to grasp what the earth looks like from space. I think all of us subconsciously think that the earth is flat or at least almost infinite. Let me assure you that, rather than a massive giant, it should be thought of as the fragile Christmas-tree ball which we should handle with considerable care.

Second, man's extended sensors have brought within arm's reach patterns and processes both strange and familiar. On the other end of the space spectrum, photomicrographs and electronmicrographs have brought microdimensions within range of our eyes. Nature has become an artistic challenge again. Artists, instead of representing nature's appearances, have explored ways to present nature's processes in their phenom-

logical aspects. Wind, rain, snow, nature growth, magnetic and hydraulic processes, and sound events have now re-entered the artist's vocabulary.

Third, some artists, finding it hopeless to formulate their experiences of the expanding, new world in sensuous objects or images, have attempted to capture the expanding space-time parameters in conceptual presentations that catch these experiences only partially.

These artistic attempts signify a fundamental reorientation. The dominant matrix of nineteenth-century attitudes was the use of Marx's term "reification"; relationships were interpreted in terms of things, objects or commodity values. Today a reversal of this attitude has begun to appear; there is a steadily increasing movement in science and in art toward processes and systems that dematerialize the object world and discredit physical possessions. What scientists considered before as substance shaped into forms, and consequently understood as tangible objects, is now recognized as energies and their dynamic organization. In the visual arts, painters and sculptors have arrived at conclusions not unlike those of the scientists. Artists have liberated their images and forms from the inhibiting world of object. Painting has become the capture and arrangement of visual energies. Through the innovations of a number of contemporary architects and engineers, buildings are also losing their object solidity and opacity to become light and transparent, "thingless" events. Buckminster Fuller's airy Dymaxion structures are important milestones of this road. Imaginative younger architects and engineers have moved still further away from weight and have touched upon the possibilities of enclosing space with air currents. Like instant envelopes these currents could be turned on or off as needed by sophisticated sensing and computing devices regulated by weather conditions. Architecture is making fundamental departures from its traditional position as a discrete, independent, heavy, and solid form catering mainly to the visual sense and is becoming a responding, bodiless, dynamic, interdependent structure answering to man's changing needs and growing controls. The flexible, mobile, transparent lightness can contribute significantly to man's liberation from the fixed space enclosure that separated him from nature's wealth of events. The meanings of architecture and urban configurations have a still more significant reevaluation. Buildings and groups of buildings are no longer considered sculptural forms and their space-organizations, but rather as systems of functions, programing life patterns with the participation of those concerned.

These innovations are the physical manifestation of a new sensibility. The scientist-



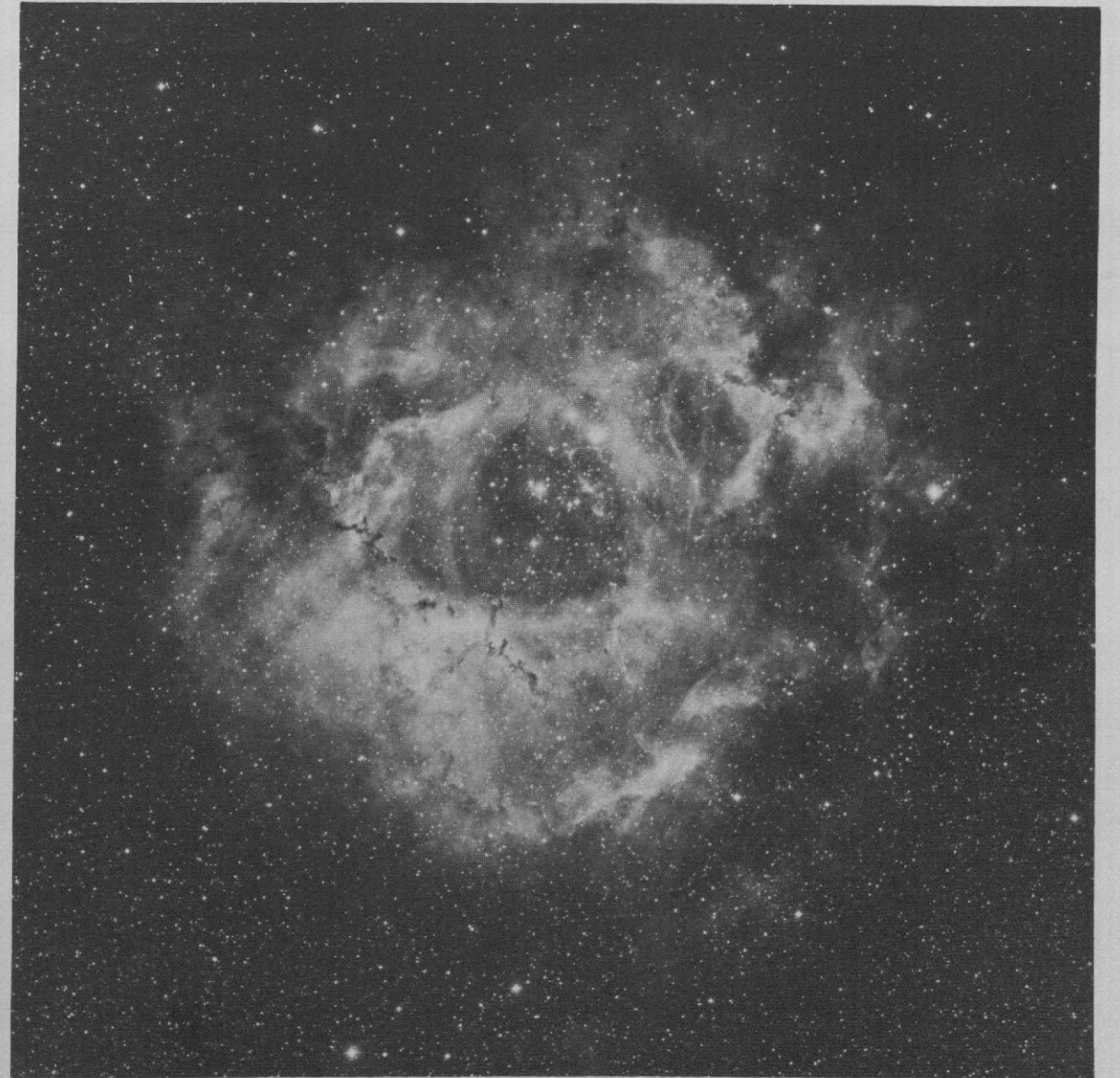
## TOWARD A NEW ENVIRONMENT

### The Powers of Nature and Man

Fig. 1. Nebulae. Courtesy Mount Wilson and Palomar Observatories.

engineer Dennis Gabor, one of the contributors to this volume, once commented that: "the future cannot be predicted, but (it) can be invented. . . . The first step of the technological or social inventor is to visualize by an act of imagination a thing or state of things which does not exist and which appears to him in some way desirable."<sup>3</sup> Imagination is the key to pre-experiencing alternative futures; desirability, in terms of human values, is the decisionmaker that now selects the right alternatives.

At this stage of evolutionary history, a new attitude toward the environment can be discerned. To the degree that man understands the external environment and, for better or worse, shapes its features in his own image, man's inner and outer landscapes will have a new meaning. The uncharted space is within ourselves, in our still unfathomed ethical potentials, in our still untapped imaginative power. Some three hundred years ago, Sir Thomas Browne saw this with his inner eye. He wrote: "We carry with us the wonders we seek without us; there is all Africa and her prodigies in us; we are that bold and adventurous piece of Nature, which he that studies wisely learns in a compendium what others labour at in a divided piece and endless volume."<sup>4</sup>



1. J. Ruskin, *Selections and Essays*, Chas. Scribner and Sons, 1918.  
2. W. Morris, ———. "Hopes and Fears for Art," 1882, reprinted in *On Art and Socialism*, London, John Lehman, 1947.

3. D. Gabor, *Inventing the Future*, New York, Alfred A. Knopf, 1963.  
4. T. Browne, *Religio Medici*, New York University Press, 1955.