

Research Essay

The Essence of Consciousness

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ABSTRACT

One of the open questions of science is known as "the hard problem of consciousness." Its nature, effects, and origin, are the subject of debate not only among psychologists, philosophers, and natural scientists, but also in the wider reading public. This article focuses on the ways in which consciousness influences human identity, on its source as the creative principle of life in the universe, and on its ongoing role in the historical process by which humans are transforming the earth.

Keywords: Consciousness, essence, hard problem, origin, human identity, creative principle.

1. Identity

To be human means having a deep need to understand how our minds work. We want to comprehend the origin of the attitudes that result in our behaviors, to know why we do the things we do. Self-knowledge can be difficult because we embody opposing impulses and contradictory responses to the world we live in. Why, for instance, do we feel two ways about nearly everything? What makes us regard our fellow beings with interest one day and indifference the next? How is it that we are capable of thoughts that are in turn base and crude or elevated and lofty? And why the human propensity not only for kindness but for hatred and revenge, a propensity manifest in the cycle of war and peace that marks our national histories?

At times there may seem to be no end to our contradictory behavior. Humans have a longing for permanence and stability, yet we contain an innate restlessness that leads to dissatisfaction with our current situation and may cause us to seek change. Who has not become distracted, reversed decisions, reneged on resolutions, or betrayed commitments? We wish to appear rational and consistent before others, but our changeable and contradictory actions may influence our relationships with them. They may begin to suspect our abilities and mistrust our motives, which in turn may lead us to lose confidence in ourselves and to harbor frustrations and insecurities. The contradictions to which human beings are subject have given rise to behavioral sciences like psychology, a field in which vast numbers of clinicians are trained to help individuals understand themselves. Too often, however, such advisors address deep-seated problems merely as the outcome of social background or environment without focusing on the naturally ambivalent operation of the mind. What would such an approach reveal?

The question inevitably involves us in the enigma of consciousness. A vexed and much debated phenomenon, consciousness plays a central role in the working of our mind--in our identity as human beings. By some it is thought to be simply perception, the result of sensory experience

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relayed to the mind, which enables it to determine its position in time and space. Where am I? How did I get here? What did I have for breakfast this morning? Correct answers to such questions are taken to indicate that an individual is conscious. Yet consciousness cannot be explained by biology alone. Although it arises from neuronal activity, it is something more, an elusive, effervescent, changeable presence that may seem alternately real or unreal. It is the something that makes us human, and at the same time a mystery to ourselves. If we are to understand our identity fully, the mystery must be challenged and elaborated. To do so will disclose the nature of consciousness as well as why we have it.

Who has not experienced in the mind's depth a pure and total freedom, the sensation of standing alone, separate from the entire world with its everyday bustle and commotion? Which of us has not felt different from all others, with a unique personality and a special way of viewing life? And who has not considered themselves incomparable in their individuality, the omniscient author of their life and destiny, answerable to no one else? It is human to think ourselves unduplicable and sovereign, to feel inviolate in our essential selfhood. We experience ourselves as centers around which the rest of the world revolves.

Yet the positive, self-affirming experience may quickly pass into its obverse, a state of mind in which who we are is insignificant. Also within us is the knowledge of our own death and the eventual destruction of our body and mind, the understanding that we will disappear into the inhuman and infinite abyss. We are able to see our life as a tiny speck of matter in an immeasurable, expanding universe, and are aware that it is only an instance of a species in which there have been billions of individuals. The experience is one of nonbeing and nothingness, and calls into question our most cherished beliefs and values. For many it causes doubt about life's purpose, and they may conclude it is meaningless or absurd.

The dual experience in which we are both everything and nothing is characteristic of consciousness. It doubles our existence, dividing it into two conflicting identities. Is there anyone who does not experience life at two levels—as both participant and observer? At the first level we are active agents, living a life in which we answer the needs and requirements of our body for food, sex, security, and companionship. We interact with others with minds engaged in greeting, talking, joining, exchanging ideas and favors. At the second, our minds are more fully conscious, and we become passive observers, watching ourselves moving in time and space. Like bystanders, we see ourselves at a distance, the way we see an actor in a video, moving in a world separate from ours. The two experiences, although closely related, are mutually exclusive: as soon as we act, full consciousness evaporates and is lost.

For centuries philosophers have puzzled over the contradiction: which is primary and more important to our understanding of what being human means? Is our identity as a participant, an objective being, the one on which to base conclusions and values: or is the more essential the observer, a subjective or ideal being? In our era, the first is often considered the more important because it is a verifiable, actual existent, while the second is a hidden, impalpable essence, a purely mental phenomenon. Perhaps the most rewarding view is that the mind, when fully conscious, allows us to reflect on our interactions with others, to control the animal instincts, assess our motives and their consequences, and choose the best path in the search for humane identity.

The double awareness imparted by consciousness also gives us our sense of having a past and future. Consciousness is historical with the result that to be human means to experience ourselves as both a memory and a hope or expectation. On the face of it both experiences are illusory, unreal: we exist only in the present. Yet it is safe to say that, without both, human life would be unthinkable. We would live like the animals in a perpetual present. It is through pure consciousness that humanity was first able to conceive time as a progression of past, present, and future; and the centrality of the idea to human life is indicated by the language we use in which verb tenses categorize our activity as belonging to one of those three dimensions. Time is in effect a kind of language, another tool that humans have used to erect civilizations.

Yet consciousness of time leads to another conflict in the human mind. Which shall I live for predominantly, the past or the future? Around which shall I shape my life? Am I the one I have been or the one I imagine, but do not yet know? To answer such questions often calls for agonizing decisions. Nostalgia is a powerful human emotion, and we easily idealize it as a time when life was simpler, less crowded, less fast-paced. In memory lies our personal history, the record of our choices and their outcomes, which we are tempted to think of as our primary identity. If we have been fortunate and our memories pleasant, we are drawn to make our lives in the present similar, to surround ourselves with familiar faces of family and friends, to live in or near the place of our origin, to perpetuate our customs and traditions. Readily we forget the past is ultimately irretrievable, and may develop a habit of mind which resists inevitable change in the world around us: the new attitudes about what is acceptable behavior, new procedures in the workplace, new ways of doing business.

In contrast to the known past, our future is pregnant with possibilities for action that may or may not be good for our fortunes. It confers no sense of actual identity, and is merely a hope which has not happened—and may never. Suppose we fail in our attempt to make it real? Wouldn't we lose what we already have? And what if we encounter poverty or serious illness? From such considerations, many fear the future and turn from its blank, inhuman face. Yet hopes and dreams come naturally and are not easily ignored or suppressed. In those who lack the courage to act upon them, they may lurk buried within yet influencing behavior in a way that is perplexing in the eyes of others. Conflict between past and future is managed differently by all with varying degrees of compromise between living for one or the other. Memory and hope also quarrel at the national level, their opposition being manifest in the division of political life into two parties or factions. One is conservative, favoring the old order, the other liberal, insisting on change.

Fear of the future brings to light the central role of possibility in life. In essence, human consciousness is possibility—its source and domain. It is awareness of all that is not here, not now, but could be were circumstances different. Its substanceless potential is at bottom nonbeing, and because it contains nothing, the mind senses it as an absence, an inward emptiness or voice, which causes not only fear but also discontent with life in the present. Due to consciousness, it is the fate of all human beings to be born incomplete, to experience a lack of wholeness: to be unwhole. Something is always missing, or exists in the future, although it may be undefinable. Life must thus seem intrinsically less than perfect, unfinished, in need of improvement. Imbued with possibility, consciousness seems to expect action, to await the choices that will complete life and bring satisfaction and happiness. But since its possibilities are

inexhaustible, our efforts are always accompanied by imperfection, hopes partially realized, desires unconsummated.

And where do all our questions arise but from the possibilities that are present in our mind? They spawn the endless interplay of interrogation and reply that is vital to all thought and critical to our search for meaning. Because our sense of possibilities is endless, every answer or conclusion can be quickly rendered uncertain and tentative; and is quickly followed by another possibility—which then motivates another question. When we think we have settled that one, there occurs another so that the search for meaning may become exasperating, and accounts for the fact that some questions are finally unanswerable. Since every affirmation involves its own denial, through the constant interaction of interrogation and reply, the mind advances its knowledge of itself and others and establishes the pattern in its experience. Ideally it is able to establish a basic awareness of its obligations and responsibilities in life. But what are they?

The most vital opposition that consciousness presents is between self and others. Human life is divided, polarized between solitude and society. Deep in our psyche we feel the urge to preserve and protect our individuality, to keep alive our possibilities and freedom of choice. Yet all feel the pull of society and the need of others; we are creatures of one and the same species, and the attraction of like to like operates like a law in our mind. The antipodal urges of attraction and repulsion, of fear of others and desire for them, may engender an unsettling confusion of motives, and make of life an anguished emotional ordeal. To which side, self or others, do we owe our loyalty and responsibility? To which should we commit the greater part of our attention and energy? Each day the choice recurs, and when the mind is fully conscious, we may find it precedes each action.

By nature the human being is disposed to put the self-first. The choice is rooted in biology; the will to life and its security is one with existence itself. It is this ineradicable need that leads us to perceive others as a hazard to autonomy and independence: we wish to safeguard our freedom to do what we want, to go where we want, when we want to, and in all to please ourselves. From fear of losing such prerogatives, humans are prey to emotions like greed, rivalry, and jealousy, which leave little room for consciousness of others. Others become a means to our end, minor players in supporting roles in our plan for security or success; in essence, reduced to things. Egocentrism leads to an unconscious mode of existence, devoid of the living whole. The mind becomes preoccupied with one's looks and appearance, obtaining material desires, enjoying favorite pastimes. We end by inhabiting an increasingly self-enclosed world, living a life that is unrewarding or pointless.

The insufficiency of a life centered on the self-points to others as its meaning. To make them our destiny is the choice that consciousness ultimately awaits and seems to expect. In this sense the word discloses its kinship with what is traditionally termed *conscience*. And what is its expectation for but love? I hesitate to introduce the word *love* here because it easily becomes a cliché, and its range of connotations and personal interpretations lead quickly to disagreement, making any generalizations a risk. Yet the fact that love is the purpose of consciousness accounts for the great interest it holds for human beings; for why it is the endless subject of books, videos, and stories, as well as an incalculable number of conversations. Another reason may be that love

involves a struggle in which there is always the chance of either success or failure. But what can be said about it more precisely that would reveal its essences?

Above all, love is a creative activity in which human beings seek to complete themselves, to make themselves whole. Out of the emptiness and vacancy within we fashion something not there before, a human tie or bond, a work of art, a business, or a building. Something more than ourselves comes into being. The manifestation of love is order. It draws together what is separate and diverse. In a society its result is to unify, collect, and gather many millions into one body. For individuals its effect is to balance the opposition of self and others, to make one coherent whole in which the needs of both are fulfilled by the other. Concern and care are the emotions of love; it brings a sense of obligation.

As a creative action, love brings forth in individuals a social identity, a being conscious of the unity of life. It means death to the former solitary self, a process that is a labor requiring restraint and self-abnegation, and the sacrifice of at least some of one's possibility and freedom. Those who love must practice a self-forgetfulness in which they struggle to suppress the emotions of fear and desire for pleasure that arise perpetually from the subconscious and demand attention. In fact, love often begins in desire and becomes itself only over time and insofar as the self is lost in the activity of loving. To make ourselves the second person, and the other the first, calls for a difficult and often painful sacrifice. Yet it creates solidarity and vitality in relationships. Others become our cause or ideal. Service is love's lifeblood.

And in what form, besides personal partnerships, do people render service to others? Isn't it by work, by the daily practice of a trade or occupation? Work is love made visible, requiring private sacrifice for the betterment of society. For most it brings remuneration, but that is hardly the end of it. Work makes possible, in large measure, self-realization and a sense of personal worth. And when it is done in a spirit of goodwill, and to the best of one's ability, it imparts order and harmony to the social whole. Many are the occupations and modalities through which love creates social wholes, and these correspond to the great variety of individual capacities and talents. Hands are needed to build roads and bridges, just as they are needed to perform surgeries and to tend the aged. Trade unions, businesses, schools and local governments, neighborhood associations, and civil organizations are only a few of the smaller wholes through which individuals devote their energies to the life of their society.

2. Knowledge

The search for knowledge is another of love's modalities. We want to understand the universe we inhabit, its laws and principles, and their effects on human behavior. This search too calls for creative sacrifice, but not for the purpose of interacting with others and forming friendships and ties. The seeker of knowledge requires solitude and silence, in which thought and contemplation can flourish. Inaction rather than action is necessary. It is usual for such people to take all humanity as their cause or ideal, in the hope that their discoveries and ideas will better its condition, and advance the sum total of human consciousness.

Human inquiry leads inevitably to the question: why do I exist? Is there anything or anyone responsible for my life? And where do I begin? With parents? Grandparents? Distant ancestors or animals? To know a phenomenon fully requires an understanding of its origin, and the search often discloses the reason or cause for its existence. Therefore to seek an explanation for our lives takes us backward in time to contemplate the origin of all life; nor does the quest end there. Intuitively we understand that our bodies and minds are composed of the elements of the universe—carbon, oxygen, iron and the rest—so that we are drawn to investigate the inception of the whole universe, the laws of its evolution, and their motive. In that riddle is entwined the mystery of consciousness. And what have we learned so far? How do we come to have it, and does it play a role in human evolution? Is it possible that consciousness is a feature of the entire universe?

Understanding of the universe has increased dramatically in the modern era. Observation of stars and planets reveals in their behavior two fundamental forces that are opposed to one another. The first, a force of attraction, or gravity, brings together the elements of matter; the second, a force of repulsion, operates to disperse them. The first is predominant and makes possible the stars from which come light, heat—and life itself. But the second is always at work causing them eventually to come apart and scatter. Over long periods of time, the dispersed elements are regathered into new stars and planets, so that there is change, and a new order emerges in the process we call evolution. For billions of years the interaction of the two opposing forces has progressed up to the present time in which we find ourselves alive on the planet earth. But do the same evolutionary forces continue to influence the place we think of as home?

Although we walk on the earth and take for granted its stability, it too is constantly evolving. The repulsive force is constantly interacting with that of attraction to transform the ground beneath our feet. Enormous pressure from the heat of the earth's molten core is moving upward causing the continents to drift apart, and on a vast time scale, to come back together into one land mass. The same heat energy generates the volcanoes which add to earth's surface by spewing out liquid lava that quickly cools and hardens into solid ground. At the same time, however, in vast trenches on the oceans' floor, in a process known as subduction, the old crust of earth is continuously melted down and returned to earth's center. The process will not last indefinitely because the earth's central furnace is slowly cooling. In the future its evolution will cease, and like a star it will burn down and come apart. But for now what keeps the two opposing forces in the equilibrium that gives the reliable world we know? What would such knowledge tell us about consciousness?

The answer lies within the atom, the smallest unit of matter, from which our minds and bodies are composed. Human science has discovered in its operation the same basic forces of attraction and repulsion that exist in the universe at large, and the balance between the two gives to the atom the stability on which all life is based. Yet the balance is tenuous and unpredictable, because underlying it is the possibility for change. Within parameters the atom contains a freedom which permits it to choose its own course of action, to react in different ways to other atoms, and at different times. Imbued with possibility, it can adapt to changing conditions, and do the unexpected.

The discovery means that consciousness exists at the heart of all matter. It is the indwelling creative force that balances the oppositions within matter and imparts its solidity. Yet because it is also freedom and possibility, it enables matter to change its form—to evolve. In its dual role, consciousness is the invisible motive for the evolution of the universe: a presence that accounts for its order and coherence but also moves it forward into the future in response to its own possibility. It is both a creator and a destroyer of the visible cosmos.

The discovery also explains why we are prone to contradictory behavior. Since the mind is composed of matter, of billions of atoms, consciousness is experienced as an alternation of the forces of attraction and repulsion. At its most fundamental level, it prompts the mind to feel two ways about any person, situation, or idea, and to react ambivalently toward them. Thus vacillation between interest and indifference toward others, between affirmation and denial, and order and disorder, are all the normal result of the mind's bipolar life. As freedom, however, consciousness is potentially aware of its own dualities, capable of observing them, choosing between them, or doing nothing but watching the world around it. Detached observing is its purest expression. Yet it always sees what could be, the next possible act or decision, and moves the mind forward to consider it—and in this way leads the mind into the future.

Does the presence of consciousness in the cosmos mean it is the source of all life? Despite its advances modern thought fails to answer this question satisfactorily. It has lacked the objectivity to consider all possible explanations. Nor has it connected life convincingly to the physical universe, which it views as inanimate. Paleontologists unearth and compile a fossil record of thousands of diverse lifeforms, and biologists study the elemental constituents of the first cell from which they evolved. Yet neither entertains the possibility that their evolution results from the hidden presence of consciousness in all matter. The primary emphasis falls on facts and not their meaning, with life defined as a physical process--locomotion, metabolism, reproduction. But how should life be understood? And what is the significance of its evolution?

Life is the gradual emergence of consciousness out of physical matter. It is a manifestation, a partial appearance of the indwelling motive with which matter is informed. In its evolution, consciousness is no longer hidden deep within inert, elemental substance, but comes to its surface, transformed into the great diversity of animate forms. Their existence points to the creative impulse for order implicit in consciousness. The term *organism* connotes order, the organization of life into a living whole; and in its evolution the basic law is progress from simple to more complex. From the first cell to the worm and jellyfish, and from there to tiger or ape, life has proliferated with each creature being more intricately put together, more capable, more conscious than its predecessor. The scale of life is ladder-like in complexity. But how does consciousness enable each creature to win its struggle for survival?

Every life, no matter how insignificant, is impregnated with its possibility for change, which is felt as an absence or void that leads it to explore its environment, seeking security. However rudimentary its awareness, it looks for an opening, a space or niche, where it can maximize its potential for more and more life, be safe from predators, and succeed against competitors. Thus birds once took to air, zebras to open savannahs, ants and moles went underground. The evolutionary process has spawned the great profusion of life as we know it today: the intricate,

living whole in whose order every creature is a whole in itself, with an individual identity, yet simultaneously a member of a species, a part of the larger order. And that species is separate and distinct from all others, yet whether as prey or predator, makes its contribution to the totality.

But what is the part played by a human being? What is my relation to the whole? I have a form that resembles an ape, and teeth and nails like other animals. And like other mammals, I have a brain, one that has allowed me to win success in the competition for life. But how am I different, if at all?

The obvious answer, too often ignored by biologists, is that we are capable of saying no to life—and even of refusing it altogether. The one who dies on a hunger strike, or the suicide, albeit in a negative way, testify to the power of self-abnegation to lift life above the level of instinct and the will to survive. Although we are animals, a human being is the only one who can defer gratification in the present moment to secure an intangible ideal, the only creature who can plan a future and act to bring it into being. The will-to-reject is involved in the mystery of love and confers creative powers. Through it we activate consciousness and thought, and prepare the mind for the acquisition of knowledge. Individuality and full humanity are not possible without it.

By itself the acquisition of knowledge also sets us apart from the animals. Civilization is a process by which knowledge accumulates generation after generation, and the ensuing fund of learning has nearly countless branches, disciplines, and specializations. By acquiring as much as possible, the human mind evolves along the same path as cosmic evolution, growing in complexity, as it seeks to make a whole of its experience, and trying it against prevailing ideas. In the creative effort of pursuing knowledge, the mind gives itself an increasingly new order and harmony, until it becomes, in a sense, a miniature planet, reflecting the outer one and furnishing it with meaning and significance.

When fully conscious, the mind grasps the oneness of all life. It is able to sense in the universe its immense, creative force, invisibly moving in and through all things, and bringing them towards it out of the eternal darkness into the light of the present moment. It is aware of itself as the apex and focus of the all-encompassing presence, of its life-pulse as the cosmic pulse, and of its emergence from matter as the culmination of a nearly unimaginable timespan of creative activity. The experience is one in which that presence invites acknowledgement as the source of life. How it entered matter and how it will end, human knowledge has not discovered; in the annals of thought there have been many names for it, but all fall short of describing its mysterious nature. Inhuman and impersonal, universal consciousness is the sum total of all possibility and freedom, and imparts to every human mind its inventive potential.

Through their labors, through productive thought and achievement, human beings duplicate on a minute scale the activity of universal consciousness. Each day when we begin the chosen work that makes our love visible, we respond to its possibility, organizing our energies in a way that repeats the creative action through which it gives form and substance to the universe. By bringing order to our lives from the natural disorder of impulse, inclination, and appetite, we replicate the foundational act in which order emerges from disorder. Productive activity, including forming wholes with others, increases the scope and presence of consciousness in the world around us. What is unseen and inhuman gets its face and reality. The understanding is

sobering, bringing with it the recognition that we humans are agents in the transformation of the universe—co-creators in the ongoing process of cosmic evolution. But in what ways specifically are we advancing evolution and transforming the earth? Besides innovation in fashions like apparel or entertainment, what new realities and capabilities is humanity bringing into existence?

3. Creativity

The root of creative action lies in dissatisfaction. The human being is a protest, a creature in rebellion against the world it finds itself in. Everything can be questioned; everything bears the possibility for change. There is nothing that cannot be improved upon, finished, made more complete. The creative impulse begins in an awareness of our nothingness and insignificance before the enormous expanses and infinite depth of the universe. With its blank forms and surfaces, indifferent and unfamiliar in their inertness, and lacking semblance to humans, it makes us feel alone, insufficient. Yet there lies within it an expectation to become something else, something more, to take on new forms and shapes, to assume a new appearance, to evolve. Creativity is our answer. To create means to humanize.

Technology is one of humanity's most significant responses to its creative impulse. We are toolmakers. They are a main reason for our evolutionary success, and their use gives us a unique identity. In itself technology requires creativity: to invent it is to take apart the elementary substances of the universe and to join, fuse, and mold them into a new form. It is to liberate the possibility for change that lies hidden and inert in all matter, its inner potential for becoming something it was not before; it is to give it another shape and appearance. The inventive human mind is the medium through which the universe changes its organization and structure, and in short, evolves.

With technology the human being is reshaping its hereditary environment. A builder, maker, and artisan, mankind is constructing a new world order, a second world fashioned out of the materials of the first, a world of great cities whose landscape eclipses the old natural vistas of mountains, valleys, and meadows. In the new urban habitat, tall buildings replace forests, great bridges span wide rivers and bays, skyscrapers blot out the rising moon. Historically, cities have been one of mankind's greatest achievements and their creation a source of pride; tourists flock to view and enjoy their monuments and remains. But today the large cities are many times more gigantic, and straddle much of the earth, housing the majority of the world's peoples, and ever increasing in size and circumference. And through technology—through a vast array of computers, telecommunication devices, underseas cables, and earth-orbiting satellites—humankind is drawing the world's cities together into one immense whole, a planetary city, an earthopolis.

The global city coming into view is astonishing in its complexity. It is mankind's greatest artifact, a creation whose intricate organization defies imagination. The technology that makes possible ever swelling human numbers also builds its structure outward and upward. It is a manifestation, a form the human mind is assuming, as it seeks to preserve, organize, and provide for the life of the species. International banks and corporations which regulate world trade, media and publishing companies which disseminate world news, and large universities where human

knowledge expands, all are located in the main centers of the global city. There nearly all objects, natural or man-made, are counted, coded, surveyed. The data is stored, analyzed, then transmitted by computers, as the human mind regulates the planet's resources for the benefit of its life. Through its increasing order and capacity, it evinces the law of evolution in which life unfolds toward greater and greater levels of complexity.

Thus the urban world is exclusively human—a culture of mind. Other beings are ever present, and through electronic devices their voices and faces come closer and closer. Not dependent on language alone, urban culture is often transmitted by means of signs and symbols, a hieroglyphics of creative imagery and icons that provide direction and must be rapidly comprehended in order to move from one place to another, work, prosper—keep up with changing conditions. Possibilities are created not so much through competition with others as by meeting the needs of the whole. Cooperation, not conflict, is required. Those who give way to nostalgia for a simpler way of life, and resist the forward momentum of urban culture, are in danger of being left behind in the ongoing process of human evolution. But are survival and success the sole motive for the growth of the planetary city?

The answer is no. The city's growth signifies humanity's effort to draw itself together, to become whole and undivided. It is a seeking a unity of its disparate populations, races, faiths, and cultures: a single order made of its billions that is all-inclusive, devoid of national or civilizational divisions. The ideal order it has its eye on is a labor of love, an answer to universal consciousness. The technologies it employs for its purpose are not only breaking down natural barriers of time and distance, but those of human nature as well. Slowly but steadily, gains in communication technology are alleviating the fear of what is foreign and different, and the emotions of jealousy, insecurity, and mistrust that divide the planet's peoples. The minds of adversaries are brought into more frequent contact, and the use of several tongues, rather than several hundred, is spreading throughout the world.

In the urban milieu, creativity fuels creativity, and technology begets technology. The process results in new forms of employment, novel ways of doing business, and new ways of living—and thus in an environment whose possibility acts like a magnet on the world's population. It is in the nature of technology to win a surplus from nature and to increase the overall level of wealth and abundance. In consequence, it is giving rise to a global middle-class whose lifestyle is one of enjoyment and consumption of the always increasing number of goods and services which it produces. The progress of course has its cost, as it depends on vast amounts of energy extracted from the earth, and it threatens to upset the balance of nature—the interaction and exchange of the elements in the skies, oceans, and soil—from which all life arises. And what has been humanity's response?

We have responded in a way that indicates growing consciousness of our place in the cosmic order. Study of the history of life's evolution reveals that in past epochs whole species have become extinct either through over-exploitation of their environment or through complacency and failure to react to changing conditions. The awareness has engendered a good deal of interest in preserving and protecting earth's balance. Climate is carefully monitored by satellites; volcanoes, earthquakes, hurricanes, and glaciation, are all measured, and their effects analyzed. To repair and restore the equilibrium of life, new technologies like wind turbines and solar

panels have been fabricated to replace older sources of energy. Humanity is exploring new ways to release or magnify cosmic forces, and to make them serve its evolution.

The global city is a work-in-progress, a constantly evolving order. Its community is far from perfect, an ideal as yet unrealized. In all attempts to establish order—to love—there is imperfection, resistance, work done inadequately, temporary failures, unforeseen setbacks. Because order must emerge from disorder, there will be misuse of freedoms, crime, drug abuse, heedless self-affirmation. The city's streets are noisy, as is the din from its construction, the traffic is often dangerous, and the crowding oppressive. Viewed from the street by a pedestrian, its life may seem chaotic, unplanned, a whirl of innumerable intents and purposes. Yet viewed from above, from a plane or helicopter, it is a surprisingly well-organized, functional whole—a pleasing spectacle. Its order testifies to humanity's aim to transform the entire earth into a garden.

One of humanity's most remarkable creative endeavors is continuing progress in the fields of medicine and medical technology. Who is unaware of the great strides forward in understanding the biochemistries of mind and body? The technologies invented to diagnose diseases, rectify inborn afflictions, and repair and even replace whole organs, testify to the human quest to overcome all natural limits. By improving life's quality and prolonging its span, we are protesting mortality itself, defying time and death. The old struggle for food and life's necessities has become a struggle to endure, to live in good health to an advanced age.

So boundless is the desire to perfect life that we have set our sights on altering the genetic traits inherited at birth. Reproductive technologies now provide the possibility of designing the characteristics of offspring, either by editing the genetic code of embryos, or by utilizing the now existing market for the sperm or ovum of a mate with what are considered the most desirable biological traits. The techniques would also make it possible to transform the bloodline of one's descendants for generations. In progress as well are new technologies that connect the human brain to a computer in order to increase its ability to process information. Are such practices desirable, or would they result in inequalities that upset the communal order? Wouldn't those people with enhanced capabilities have unfair advantage over those who do not have them? Should human beings be contemplating a race of superhumans?

In answering such questions, it is well to remember that the order of nature can no longer be used as the sole basis for a decision. Above all, the human mind is free and must be allowed to explore the possibilities which consciousness presents. Creative activity involves the chance of error; its future is always unknown. In all progress, mistakes and wrong directions inevitably occur. In time, however, consciousness brings recognition of error, and urges its correction, and this is one of the surest signs of its reality. It may be that, in order to advance knowledge, scientists will do whatever it is possible to do. Therefore it remains for government—for politicians who are representatives of all the people—to restrain or eliminate the technological developments that are harmful to the whole community. Governments should act from the awareness that human beings do not and cannot create life; and that, whether life comes by accident or design, it is intrinsically good and must be protected. To protect is the purpose of its power.

No creation speaks more tellingly of human possibility than the great rockets that hurtle forth from the face of the earth into outer space. Humanity is making it clear: nothing is impossible. All barriers are unacceptable. The climate and conditions of space are more hostile than any known on earth; yet humans are there with tools and cameras, digging rocks from distant planets and assessing their atmospheres, as well as making medicines and computer chips in an orbiting space station. We are now planning to colonize Mars, and to make use of the resources of asteroids; and we have sent a spacecraft beyond the solar system to report its discoveries. Humanity has thrust its presence into distant reaches of the universe. But what are the effects of space exploration?

Its exploration has increased cooperation among earth's peoples. Scientists as well as civilians from many nations are collaborating to gain new knowledge of the elements and laws which govern the universe, and the accumulating fund of knowledge is being shared to enhance the wellbeing of the global community. To see the earth from the perspective of space has also brought new awareness of life's fragility in the midst of the blank, eternal darkness. The blue orb seems to float, suspended in the abyss, a beacon of trust in life's goodness. The sight kindles the desire to husband carefully its intricate ecosystem, and deepens the sense of responsibility for safeguarding its equilibrium. And knowledge of the universe beyond earth has engendered a spirit of humility: humans now must contemplate the possibility that we may not be its only inhabitants. Other planets might be home to other beings.

Humanity is on the way, ever evolving in response to its possibility. Ultimately, to be human is to be a creature of the future, one captivated by its inhuman stare. It is to thirst for new encounters, challenges, new experiences, vistas and horizons. Our presence in outer space signals our aim to humanize its darkness and nothingness, to domesticate its nonhuman expanse, and bring life to its endless emptiness. The plans to people Mars, and to explore more distant planets, are our answer to the silent call of cosmic consciousness: a response to its transcendent creative force which lurks in the vast reaches of space, concealed in indifferent matter. Through our exploration and achievement, it emerges and takes on a human face and form, evolving in power and reality through the human being. We are making what is unseen seen and apparent, making its possibility real.

Domestication of outer space echoes the human past in which we brought order to unknown continents, and to their unmapped wilderness. Mars and the farther planets are waiting to be known, to be colonized and settled, to bear human footprints as the moon now does. They are waiting to take their place in human history. Mankind is a civilizer. Just as we are transforming the earth, we would plant a new order in space; and our plans become actualities, events in the human record. Exploration and domestication are our creative vocation.

Finally, exploration of outer space is one with humanity's effort to know and understand itself. The outer search is one with the inner. The names we give our spacecraft—*challenger*, *voyager*, *explorer*—reflect the need to search our own inward spaces whose depth is unknown. There lurk the infinite possibilities which consciousness confers. Thus our creative deeds and accomplishments fall away into the past, ossify, and come to seem useless in the light of the future. Because the possibilities of being cannot be exhausted, it is our fate to keep moving outward, forward, in search of an identity that would be final, of a self-knowledge that would be

acceptable.

Yet it is humanity's fate to be an explorer whose identity is always evolving, always incomplete. The Utopian vision in which contentment and happiness can be realized in life's material conditions is an illusion, a false imagination. For those who accept the challenge of creative activity and the work of love, there is no final understanding of who we are. All moments of consciousness are elusive and impermanent, superseded by new possibilities. Without resting place, port or harbor, humanity's role is to continue the search, to come perpetually into being. It is in this way that we discover ourselves, our capabilities, our potential for perseverance, patience, and compassion. In this way, with our lives, we give measure to eternity, to the transcendent consciousness whose being remains a mystery. It is by the search itself, by the open road, that we answer the unanswerable questions: Who are we? and Why are we here?

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