The God Who Would Be Known
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Revelations of the Divine in Contemporary Science

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Dedicated to the pioneering research scientists who are discovering the ongoing and accelerating creative process and millions more creations by the Creator.
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Men of Athens! I see that in every way you are very religious. For as I walked around and observed your objects of worship, I even found an altar with this inscription: To The Unknown God. . .

The God who made the world and everything in it is the Lord of heaven and earth and does not live in temples built by hands. And He is not served by human hands, as if He needed anything, because He Himself gives all men life and breath and everything else.¹

Science and Divinity

This is a book about signals of transcendence, about pointers to the Infinite that are coming to us not from mystics but instead through the most recent findings of science. The God of Scripture, of historic Judaism and Christianity, is essentially unknown to modern humankind. The images of an earlier generation have often seemed to portray God as an indulgent grandfather or an angry judge, and neither seems to have any relevance to a tech-
nological society. And science, on its part, purportedly has shown that we are alone in the unfeeling immensity of a universe to which we have come without plan or purpose, a mere accidental assemblage of molecules. But this is not really what the current discoveries of science are telling us. The tight little mechanisms, the clockwork images, the strict following of cause by effect, the tangibility of matter, the gradual evolutionary climb, even our own objectivity, these and many more of the most familiar components of scientism are fading fast. Instead we find an exciting world in dynamic flux, an unexpected universe whose mechanisms are ever more baffling and staggering in their beauty and complexity, where predictability is uncertain instead of deterministic, where matter and energy are interchangeable, and where evolutionary change occurs by leaps and bounds that defy mechanistically simple explanation. And ourselves; what has become of us? The physicists tell us that we are peculiarly situated midway between the immense parameters of the cosmos and the infinitude of the smallest particles of matter and energy. Our arrival on this planet seems remarkable whether looked at in terms of the requirement for a special relationship among the forces controlling elementary particles, or in terms of the mechanisms of biological evolution. What is becoming increasingly obvious is that the evolutionary process that has resulted in humankind is a unique and unidirectional one. And the steps peculiar to Homo sapiens are remarkable in both their timing and their developmental aspects. Most wonderful of all, our journey has just begun.

Phases of Human Development

One of the great benefits of examining the vast development of the cosmos is that by so doing we obtain a sufficiently broad perspective to begin to discern a purpose or plan—an ulti-
mate meaning—in the evolutionary creative process. The alternative, by which science ordinarily functions, is to focus on limited components, detailing the processes and mechanisms involved. The risk of the latter is to see the process but miss the plan. It is for this reason that Sir John Eccles in his Gifford lectures of 1978 begins with the concept of the hierarchical structure of nature, in which higher levels are seen to emerge unpredictably from lower levels. The example he uses is that of the emergence of life, which could not have been predicted even with complete knowledge of all the events of the prebiotic world. As we move on through hierarchies of increasing complexity, life gives rise to humankind, which itself then undergoes a leap to another hierarchy, consciousness. And conscious humankind next bounds to what may be an ultimate hierarchy: spiritual humankind. It is at this level that we see the greatest opportunity for humankind to develop those attributes that will allow the greatest harmony with each other and the greatest communion with the majestic and all-powerful Creator, into whose eternal purposes we fit. Perhaps our supernatural meaning will then be fully perceived. We suspect that if and when that happens, we will have had the holy experience, the vision of the awesome size of God. This book is, we hope, a beginning in that direction.

What we now know of the origins of humankind increasingly hints at the awesome sweep of the Creator’s hand. As Eiseley phrases it, this may be “Nature’s last great play—the play of man.” The role which the central character has assumed is a tremendously challenging one, for it embraces not only the ascent up the evolutionary ladder to a creature with unheard-of powers of mind and intellect, but also the advent of the uniquely human spiritual conception of our Creator in whom we live and move and have our being and purpose.

PHYSICAL DEVELOPMENT

The physical phase of human evolution involves two great leaps upward, one at the point some two million years ago when our
presumed ancestors—the australopithecines—first walked erect, and the second at the advent of cultural humankind—Homo sapiens—with their greatly enlarged brain, perhaps 150,000 years ago. The period over which the brain increased threefold, from its one-pound weight in the hominid ancestor to three pounds in Homo sapiens, was amazingly brief, a time span totally unlike that in any other creature.

THE APPEARANCE OF INTELLECT

The large brain of Homo sapiens neandertal with its enlarged frontal lobes—in modern humans two times greater than in the chimpanzee—made possible an enormous capacity for cultural and intellectual development. Eccles points out that there were also accompanying qualitative changes in the so-called Broca and Wernicke speech centers of the brain that allowed for the development of language. At this point the evolution of humankind turned a corner. No longer was physical size, even of the brain, a significant factor, as indicated by the fact that brain size has even decreased slightly from Homo sapiens neandertal to modern Homo sapiens. What happened instead was a vast and rapid change in cultural development. This was the phase of the intellect. Primitive humans began to plan their hunts, their defenses, their leadership. And these developments occurred just in the nick of time, for the open, grassy savannah was soon transformed into a sheet of ice as glaciers ground their way inexorably from the north. Toolmaking became sophisticated, symbols were developed for recordkeeping and for rituals associated with a developing social order; people became artists. More than two hundred caves with exquisite drawings attest to the artistic sensitivity of prehistoric humankind.

What followed in civilized times was nothing short of miraculous. The rate of growth of our knowledge of our world was phenomenal. The pyramids of Egypt, the architecture of the Greek temples, the Roman aqueducts and roads, the world explorations by the Spanish and Portuguese, the great cathedrals of
the Middle Ages: these were the products of human intellect. In our own century the acceleration of learning continues; indeed, more than half of the scientists who ever lived are alive today. More than half of the discoveries in the natural sciences were made and more than half of the books ever written were written in the last half of the twentieth century. Intellect, like a grand invisible sphere surrounding our planet, has unleashed tremendous creative force in this last one-millionth of universal history.

THE SPIRITUALITY OF HUMANKIND

The most fascinating phase of the human journey is its spiritual development. There is strong evidence that early humans, Homo sapiens neandertals, protected the sick and crippled, buried their dead with reverence, and loved the animals whose pictures adorned their caves. This kinship of human and beast, this respect for both life and death went far beyond mere concern for survival. It suggested that the daily tasks of hunting, caring for the young, preparing food and eating, could be interrupted for events of deeper meaning. But the crucial evidence regarding spirituality concerns the care of the dead, for in a number of instances it has been found that not only were the graves covered with flowers but there were tools and food and a ring of stones surrounding the dead, as though these would be needed in a future life. Thus even 100,000 years ago, humankind anticipated a hereafter!

Humanity’s fascination with a spiritual dimension, a hidden sphere of power, an underlying ordering principle that lies unseen behind everyday events as well as gigantic happenings, has grown and taken on new importance in the ensuing centuries. Science has given us knowledge of the fundamental structure of matter in terms of a plethora of subatomic particles, and knowledge of processes of biology in terms of molecular mechanisms. But each new explanation seems to open up deeper questions, as though we still see only the outline of things and explain our ob-
servations by means of models that only approximate the truth. Indeed, many in science now see the limitations of scientific description and do not presume that scientific descriptions are ultimate truth. For some there is the added concept that the Creator is revealing himself through science, so that the results of science serve as signs pointing to a larger Reality. But people cannot learn all about God by studying nature, because nature is only a contingent and partial manifestation of God. So we look to theology, particularly as it opens itself to the discoveries of science, to extend our perceptions of God. And so the spheres of the spirit may spread and energize new creative dimensions of understanding for future humankind.

**Changing Patterns of Understanding of Creation**

**HUMANKIND'S AWE AND WONDER**

Early humankind had a religious sense, an understanding that behind the awesome phenomena of nature—thunderstorms, floods, great animals, volcanic activity, whatever they saw—there were unseen forces at work. Their reaction has often been depicted as one of stark fear, but a little reflection will show that their experience was more a sense of awe and wonder. As the glacial ice receded under the summer sun, thousands of varieties of flowers bloomed and birds sang. There was a curious harmony in nature and now there was time and intelligence to reflect upon it, not unlike the way some American Indians relate to nature today.

**POLYTHEISM AND GREEK PHILOSOPHY**

Many of the awesome events observed by early humankind prompted their reverence, especially if the particular occurrence
was beneficial for survival. Worship cults arose that centered on game animals and fertility deities. In a sense the worship of God included a pragmatic, materialistic aspect. By the time civilization reached the stage of the Egypt of the pyramids, polytheistic worship was the norm. It was so in southern Asia and in Greece and Rome as well. But the ancient Greeks gave us an additional dimension. They brought us not only the plethora of deities seen by St. Paul in ancient Athens, but also produced some of the most profound philosophical thinkers the world had ever known. The most influential from a scientific point of view was Aristotle, but unfortunately his philosophy and that of most of his fellows was dualistic, separating the human mind from the human body. The mind was seen as transcendent—almost Godlike—and was to be occupied with eternal ideas, such as truth, harmony, goodness, and beauty. The body, however, was of the earth and of less consequence. A tragic outcome of this dualism, in which things intelligible were considered of value but things of sense and feeling were viewed as meaningless, was the radical separation of theory from practice. It was this philosophical position that delayed empirical science until the thrust of Christianity affirmed the value of material things.

MONOTHEISM

Given the strength of polytheism, the monotheism of the Hebrews of the Old Testament is remarkable. Here arose, apparently from a Hebrew raised in the royal family and educational milieu of polytheistic Egypt, a powerful statement of the one God, maker of the heavens and Earth, at once Lord over all the forces of nature and the Creator of humankind but somehow separate from visible reality. The power of that message swept the ancient world, and centuries later in the new form of Christianity conquered pagan Rome and the rest of Europe. In the hands of the Muslim peoples, it swept across northern Africa and the Near East. In the Middle Ages it provided the foundation for
some of the finest meditation and artistic expression our world has known. It also provided the foundation for empirical science.

MODERN SCIENCE

The Initial Openness to Theological Truth

There is strong support for the thesis that science arose as a consequence of a Judeo-Christian theology that viewed God as Creator and Supreme Ruler of nature, one who had not only brought the cosmos into being, but governed it by laws that reflected his faithfulness and consistency. The pioneers of science thus embarked on an unprecedented period of exploration with the attitude that God had given them a world to be understood and appreciated through science in much the way that theologians understood and appreciated God through the study of the Scriptures. This reverential attitude is seen in Francis Bacon, Isaac Newton, James Clerk Maxwell, and the vast majority of their contemporaries. In the twentieth century it was profoundly the experience of Albert Einstein, of naturalist Louis Agassiz, and of physicist Werner Heisenberg. It is also the experience of neurophysiologist Sir John Eccles, and of astronomers Alan Sandage and Owen Gingerich.

The expectation of the early scientists that God would reveal himself increasingly in their endeavors was amply realized. With wonder they perceived intricate design and mathematical lawfulness everywhere they looked. And the result was a worship experience, a revelation of the profound nature of the vast universe, their own finitude, and the awesome size of divine accelerating creativity.

It is perhaps no better stated than in these words from Pascal’s Pensees, written by the great scientist-theologian in 1657:

Let man then contemplate the whole of nature in her full and grand majesty, and turn his vision from the low objects which surround him. Let him gaze on that brilliant light, set like an eternal lamp to illumine the universe; let
the earth appear to him a point in comparison with the vast circle described by the sun; and let him wonder at the fact that this vast circle is itself but a very fine point in comparison with that described by the stars in their revolution round the firmament. But if our view be arrested there, let our imagination pass beyond; it will sooner exhaust the power of conception than that of supplying material for conception. The whole visible world is only an imperceptible atom in the ample bosom of nature. No idea approaches it. We may enlarge our conceptions beyond all imaginable space; we only produce atoms in comparison with the reality of things. It is an infinite sphere, the center of which is everywhere, the circumference nowhere. In short, it is the greatest sensible mark of the almighty power of God that imagination loses itself in that thought.

Returning to himself, let man consider what he is in comparison with all existence; let him regard himself as lost in this remote corner of nature; and from the little cell in which he finds himself lodged, I mean the universe, let him estimate at their true value the earth, kingdoms, cities, and himself. What is a man in the Infinite?

But to show him another prodigy equally astonishing, let him examine the most delicate things he knows. Let a mite be given him, with its minute body and parts incomparably more minute, limbs with their joints, veins in the limbs, blood in the veins, humours in the blood, drops in the humours, vapours in the drops. Dividing these last things again, let him exhaust his powers of conception, and let the last object at which he can arrive be now that of our discourse. Perhaps he will think that here is the smallest point of nature. I will let him see therein a new abyss. I will point for him not only the visible universe, but all that he can conceive of nature's immensity in the womb of this abridged atom. Let him see therein an infinity of universes, each of which has its firmament, its planets, its earth, in the same proportion as in the visible world; in each earth animals, and in the last mites, in which he will find again all that the first had, finding still in these others the same
thing without end and without cessation. Let him lose himself in wonders as amazing in their littleness as the others in their vastness. For who will not be astounded at the fact that our body, which a little while ago was imperceptible in the universe, itself imperceptible in the bosom of the whole, is now a colossus, a world, or rather a whole, in respect of the nothingness which we cannot reach? He who regards himself in this light will be afraid of himself, and observing himself sustained in the body given him by nature between those two abysses of the Infinite and Nothing, will tremble at the sight of these marvels; and I think that, as his curiosity changes into admiration, he will be more disposed to contemplate them in silence than to examine them with presumption.5

Given this attitude among its practitioners, the first centuries of Western science were euphoric. People explored the creation with expectation and wonder, understanding that everything they observed was under the hand of Providence and thus contingent upon the divine will. And they were humbled before the size of God.

The Shift to a Conflict with Theology
Although the pioneers of science deemed nature an object worthy of study, there were others, in theology, who still remained influenced by the Greek dualistic ideas, which placed the Earth and things of sense and feeling below the considerations of mind and eternity. This worldview, which emphasized the perfection of God and heaven and Earth’s baseness continued to be a source of friction between science and theology.

But this divisive force was joined in the seventeenth century by a second worldview, championed by two great scientists, Descartes and Newton, which emphasized God’s immutability or unchanging faithfulness. Though both these great thinkers had no intention to undermine theology, the effect of their emphasis on God’s timeless immutability was to separate his activity