

# Unorthodox Science as a Popular Activity

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In *Through the Barrier*, privately published in 1977, Edgar A. Ostrander, a civil engineer residing in Wading River, N.Y., brings together nine papers written over a decade. Therein he develops in fascinating detail (much of it expressed mathematically) a new “mental picture of the entire UNIVERSE,” one which will “bring all scientific observation into a consistent whole for the first time.” The new picture, which he calls the “O’Hypothesis,” presents a great many surprises—for instance, that the nucleon *is* the galaxy *is* the universe, that any one nucleon (or galaxy) is every other nucleon (or galaxy) and that the space between the galaxies is not space, but time. In the final paper, the author gives a new reading, in the light of the O’Hypothesis, of some ancient Mayan manuscripts.

Ostrander is presently trying to reduce to practice the antigravity implications of the O’Hypothesis. He pledges to proceed cautiously, for “inherent in such procedures is the possibility of a gravitational bomb which could instantly effect [sic] fantastic areas with huge destructive stresses.” A misstep, he warns, might even generate a black hole which could drag in the whole universe.<sup>1</sup>

Archie H. Flory of Gilboa, N.Y., has his own views on the nature of things. Working in a tradition made famous by Lucretius, Mr. Flory conveys these views in verse form, in a 1978 broadside poem entitled *The Quantum Electromagnetic Theory of the Unified Field: An Explanation of the Creation*. In an admirably short space the poem not only gives a vivid and unique account of a very large subject but throws off some intriguing suggestions—for example, that the squaring of  $c$  in Einstein’s famous equation hints “that something is much faster by far than light!” Eschewing to go beyond an account of how creation occurred, Flory nonetheless ends his poem with the hope that “Perhaps some day we’ll comprehend the elusive reason why/We speed through time on spaceship Earth in a wondrous starfilled sky.”<sup>2</sup>

*The Imminent Shift of the Earth’s Axis* is the ominous title on the handsome cover of a 1971 treatise proffered by Emil Sepic of Eureka, Cal. Not wishing merely to herald the forthcoming catastrophe (due in another 20 years or so), he explains how the gyroscopic motion of the earth sets up a secondary orbit which interacts with its main orbit and thereby initiates a periodic axial shift. Because orthodox astronomers have completely overlooked these complexities of the earth’s motion, which he illustrates in many careful drawings, neither they nor the rest of us are aware of the peril. Sepic believes that, if governments would unite in concerted action, the axial shift could be “prevented with projects [unspecified] of unheard-of

proportions." But he doubts that governments will do anything. When the time of the shift is at hand, he advises the reader to move "far inland, in the middle of large continents, away from the oceans and other large bodies of water, and the higher the better."<sup>3</sup>

A different earth feature is the focus of interest of Captain Tawani W. Shoush of Houston, Mo. Captain Shoush is the principal officer of the International Society for a Complete Earth, which holds that the earth is hollow and can be entered through openings at the poles. The Society also believes that Admiral Byrd may actually have flown in accidentally, as is suggested in the Society's booklet, *A Flight to the Land Beyond the North Pole, or Is This the Missing Diary of Admiral Richard Evelyn Byrd?* In a form letter, sent by Captain Shoush, the main scientific mission of the Society is set forth: to enter either the north or the south polar hole by dirigible. In addition to learning more about an unknown world, members expect to make contact with denizens, "a blond, blue-eyed, super-race," and work with them to help surface-man (who has "lost his way") secure world peace.<sup>4</sup>

Two other Midwesterners, Mary and Dean Hardy of Allegan, Michigan, during the past ten years have delved deeply into a mysterious energy form. They report their findings, partly scientific and partly occult-religious, in their 1977 book, *Pyramid Energy Explained*, written in collaboration with their technical-psychical consultant, Kenneth Killick. The Hardys tell how they were directed by mysterious UFO visitors, who appeared every Sunday night, to design and build a large, walk-in pyramid (entered through a tunnel), which they were led to understand would somehow be of help in the treatment of their son's dyslexia. When they were done, they found they had constructed a "giant capacitor" or "resonance chamber" which created a "standing columnar wave," functioned as an "interdimensional communication center," refocused light into its "sub-atomic particles," and could help people change their "auras" for the better. This knowledge led, in turn, to a new understanding of one of the world's oldest mysteries, the Great Pyramid of Giza. The Hardys now propose to set up a pyramid research center. They give guidance in their book to others who also may wish to build and experiment with large pyramids, apparently dangerous enterprises if not done properly.<sup>5</sup>

A fascinating unsigned report, sold in 1979 by a J. Mulligan of Portland, Oregon, describes some experimental studies of "paranormal flowing energy." This "subtle energy" apparently pervades all substances and can be discharged to good effect by some simple massage techniques. For instance, the unnamed investigator reports that a towel massaged and then applied to the scalp two or three times a day can thicken the hair and restore color. Appropriate massage techniques can also cause laundry detergents to yield a brighter wash, razor blades to give a better shave and vitamin capsules to increase their potency. However, because very little is yet known about flowing energy, its use involves possible dangers, against which the investigator repeatedly warns. Flowing energy can regenerate tooth excavations, for instance, but may cause fillings to fall out before full regrowth has occurred. The report contains an emphatic warning to men: flowing energy "may cause the penis to grow, causing it to become too large

in some men.”<sup>6</sup>

Giant Rock is a mere speck on the California desert, yet it nonetheless is the site of what may be the most curious applied energy research going on in the United States today. There, from 1952 until his death in 1978, George W. Van Tassel, local airport manager, directed his attention to the process whereby human cells might be rejuvenated and aging retarded. Following seven years of bench research, Van Tassel began the construction of the “Integratron,” a domed, four-story machine/building which looks much like an observatory and has a unique Chinese puzzle construction using no nails, screws, nuts or bolts. In his 1976 book, *When Stars Look Down*, Van Tassel described the Integratron as an “electrostatic generator” in which are simultaneously applied two well-known and basic electro-magnetic principles. “The only new principle in this machine is that we control the resonance, and polarity reversal interruptions, through a time function that creates a ‘time zone’.”<sup>7</sup>

Over the decades he reported his progress in his serial publication, *The Proceedings of the College of Universal Wisdom*. His life ended just as his years of dedicated labor neared their fruition, but his widow and other colleagues at the College of Universal Wisdom are continuing his work. In a recent communication Mrs. Van Tassel writes that the Integratron is “95% mechanically completed,” and so it should be ready for testing soon.<sup>8</sup> Once it is in safe working order, the machine will be able to apply the rejuvenation process to as many as 10,000 people a day. If everything goes as planned, the Integratron may also have important uses for time travel, the generation of anti-gravity forces, and communication with extra-terrestrials.<sup>9</sup>

What have I been describing? These are a mere handful of examples, drawn almost at random from my bulging files and sagging book shelves, of a large number of fascinating projects underway at the nether levels of science. Although the projects vary enormously in rationality and plausibility, they share two main characteristics: 1) they are carried out by practitioners who lack conventional scientific credentials and who work outside the various communities of scientific professionals, and 2) the projects employ concepts and methods and arrive at discoveries which are at great odds with those accepted by the established scientific communities.

There will, of course, be some critics prepared to argue that these characteristics establish a strong presumption, or even a conclusive judgment, against the validity of this scientific work. My concern here, however, is not to evaluate any of the claims for or against this work (or any portion of it) but only to examine such scientific activity as an element of American culture. Such a widespread popular activity deserves a closer look in its own right, even if (or especially *because*) it falls outside the boundaries of conventional science.

### The Ubiquity and Hardiness of Unorthodox Science

It would be helpful to have a term which reflects the main features of this special kind of science, distinguishes it from conventional science, and

by avoiding negative connotations, holds in abeyance the question of its scientific merits. But a completely satisfactory term is not easy to find. The too-freely used, pejorative term “pseudoscience” doesn’t fill the need, nor does “fringe science,” a term also suggesting kookiness. I resort to “unorthodox science” throughout but regret that neither it nor any similar term—heretical, unconventional, dissenting, alternative, or deviant science—quite captures the popular flavor and widespread incidence of the science under study. “Popular” or “grass roots” science might do the job in these last respects, but each fails in another way. Neither, that is, suggests the other principal feature of this science—its frequent iconoclastic challenge to orthodox science.

We are not dealing here with the familiar kind of amateur science that often results in modest contributions to the world’s store of knowledge—the discovery of an asteroid, say, or the description of a new species of beetle. Rather, the scientific activities under review usually have important, sometimes even shattering, implications for our customary understandings of the world, for the very structure and content of the specialized sciences, and for our notions about how knowledge of the world is to be acquired. Significant revisions of scientific thought or procedure were involved in all the examples given above and are the explicit or implicit goals of most of the unconventional science under scrutiny. New scientific paradigms are necessarily conveyed in every treatise which argues, for instance, that the curvature of the earth’s surface is concave, not convex; that ancient astronauts produced human intelligence on earth by mating with the most advanced (no doubt, also, the most comely) apes; that space is Euclidean and  $c$  is not an upper limit on velocity; that anti-gravity guns were used to lift the blocks in the construction of the Egyptian pyramids; that plants are far more sentient than animals or people; that most events in the universe are effected by orgone energy exchanges; that Venus was once a comet near the earth, from whose tail dropped hydrocarbons (manna) to feed the embattled Israelites; or that the heavens revolve around the earth.

How widespread and plentiful is unorthodox science? Very, if my large holdings of materials, the ease with which I have assembled them and their widely scattered points of origin will be admitted as rough measures. I even venture to speculate quantitatively. Drop the point of a compass almost anywhere on the map of the United States (or, for all I know, of any other scientifically advanced country) and draw a circle with a radius to the scale of, say, 25 miles. Within the circumscribed area, I hazard, you will find at least half a dozen unorthodox scientists. Each may be laying plans for an expedition to photograph Sasquatch or the Loch Ness monster, working out the principles of the “diamagnetic” propulsion systems of UFOs, experimenting with Kirlian photography and the detection of auras, developing imaginative explanations of gravity, combing the Bible to find evidences of ancient astronaut encounters, perfecting a new “unified field theory” of the universe, or carrying out any of a multitude of equally fascinating scientific projects.

Probably the amount and variety of unorthodox science, while always great, have actually increased in recent years. Rough evidence for this

conclusion can be gotten by comparing the situation today with what is described in Martin Gardner's *Fads and Fallacies in the Name of Science*.<sup>10</sup> In spite of its pejorative title and treatment, Gardner's book was an excellent survey of the fields of American unorthodox science in the 1950s. It is most revealing to find, then, that virtually all areas of unorthodox science then extant which Gardner discussed, including some which he thought were near or in the grave, are thriving today—and so are many new ones.

For instance, the hollow earth theory, as we now know, was not put to rest by Admiral Byrd's polar flights, as Gardner thought, nor have photographs of the earth taken from the moon killed off the Flat Earth Society. Far from being "burnt out," as Gardner supposed, L. Ron Hubbard's "dianetics," with its E-meters and novel notions of "engrams," "clears," and "theta beings," soon took on new vigor and is today subsumed in the thriving world-wide religion of Scientology. Speculation about flying saucers was just getting on its legs as Gardner wrote; it has since galloped off as the science of ufology. Immanuel Velikovsky went on to write more volumes documenting his thesis of the earth's cataclysmic encounter with Venus in historic times. There is now even a Velikovskian organization, the Cosmos and Chronos Foundation; it sponsors a very handsome and learned journal, *Kronos*, which is given over to publishing research articles by Velikovskian scholars, of which there seem to be many.

Chiropractic not only has continued to pick up devotees, but has entered a new research phase; under Congressional mandate, chiropractic research could for a while even qualify for NIH funds. Naturopathic medicine also has a growing clientele, and new schools spring forth to meet the demand for practitioners. Dr. Wilhelm Reich, discoverer of "orgone," died shortly after the period of Gardner's survey, but his pioneering work is carried forward by the American College of Orgonomy; new research findings are reported in its semi-annual journal.

The biblical account of creation, which was thought to have been killed by ridicule at the Scopes trial, has been brought to life again as "scientific creationism" and, in this up-to-date guise, pondered sagaciously by several state legislatures for possible required inclusion in school biology courses. Many other old favorites—for instance, Atlantis and Lemuria, the secret meaning of the Great Pyramid, ESP, dowsing—continue strong among the unorthodox scientists. And, of course, some areas of inquiry—perpetual motion, squaring the circle, trisecting the angle, anti-gravity—have an appeal that is eternal.

And so it goes with most of the remaining areas of unorthodox science covered by Gardner. Add to Gardner's account all the areas of unorthodox science which have since come to prominence—ancient astronauts, Kirlian photography, acupuncture, cancer cures from apricot pits, the "secret life" of plants, mutology (i.e., the study of cattle mutilations), pyramid power, new diet and food discoveries, the Bermuda triangle, cryptozoology, T.M. (especially discovery of the "Maharishi Effect"), scientific proof of immortality, psychokinesis, biorhythms, the search for Noah's Ark—add these and many others, I say, to what continues strong from the past and the case seems conclusive: unorthodox science has been one of the growth

industries of our time. Never before, probably, have there been so many unusual scientific activities going on in the studies, basements, backyards, or garages of humble abodes. Never before have so many research institutes, expeditions, international conferences, specialized journals, learned societies, promotional associations, even "universities," been given over to the investigation of strange phenomena or the promulgation of novel scientific doctrines.<sup>11</sup>

As it happens, there is another development suggesting the current vitality of unorthodox science. Gardner discussed an unwritten understanding which had developed over the years among major publishing houses to act "responsibly," i.e. to refrain from publishing works which ran glaringly athwart mainstream science. Thus Macmillan's publication in 1950 of Velikovsky's first book, *Worlds in Collision*, set off a great controversy: had the unwritten rule been broken? Dr. Harlow Shapley of Harvard and some other distinguished American astronomers thought so, and there was talk of a boycott of Macmillan's science text books if Macmillan didn't sober-up. In face of the controversy, and even though the book was a best-seller, Macmillan sold its rights in *Worlds in Collision* to Doubleday (which had no textbook division). Gardner was obviously troubled by the issues raised in this incident: he certainly did not favor press censorship but did see the concerns of the critics. In the end, he seemed to hope for a shoring up of the temporarily-breached, self-imposed "code of responsibility" by the publishers, so that no more works like *Worlds in Collision* would be given the imprint of a major publishing house.<sup>12</sup>

How unrewarded a hope! The works of most unorthodox scientists continue to be published privately, of course, but a large number are not. Instead, publishers seem to vie with one another today for rights to publish the kinds of works that appalled Gardner. Consider, for instance, the following titles and publishers: *The Secret Life of Plants*, Harper & Row, 1973; *Gods from Outer Space*, Putnam, 1970; *Gods of Aquarius: UFOs and the Transformation of Man*, Harcourt Brace Jovanovich, 1976; *Window to the Past: Exploring History through ESP*, Doubleday, 1969; *First Man, Then Adam*, Simon & Schuster, 1976 (a work arguing that the Garden of Eden may have been a space ship which crash-landed on earth).

The lesson is clear enough: for the publishers, there's money in it. There is today, probably more than ever before, a huge and irresistible market for outstanding works of unorthodox science. Today's unorthodox scientist has excellent reason to hope that, like Immanuel Velikovsky or Erich von Däniken, he too will be brought to public notice by a discerning major publisher.<sup>13</sup>

#### Orthodox Science vs. Unorthodox Science

But these increases in the amount of unorthodox science, in its variety, and in the public's taste for it have not been matched by any corresponding rise in appreciation by the practitioners of orthodox science. For the most part, the latter still pay little heed to unorthodox science, let alone take it

seriously. This neglect sometimes enrages those unorthodox scientists who view themselves as full partners in the enterprise of science. The literature of unorthodox science contains some complaints about the indifference shown by the orthodox scientists. Understandably, the unorthodox scientists are proud of their work, and being ignored hurts.

This situation may be changing slightly. A few defenders of orthodox science, alarmed by the growing popularity of some of the fields of unorthodox science, now feel a need to oppose them. Thus there have been some recent, book-length indictments brought against the ancient astronauts, flying saucers, and the Bermuda Triangle. In recent years, major panels at national meetings of the American Association for the Advancement of Science have been devoted to UFOs and the theories of Velikovsky. Prestigious science journals have carried articles which have replied in painstaking fashion to the claims made for the sentience of plants and offered an optical-illusion explanation for the Loch Ness monster. What is interesting about these efforts is that they proceed, not by the hurling of anathemas, but by the summoning of analysis, argument and evidence. The contrast with the treatment given Velikovsky in the 1950s is striking.

One important measure of the new attention being addressed to unorthodox science is the appearance of *The Skeptical Inquirer*, a journal established in 1976 by the Committee for the Scientific Investigation of Claims of the Paranormal for the purpose of countering what the Committee believed was a strong wave of pseudoscience running through the U.S. Its name notwithstanding, *The Skeptical Inquirer* is a debunking publication; the articles it carries, although they may be about various topics of unorthodox science, reveal a commitment to the defense of orthodox science. But into the fray in 1978 stepped *The Zetetic Scholar*, a genuinely skeptical publication. This journal opens its pages to pro and con discussions of many alleged anomalies and unorthodox inquiries, some of which the founder-editor, Professor Marcello Truzzi of Eastern Michigan University, is even willing to call "protosciences." *The Zetetic Scholar* has carried open-minded articles and dialogues on Velikovsky, UFOs, parapsychology, "canid communications," "scientific" astrology, and other unconventional topics.<sup>14</sup>

Thus at least some of the unorthodox scientists seem at last to be getting the kind of attention which they claim to have wanted from the orthodox scientific community, even though this attention is certainly not the same as an open-armed welcome or an acceptance of unorthodox claims. If the unorthodox scientists are handled roughly, at least they are no longer getting a cold shoulder. But this is true, of course, only for a certain number of the "big names" in certain of the fields of unorthodox science. Most unorthodox practitioners still suffer from the oblivion that has traditionally attached to the practice of science outside the circle of orthodoxy. When they send their papers for comment to orthodox scientists, the latter often consign the papers to their curiosa files. Editors of scientific journals may be tempted to drop them in the wastebasket.

Why, then, would anyone wish to practice unorthodox science? Why,

moreover, is it riding high in our time? Gardner had some ready answers to these questions. In his view, unorthodox science is a parasite, drawing sustenance from orthodox science's success, influence and prestige in the modern period. He foresaw that the major scientific advances underway in the post-World War II era would continue to feed a luxuriant growth of the "fads and fallacies" which are, he believed, at best a nuisance or joke and at worst a menace—not necessarily to the health of science, but certainly to the health of public support and understanding of science. As for the motives of the unorthodox scientists, Gardner traced these back to what he took to be tendencies of their personalities toward *paranoia and megalomania*.<sup>15</sup>

A part of what Gardner had in view were protestations by some of the unorthodox scientists about the greatness of their works and about the poltroonery of orthodox scientists in resisting this greatness. Some of the unorthodox scientists, in fact, deem the orthodox scientists to be dolts, light-years behind the unorthodox brethren. Alfred Lawson, discoverer of the cause of movement (also of sex) in suction, pressure and "penetrability," provides an illustration. Compared with his own scientific work, Lawson concluded, "the lessons from Copernicus, Galileo, and Newton relating to universal laws are like school boy information."<sup>16</sup> (Lawson's case is atypical in at least one respect, however. Much more frequently, Galileo has a hero's standing among unorthodox scientists. After all, he too suffered persecution at the hands of orthodoxy.)

But Gardner's account of the sources of unorthodox science, although it has something to it, doesn't tell the whole story, and his account skews the story in a way that is not completely fair. Science doubtless has for the unorthodox scientists many of the same appeals which it has for orthodox scientists. With the latter they appear to share an intellectual curiosity about the mysteries of the world, an urge to clear up the mysteries and to make significant discoveries, a passion for finding scientific explanations of things—that is, for discerning and expressing the order in nature, and an understandable wish to shine and be accorded recognition as persons of scientific genius. In their practice of science, the unorthodox scientists are distinctly out of step with their orthodox brethren, but it is very hard to conclude that they are thereby pathogens threatening the health of science. Nor is it so clear that they cause, rather than merely find advantage in, any doubts which the public may have about orthodox science. As for the unorthodox scientists' frequent complaints against orthodox scientists and their occasional brayings of their own greatness, these may sometimes boil up from the frustrations of repeated rejection and enforced scientific isolation. What Gardner cites, then, as evidences of their personal pathologies may in some instances be as much the consequence as the cause of their having followed an unorthodox path. We ought at least to concede that it is a hard path they have chosen to follow and seek further for the specific sources of their attraction to unorthodox science.

The very presence of the unorthodox scientists is, as Gardner suggests, a tribute to the high standing and appeal of science in our time. Science is, indeed, a "glorious entertainment" and a prestigious activity, and the unorthodox scientists don't want to be left out. We might be tempted, then,



to attribute the idiosyncracies of their work to nothing more than enthusiasm, combined with lack of specialized scientific training.

But there is more to the matter than this. For all their relish for science, the unorthodox scientists are frequently also harsh critics of certain features of its current orthodox practice and aims. Their criticisms are sometimes clearly stated but, even when they are not, it is not hard to infer them from the unorthodox scientists' work. They are of two main types, both of which have to do with the alleged failure, even the inherent inability, of orthodox science fully to comprehend the world as it really is. One line of criticism traces science's problem to a deficiency of imagination; the other finds the heart of the problem to be an inability of orthodox science to "stick to the facts," an alarming proclivity to let the imagination roam too freely in pursuit of phantasms of the mind.

In striving to overcome these alleged deficiencies, the unorthodox scientists produce work which, in turn, can be analyzed under two broad headings defined by the apparent aims or tendencies of unorthodox science. One aim, linked to the first type of criticism above, is the creation of a more capacious science holding within its mesh phenomena neither countenanced nor perceived by orthodox science. But the second aim, corresponding to the second line of criticism, is the reducing of unduly complex and fragmented orthodox science to unity, to elementary fidelity to the facts, and, above all, to comprehensibility by laymen.

The two categories of criticism of orthodox science, each coupled with a distinctive corrective practice of unorthodox science, make the unorthodox scientists' case for the value of the scientific outsider. Therein presumably lies much of the justification for the decision to tread the path of unorthodoxy. If we are to understand the sources, character and meaning of unorthodox science, then, we must take a closer look at what the unorthodox practitioners state or imply are orthodoxy's shortcomings and at how their efforts to overcome these shortcomings result in two distinctive tendencies of unorthodox science.<sup>17</sup>

### Unorthodox Science as Unleashing of the Imagination

The first line of the unorthodox scientists' critique of orthodox science holds that the latter is simply not imaginative or fearless enough to deal adequately with all that is in the world. Far from being a collection of independent thinkers who are open to all the possibilities and who will follow Truth where it leads, orthodox science, runs the charge, is a conservative community exerting powerful group pressures on its members and insisting on dull conformity to very narrow, "party line" ways of looking at the world. Subjected to only certain permissible kinds of scientific education and practice, orthodox scientists acquire a "trained incapacity" from which the unorthodox are entirely free, the critics suggest. Taught to think only in a disciplinary way, the orthodox scientists are not able to leap across disciplinary boundaries to exploit discoveries made in other fields. Because the scientific imagination has been so abused in their training, orthodox scientists are not even well-equipped to meet puzzling anomalies and long-standing problems, or to handle in an imaginative way

exciting new discoveries, occurring in their own disciplines. These, at least, are the charges suggested in some of the literature of unorthodox science.

Erich von Däniken illuminates nicely the urge among many unorthodox scientists to break down the walls of torpor allegedly enclosing orthodox science in order to allow a more luxuriant growth of imagination in science. He writes:

Our research into myths and legends, and the interpretations of archaeology are—as far as they concern prehistory—are [sic] tied up in a straitjacket of preconceived views. Eyes have grown blind, ideas become dead. Science says that it cannot accept imaginative solutions because they have no empirical or demonstrable foundation. But now serious conclusions become more and more fantastic every day, while at the same time the disparaged fantasies acquire a firmer background. Three premises are the basis of all research: freedom of thought, a gift for observation, and a sense of connections. Laymen can make use of them, too.<sup>18</sup>

Having far less deference for orthodox science than does von Däniken, some unorthodox scientists would doubtless go farther to contend that gifted laymen can make *better* use of the three premises than can the stick-in-the-mud, unimaginative orthodox scientists.

As von Däniken suggests, it is orthodox science itself which sometimes lays the ground work for the emergence of unorthodox science by making “fantastic” discoveries and finding new evidence for “disparaged fantasies.” But orthodox scientists refuse, in his view, to see the full implications of these advances in scientific knowledge; they stubbornly stick to received ideas and familiar procedures and paradigms, even when new findings suggest that new ideas, paradigms and procedures are needed. If progress is to be made, he hints, it often will require the intrusion of outsiders, of laymen, whose minds are not burdened by orthodoxy and whose imaginations are free to discover previously unsuspected connections among things.

Thus it took a von Däniken to see the implications for archeology of the reality of space travel and of the increasing conviction among orthodox scientists that we are not alone in the universe. It was von Däniken who called upon the archeologists and the students of ancient myths and literatures to re-examine their materials with a “space outlook.” When none responded, it was von Däniken and other like-minded lay researchers who pursued the re-examination alone in a torrent of books. And lo! their freely-roaming imaginations, their “space eyes,” found evidences everywhere of the arrival on earth in the distant past of gods in space ships. In similar manner, other partisans of unorthodoxy let their imaginations wander through the empyrean realm of black holes, quasars, quanta, and quarks, the “big bang,” curved space, time dilation—that is, among all the surprising and mysterious concepts of orthodox science—and attempt to tease out new theoretical possibilities and “connections” which their duller orthodox colleagues might otherwise miss. They usually succeed.

Often, of course, it is not the latest findings of orthodox science which provide the stimulus to unorthodoxy, but rather the oldest standing mysteries and puzzles, the problems which have stumped the orthodox scientists for centuries. The nature of gravity is such a problem. How many

minds brimming with imagination and seized by a passionate but untrained interest in physics can turn away from this challenge? Not many, if we are to judge from the many treatises on gravity (and also, of course, on anti-gravity) which have poured forth from the mimeograph machines and village job presses of the United States. Perpetual motion is another example. The professional scientists threw up their hands on it many years ago, lamely retreating behind the Law of Conservation of Energy and leaving the field clear for cultivation by persons having imaginations untrammelled by orthodox scientific training.

Probably most challenges to orthodox science have been based, however, on the premise that orthodox science simply is not expansive enough to comprehend everything in the world. Although, in principle, orthodox science holds that all is open to investigation, still, in practice, it inevitably constricts, as to subject matter, method and logic of explanation. Unorthodox scientists break through these constrictions and insist on a practice of science which will entertain wider possibilities.

As one result, an enormous amount of unorthodox science centers on the study of alleged anomalies—that is, on phenomena (e.g., UFOs, cattle mutilations, the yeti) which may exist but whose existence is not yet conclusively established and not generally taken seriously by orthodox scientists. Going yet farther in their quest for mysterious phenomena, the unorthodox scientists often bring back accounts of strange energies (e.g., orgone, tachion, emanations underlying dowsing, pyramid energy, vegetable energy, the Maharishi Effect, human auras) which conventional science has consistently failed to discover.<sup>19</sup> Then, of course, there are the psychic phenomena (e.g., telepathy, precognition, psychokinesis), which orthodox scientists seem to have such a hard time comprehending within their conception of science and their view of the way the world works. Interwoven with most of the above are unorthodox studies of the ancient world (e.g., ancient astronauts, Atlantis and Lemuria, the “meaning” of the Great Pyramid) which seek out the “lost” scientific knowledge of our ancestors and generally find more surprising events occurring in the ancient world than the orthodox scientists could ever think possible. Finally, there are all the other mysteries of the earth (e.g., undetected axial wobbles, ancient cataclysms, the Bermuda Triangle, the hollow earth, unknown races living in caverns in the earth, the Great Flood and Noah’s Ark) which have been overlooked or ridiculed by orthodox science.

In sum, the unorthodox scientists seem to be saying that the world is a far more mysterious place than orthodox science will allow, or, what is the same thing, that modern science has paid a stiff price for its adoption of procedures and paradigms that unwarrantedly restrict what comes within the purview of science.<sup>20</sup>

It is worth recalling here Max Weber’s discussion of the “disenchantment of the world” which accompanied the growth of secularism, the “rationalization” of modern life, and, especially, the development of modern science.<sup>21</sup> It is too late in the game to abandon science, of course, and the unorthodox scientists certainly would not propose to do so; for all their criticism of its modern practice, they hold

science in high esteem. Nonetheless, a surprising amount of their work, and their implicit criticism of orthodox science for its narrowness and lack of imagination, might be interpreted as efforts to *re-enchant* the world *through* science. They would bring back into science's ken the monsters, giants, wee people, dread cataclysms, Biblical miracles, strange lands, fabled events, spirit realms, mysterious forces, gods from space, philosopher's stone, sorcerer's power, and other ancient mysteries that once upon a time were exorcised from science and by science. Theirs is, in other words, a fascinating apparent effort to be "for" science and yet, at the same time, against its "impoverishing" impact on our modern world view.

Strictly considered, of course, enchantment through science is an impossibility. If the goal of science is to seek explanation through general law, then no sooner will an anomalous phenomenon be established than the effort will be made to explain it in terms of existing theory or to revise theory to accommodate it. But explanation by scientific theory is the essence of disenchantment. In this manner, meteorites, disease and many other phenomena became disenchanted in relatively recent times. So may the yeti, the Loch Ness monster and flying saucers, if hard and sufficient evidence of any of them is ever obtained. Here is a definite risk for these and many other phenomena of interest to unorthodox science. On the other hand, there are several things which work against the risk of disenchantment and buttress unorthodox science's appeal to those seeking enchantment.

In the first place, how likely is it that incontrovertible evidence of any of the alleged anomalous phenomena will come in very soon? Claims of such evidence have poured in for many years in some areas of inquiry, but they seem always to be vulnerable to challenge, and the controversies over the claims and their interpretation rage on. Some of the controversies would yield if, for instance, the remains of some of the advanced technology of the ancient astronauts could be found, or if Big Foot were captured, so that there was more to work with than just his footprint, or if the Loch Ness monster could be netted and brought up for study, or if at least one of the elusive flying saucers would crash and thereby give us a chance for close-up scrutiny under controlled conditions. But who will bet on any of these events happening in the near future? The vast majority of these alleged anomalies will probably remain for a long time to come in the zone of the not confirmed and not disprovable. This is a zone in which science and enchantment can very comfortably co-exist.

But if we examine carefully the claims, and the implications of the claims, of many of the unorthodox scientists, we find that much of their work is scheduled, by design, to remain forever in the zone where science, the enchanted, and even the transcendent meet. One line of thought in ufology, for instance, holds that UFOs are probably not extraterrestrial, but "meta-terrestrial"; that is, they pop into our world from another "dimension" of existence. If this is so, then it is clear that this is one piece of scientific knowledge which cannot possibly disenchant its subject matter.

Think for a moment, also, about the full implications of the "scientific" proof of the Great Pyramid's alleged Christian prophetic meaning, or of the

doctrine of "scientific creationism," or of the "scientific" proofs of immortality, or of Velikovsky's "scientific" confirmation of some of the providential miracles benefitting the ancient Hebrews, as chronicled in the Old Testament. In a reversal of the long-term trend, science here comes to the service of traditional religious views, including the view that there is a transcendent reality beyond science.

For a final example, consider what is entailed in the psychic phenomena—for instance, in precognition. Assume that the existence of precognition in some persons is established in a manner that will convince most skeptics. What then? For science, the next step would be to posit a physical basis for the phenomenon, some physical link (such as electromagnetic radiation) between present minds and—future events? But this surely lies beyond orthodox science's capacity—which fact may explain why many students of psi (including, apparently, the most famous of them all, J.B. Rhine) have been enthralled by the psychic phenomena. These may be approached scientifically, as fit subjects for scientific inquiry. But the successful outcome of such scientific inquiry would be to show that there are some things science (at least as we presently understand it) can't explain.<sup>22</sup>

In sum, in these areas of research, and in others not mentioned, science is used to establish the existence of other realms into which orthodox science can't go. If the wonderful things and mysterious forces residing in those realms can ever be known at all, it will be only through radically altered scientific conceptions and procedures<sup>23</sup> or perhaps through religious revelation, occult or mediumistic methods, "expanded consciousness," or some other means of putting oneself "in tune with the Infinite." In other words, science—sometimes hailed by its devotees as "new age" or "borderland" science—goes a very long way not to disenchant but to re-enchant the world.

### Unorthodox Science as Leashing of the Imagination

If for many unorthodox scientists orthodox science is too narrow and excludes too much, for others it is too hospitable to wild theoretical development, too little disciplined, too ready to concoct and then doggedly stick with "fantastic" conceptualizations which have led orthodox science down back alleys into dead-ends. The first group finds a deficiency of imagination in orthodox science; the second group, we might say, finds imagination run rampant. The one group calls for a loosening up of science, for a renewed recognition that "there are more things in heaven and earth than are dreamt of in your philosophy," but the other group is appalled by what it sees as orthodox science's lack of intellectual restraint and tough-mindedness. These critics seek to tighten up orthodox science, to dephlogisticate it, to supply it with new "rational" foundations which will bring orthodox science back to simplicity, comprehensibility, and fidelity to the facts of observation.

Although many of the conceptions of orthodox science are an outrage to good sense and a burden to science—so these critics claim—they are rigidly

enforced by group pressures maintained within the orthodox fraternity. In the face of this enforced commitment to conventional wisdom, new experimental findings and observations, these unorthodox scientists assert, can be accommodated only by the elaboration of already dubious theory into even more questionable realms of the fantastic and the incomprehensible. In result, the argument continues, so much of twentieth century science has acquired a byzantine, complicated structure in place of the clean, simple structure which ought to be the goal of science and is needed to represent the simplicity of nature accurately.

The list of allegedly bogus concepts and imaginary entities which have been cited for bringing woe to the various branches of science is very long. Chiropractors and naturopaths, for instance, would each put orthodox medicine's house in order with a much simpler pathology, as well as a more efficacious therapeutics. Scientific creationists, for their part, propose to overcome biology's problems by jettisoning natural selection and a related red herring, the mutability of species. Geocentrists and flat earthers continue to flail at the modern astronomical and geological heresies which so defy common sense and everyday observation. Numerous current critics of Newton would solve the mystery of gravity by conceiving of it as a "push," not a "pull." Equally numerous critics of Einstein see a need to reinstate Euclidean space and  $c$ -plus velocities. And at the seat of the problem in modern physics, according to Alfred Lawson, is the adoption by orthodox physicists of an imaginary entity, energy:

There is no greater load of theoretical tomfoolery that Science has ever had to shoulder than the unprovable theory that somewhere, somehow, and in some shape, there exists a substance called Energy that causes movement. No such thing exists anywhere and Science should expurge [sic] that fallacy without delay.<sup>21</sup>

Physics seems to be, as a matter of fact, the field in which the greatest number and variety of reformulations and expurgations are called for and offered by the unorthodox scientists. And without doubt, the harshest and most fully developed critique of orthodox physics' alleged conceptual problems has come from the pen of Dewey B. Larson, author of six impressive volumes presenting his "Reciprocal System" of physical theory.

The Reciprocal System holds that ours is a universe fundamentally not of matter but of motion; matter is merely a "manifestation" of motion.<sup>25</sup> Starting with two basic postulates, which Larson believes common sense will find unexceptionable, he goes on to deduce the properties of an entire hypothetical universe of motion, whereupon he finds that these properties are either confirmed in our universe or at least not inconsistent with definitely known properties of our universe. It would therefore be false modesty, he confesses, for him not to conclude that his theory (or rather system of theories, for it subsumes all branches of physics) is confirmed in all particulars as the true theoretical system comprehending our physical universe. In addition to being accurate, the Reciprocal System, Larson claims, is unified, self-consistent, unequivocal, rational and complete, in all

of which respects orthodox physical theory is grossly deficient.<sup>26</sup>

Larson finds that modern physics is full of “creatures of the imagination.” “Present-day theorists,” he writes, “are under the impression that they are at liberty to define the concepts which they use in any way that they see fit.”<sup>27</sup> An example is the orthodox scientists’ perverse whooping up of the Bohr-Rutherford model of atomic structure—a concept “formed in the image of their fancies” and long unable, according to Larson, to accommodate the many perplexing phenomena at the atomic level. He cuts through the mess by conceptualizing the atom in terms of “spins” (i.e. motions), not particles. Another one of the many “cherished products of modern ingenuity” which he condemns is Einstein’s special theory of relativity. In Larson’s analysis, it is just as defective and *ad hoc* in character as the discredited Fitzgerald contraction hypothesis.<sup>28</sup>

A century ago, Larson notes, physics was rational, unified and understandable. Today, however, the scene is one of fragmented, incompatible, partial theories, many of them unable to deal adequately with the phenomena within their respective domains and some, in fact, quite incomprehensible. Each time new data come in which raise questions about existing theory, the orthodox scientists frantically scramble to buttress the theory in question with *ad hoc* hypotheses and to make the theory more abstract, i.e., more vague, i.e., more incomprehensible. Never do they suspect “there is something wrong with the *foundations* of existing physical theories,” which can’t be overcome by “mere tinkering.”<sup>29</sup> “We are even told that for further progress we must give up whatever small degree of comprehensibility still remains in modern theory.”<sup>30</sup> And not only are the orthodox physicists willing to tolerate the jumble of inconsistent partial theories, they also “have come to the conclusion that an understandable general theory is unattainable.”<sup>31</sup> Larson even notes “the emergence of a tendency to lay the blame on Nature itself rather than on the inadequacies of the theorists’ efforts.”<sup>32</sup>

Larson is particularly critical of modern physics’ heavy reliance on abstruse mathematics. In his view, this has become the principal means used by physicists to make their theoretical work more abstract—that is, more vague—and to escape from the need to conform theory to physical reality. If equations can be found which yield correct predictions, the orthodox physicists are too ready to be satisfied; no matter that the mathematical apparatus actually covers an appalling lack of understanding of the physical processes under study. Larson finds, instead, “that the complex entities and phenomena of the universe are built up from simple foundations, and these simple basic phenomena and relations do not require complex mathematics for their representation.”<sup>33</sup>

There are many unorthodox scientists who, like Larson, spurn highfalutin mathematics and believe they have found the simple foundation on which can be erected easily-grasped scientific theory, able to explain Nature’s greatest mysteries. Nor is Larson alone in yearning for, and then producing, a *unified* theory of the entire physical *universe*—one theory which will tie together and explain all the phenomena at the levels of the atom, everyday human experience, and the far reaches of the cosmos.

Ostrander's O'Hypothesis also offers to make our understanding of the universe whole again, and Dr. Wilhelm Reich was on the path to the same thing as he elaborated the biological, psychological, atomic, meteorological and cosmological effects of orgone energy. So was Alfred Lawson, when he accounted for everything in terms of "penetrability" and the actions of "menorgs" and "disorgs," submicroscopic entities of vast puissance. Orthodox science has nothing to offer having similar unity, scope and explanatory power—and therefore nothing having similar capacity to soothe psychologically and to reassure us that we can "grasp this sorry scheme of things entire."

What Larson and others aim at, then, is a simplified, "rational" account of the world, conveyed by science but nonetheless accessible to laymen. Their work is offered as a corrective to the alleged tendencies of contemporary orthodox science to insult the wholeness and intelligibility of Nature, to ignore the "big picture" in favor of the development of arcane sub-specialties, to draw ever farther away from the possibility of comprehension by the general public, and to shrug off all accountability to the intellectual and emotional needs which ordinary persons in a scientific age expect to have satisfied by science.

#### In Praise of the Unorthodox Scientists

In their efforts to unleash the scientific imagination, some of the unorthodox scientists have fashioned a scientific practice which would broaden our conception of reality and re-introduce mystery and enchantment into our world. In their efforts to discipline the scientific imagination, some have produced unusual alternative scientific theories which offer to unify, simplify and make comprehensible again our knowledge of the world. But we have here disclosed different impulses or tendencies of unorthodox science more than wholly separate types of unorthodox scientific practice. Even though these tendencies go off in different directions and may appear to be logically antagonistic, evidences of each are nonetheless often found together in the works of unorthodox science.

A hefty portion of unorthodox scientific work manifesting each tendency, it should also be noted, attempts to close some of the fissures between fact and value, between cosmic and human purposes, and, in the most general sense, between science and religion. There are mystical and occult trappings, even distinct "spiritual" overtones, to much unorthodox scientific writing, and concrete religious ideas are built into or flow naturally out of some of it. By no means is the goal always or even usually to buttress traditional religious views; often the religious component is highly novel in content. Sometimes the spiritual or religious component may actually be unintended or even denied—for example, in the case of transcendental meditation, or in the case of some flying saucer and ancient astronaut writings which have supplied, perhaps unconsciously, what some have identified as new gospels for a scientific age.<sup>34</sup> But often the religious component is there deliberately, as part of an effort, it would seem, to forge a new religious—scientific synthesis. In several instances—for



example, Scientology and Lawsonomy—full-scale new religious creeds and organizations have even arisen out of unorthodox science.

In all these respects, the unorthodox scientists show a very skillful hand in shaping doctrines designed to play to quite understandable human yearnings. The evidence is all round that the goods being offered have many takers.<sup>35</sup> Because so much of unorthodox science speaks directly to a wide range of popular emotional, religious, aesthetic and intellectual concerns—something orthodox science is inherently unable to do and of the importance of which most of its practitioners are probably unaware—it has distinct advantages and much strength in the contest with orthodox science. Orthodox scientists' efforts to fight back, so long as they are aimed only at the higher cerebral centers (through such things as debunking critiques, campaigns to expose "pseudoscience," and efforts to upgrade science teaching in the public schools), may therefore never have more than marginal effect in diminishing the appeal of unorthodox science.

Even more impressive, in my judgment, than the skills shown by some unorthodox scientists in speaking for and reaching out to a scientifically unsophisticated lay audience are the unorthodox scientists' gifts for independent and original thinking. Like Wordsworth's Newton, they are minds "forever voyaging through strange seas of thought, alone."

Of course, unlike Newton's, their voyaging may never lead to genuine scientific discovery. In the eyes of some critics, the possibility is greatly diminished by the unorthodox scientists' refusal to take *any* bearings from the established community of scientists. This objection is worth pondering carefully. For these critics force us to consider the following questions: just how ready are we to doubt that the best practice of science will usually be carried on by workers subject to the discipline found within a community of professionals? Or that the most reliable judgment of the merit of scientific ideas will come, in the usual case, from peers practicing within that community?

Still, there is something engaging about the unorthodox scientists' headlong rush to make charts of the seas so different from the conventional charts, to sail off for *terrae incognitae* whose existence orthodox science denies or thinks doubtful, and to put forward, in the face of orthodoxy's scoffing, accounts of novel discoveries made in these mysterious lands. And, of course, it remains a theoretical possibility that, within a given field of scientific inquiry, all the orthodox practitioners may be wrong and the lone, amateur investigator may be right. If there be such a case, the outsider may be assured that eventually his work will triumph. From that point forward, there is also no doubt, he will be hailed as a hero of science. He will be praised not least for his defiant independence, his David-against-Goliath taking on of the scientific establishment, and his courageous persistence in the face of orthodoxy's furious resistance or maddening indifference.

There are many unorthodox scientists holding fast and awaiting this triumphant moment of vindication. Will it come within their lifetimes? Will it ever come? The odds in the latter case, it may be, are nearly as slim as in the former. Nevertheless, we should not hesitate, I think, to admit the stunning originality of many of the unorthodox scientists and to admire

their handiworks as unique and (usually) sincere efforts toward the truth.

In fact, the more one reads in this field of popular literature, the more one is fetched. It is simply impossible not to find enjoyment here or not to come to a considerable feeling of sympathy and admiration for most of the authors. No matter that some of this literature is flawed by bad grammar, misspelling, or questionable logic, or that much of it is poorly produced by mimeograph or job press. These faults are more than made up for by the startling visions, the ingenious arguments, the colorful terms and images, the intellectual *tours de force*, the brash assertions of self, the fervent efforts to communicate something of importance, the triumphant notes of having caught the Truth.

In many instances this literature rises to impressive heights. Whatever the scientific merits (or lack thereof) of a particular work, it may nevertheless stand as a remarkable piece of scholarship or art, as the fascinating product of a focussed, passionate and creative mind.

This is the case, for instance, for those works given shape by an unusual organizing vision. A splendid example is Cyrus Reed Teed's *Cellular Cosmogony*, which powerfully interweaves experimental evidence and argument to show that the curvature of the earth's surface is concave and that we—in fact, everything in the universe—are contained *within* the earth.<sup>36</sup> Another example is Alfred Lawson's three-volume *Lawsonomy*, an astonishing account of a suction-and-pressure universe, a conception emerging out of Lawson's life-long passion to understand how there can be movement if there is no such "thing" as energy.<sup>37</sup>

The accounting for an amazingly large or diverse group of phenomena in a very brief space is what gives power to some other unorthodox scientific classics. Dr. Wilhelm Reich's *Cosmic Superimposition* is a superb illustration.<sup>38</sup> Therein, Reich shows how orgone processes explain the creation of matter, the formation of the galaxies, the origin of life, the Aurora Borealis, hurricanes, sexual mating, and numerous lesser phenomena, such as the shape of the human ear—all this in a scant 135 pages. In even briefer fashion—73 pages, to be exact—L. Ron Hubbard accounts for *A History of Man*, beginning the story sixty trillion years ago, bringing it forward through such previously unknown evolutionary stages as the Clam, the Weeper, the Volcano and the Sloth, and showing how human development and behavior are complicated by the presence of rascally intergalactic interlopers called "theta beings."<sup>39</sup>

The careful structuring of argument and immense amounts of evidence on behalf of a startling thesis can also be productive of impressive and enjoyable literature. In fact, this feature probably characterizes the largest portion of outstanding works of unorthodox science. Many examples rush to mind—for instance, some of the works of the ancient astronaut theorists, Ignatius Donnelly's *Atlantis* and *Ragnarok*, and the early volumes of Velikovsky. These particular works have the advantages, of course, which come with dramatic or cataclysmic theses. But such a thesis isn't absolutely necessary for an excellent work to come from the hand of a skilled unorthodox scientist, as is proved by Marshall Gardner's *A Journey to the Earth's Interior, or Have the Poles Really Been Discovered?*<sup>40</sup> Therein

Gardner painstakingly sifts through huge mounds of astronomical, meteorological and polar exploration literature, toward the end of establishing that the earth is hollow and may be entered through openings at the poles. It only adds to our sympathetic enjoyment to learn that Gardner was, by day, in charge of maintaining machinery in a corset factory and presumably produced his great masterpiece of unorthodox science at the cost of all his spare time for decades.<sup>41</sup>

But my speaking in glowing terms of a few giants in this field should not be construed as a slighting judgment on the more obscure and ephemeral works of lesser scope written by scores of other unorthodox scientists. Many of these lesser works—be they newsletters, mimeographed research reports, soft-covered books or pamphlets printed by local job presses, or handsome volumes from the vanity presses—also have their merits as popular literature. In any event, they are always fascinating as documents of singular minds in our present-day culture. They bespeak what is individual and creative at a level of culture—the popular level—which is too often characterized only in terms of what is produced for or enjoyed by the millions.

The unorthodox scientists, of course, view themselves as contributors to science, not as creators of popular culture. Because I have throughout considered them only under the latter heading, let me in closing yield the rostrum for a moment, at least, to one of the very best of them to state the case for the unorthodox scientists as scientists. Here is what Dewey B. Larson has to say:

Research is, in some respects, like fishing. If you make your living as a fisherman, you must fish where you know there are fish, even though you also know that those fish are only small ones. No one but the amateur can take the risk of going into completely unknown areas in search of a big prize. Similarly, the professional scientist cannot afford to spend twenty or thirty of the productive years of his life in pursuit of some goal that involves a break with the accepted thought of his profession. But we uncommitted investigators are primarily interested in the fishing, and while we like to make a catch, this is merely an extra dividend. It is not something essential as it is for those who depend on the catch for their livelihood. We are the only ones who can afford to take the risks of fishing in unknown waters....<sup>42</sup>

Could the case for the unorthodox scientists be put more winningly? But whether one views them as bold fishers in unknown waters, as lone voyagers through strange seas of thought, as heralds of a wider dissatisfaction with orthodox science, as misleaders of a scientifically none-too-savvy public, or merely as proofs that even science has its Don Quixotes, one must nonetheless conclude that the unorthodox scientists are a fascinating component of the scientific and popular cultures of our time.

## Notes

<sup>1</sup>Edgar A. Ostrander, *Through the Barrier* (Wading River, N.Y.: By the author, 1977). Passages quoted are found on pp. 15, 12, 239, respectively.

<sup>2</sup>Archie H. Flory, *The Quantum Electromagnetic Theory of the Unified Field: An Explanation of the Creation* (Gilboa, N.Y.: By the author, 1978). (A one-page broadside poem.)

<sup>3</sup>Emil Sepic, *The Imminent Shift of the Earth's Axis* (Eureka, CA: By the author, 1971). Passages quoted are both found on p. 11.

<sup>4</sup>Form letter (photocopied, one page) from Captain Tawani W. Shoush, c/o International Society for a Complete Earth (Hollow Earth Society), Houston, MO. no date. Passages quoted are from this letter.

<sup>5</sup>Mary Hardy, Dean Hardy, and Kenneth Killick, *Pyramid Energy Explained* (Allegan, MI: Delta-K Pyramid Products, 1979). All quotes scattered throughout pp. 1-7.

<sup>6</sup>"Flowing Energy," Mimeographed four-page research report, unsigned (for sale by J. Mulligan, Portland, OR, 1979), p. 3.

<sup>7</sup>George W. Van Tassel, *When Stars Look Down* (Los Angeles: The Kruckeberg Press, 1976), p. 146. There are several pictures of the Integratron in this book. Information on the Integratron's construction is from Peter Tompkins and Christopher Bird, *The Secret Life of Plants* (New York: Harper & Row, 1973), p.58.

<sup>8</sup>Communication (mimeographed, one page) from Mrs. Dorris Van Tassel, "Exciting New Projects Are in Store for 1979," Yucca Valley, CA., no date.

<sup>9</sup>Numerical claim for the rejuvenation process is found in George Van Tassel, p. 147. The other claimed uses for the Integratron are found in Tompkins and Bird, p. 58.

<sup>10</sup>Martin Gardner, *Fads and Fallacies in the Name of Science* (New York: Dover, 1957). This is a revised and expanded edition of a book first published by G.P. Putnam's Sons in 1952 under the title *In the Name of Science*. For a recent survey of unorthodox science, see John Sladek, *The New Apocrypha* (New York: Stein and Day, 1974). For a sympathetic account of many contemporary unorthodox scientists see Patrick Moore, *Can You Speak Venusian?: A Guide to the Independent Thinkers* (New York: Norton, 1973).

<sup>11</sup>Research libraries and popular culture scholars really should be making an effort to collect materials documenting the rich superstructure of unorthodox science. For an interesting survey of some of unorthodox science's promotional associations, see Robert Schadewald, "The Hollow Earth Catalog," *TWA Ambassador*, April 1979, pp. 39-43. A few of the associations Schadewald covers are the International Society for a Complete Earth, Association for Pushing Gravity Research, Ancient Astronaut Society, New Atlantean Research Society and International Flat Earth Research Society of America; of course, there are very many associations not covered in this article. Another rich field is the specialized serial publication—for example, *The New Atlantean Journal*, *Pyramid Guide*, *Ancient Skies* (for the Ancient Astronaut Society), *Pole Watchers Newsletter* (for students of axial shifts), *Gigantopithecus Gazette* (for students of Big Foot), and numerous UFO and flying saucer journals. Finally, the many specialized private research institutes and "universities" of unorthodox science deserve investigation and survey.

<sup>12</sup>Martin Gardner, pp. 4-5, 28-29.

<sup>13</sup>Those not taken on by a major publisher can not, of course, count on a large audience; for them, the search for a following will probably be difficult and slow-going. Founding or joining a promotional association is one route sometimes followed, as is advertising one's privately-published works in the specialized journals of unorthodox science. Another method frequently used is advertising in the back-pages of certain popular magazines; *Science Digest* and *Fate* have been particular favorites for this purpose. But none of these methods seems likely to yield very quickly a large sale or following. Only in rare cases, anyway, could a privately published work hope to catch on and reach best-seller status, and in those cases, large sales are sometimes explained by the adventitious availability of a large marketing organization—for example, the Publications Organization of L. Ron Hubbard's Church of Scientology.

<sup>14</sup>Professor Truzzi was the original editor of *The Skeptical Inquirer* (called originally *The Zetetic*). For his views on unorthodox science and his account of his tribulations and decision to resign as editor, see a two-part interview of Truzzi in Jerome Clark and J. Gordon Melton, "The Crusade against the Paranormal," *Fate*, Sept. 1979, pp. 70-76, and Oct. 1979, pp. 87-94. It should be noted, incidentally, that *Fate* often carries articles on topics of unorthodox science. In this respect, the relatively new journals *MetaScience Quarterly* and *Second Look* (now renamed *Frontiers of Science*) should also be mentioned.

<sup>15</sup>Martin Gardner, pp. 12-14.

<sup>16</sup>Alfred W. Lawson, *Manlife* (Detroit: Humanity Publishing Co, 1923), p. 7. This passage is found in "The Wizard of Reason," a preface by "Cy Q. Faunce," a Lawson pseudonym.

<sup>17</sup>This scheme of classification (of two broad criticisms of orthodox science and two broad aims of unorthodox science) is developed as much from my inferences from the unorthodox scientists' texts as from direct statements found therein. In fact, only a minority of unorthodox scientists seem to have much to say explicitly on these matters. But my classification scheme does, I think, accurately represent a basic division of concerns and perspectives expressed among

this articulate minority and permits, in my judgment, a ready and plausible sort among the majority who are silent. In effect, it attempts to capture the "inner logic" of the work of a large number of practitioners, even if only in a relatively few cases can it purport to represent their explicit identifications of purpose. My scheme has, I believe, a further merit: it gives the benefit of the doubt to the unorthodox scientists as to their purposes and good faith—that is, it assumes their work is motivated by serious differences with orthodox science and attempts to construct what these differences are. Any deficiencies in this method are probably no greater than those arising from the more familiar approach of analyzing exclusively in such terms as the unorthodox scientists' alleged mental aberrations, psychological pathologies, or desires to put down orthodox scientists as modern "authority figures," to build a cult following, or to earn a fast buck. Need I add, however, that there doubtless are limits to the applicability of my analysis and that, in some cases, these latter categories of analysis may be the most apt?

<sup>17</sup>Erich von Däniken, *The Gold of the Gods* (New York: G.P. Putnam's Sons, 1973), p. 121.

<sup>18</sup>Frequently the atmosphere of mystery is enhanced by the use of "black boxes" and other novel devices—for instance, the "orgone accumulator," the E-meter, the Integratron, the pyramid. For a fascinating discussion of "black boxes," see Christopher Evans, *Cults of Unreason* (New York: Farrar, Straus and Geroux, 1974), pp. 179-208.

<sup>19</sup>However, two orthodox physicists, Albert Shadowitz and Peter Walsh, *The Dark Side of Knowledge: Exploring the Occult* (Reading, MA: Addison-Wesley, 1976), seem to believe that orthodox science maintains a double standard. They note that modern physics, which they call a "wonderland" in their final chapter, is full of bizarre things. Now what is needed, they argue, is the same openness to bizarre claims for the paranormal!

<sup>20</sup>See, for instance, Weber's discussion of "disenchantment of the world" in "Science As a Vocation," pp. 129-156, in H.H. Gerth and C. Wright Mill, eds., *From Max Weber: Essays in Sociology* (New York: Oxford Univ. Press, 1958).

<sup>21</sup>The ideas in this paragraph I take from pp. 48-50 of a splendid book by Daniel Cohen, *Myths of the Space Age* (New York: Tower Publications, 1967).

<sup>22</sup>For instance, some unorthodox scientists charge orthodox science with making a false dichotomy between the knower and the known. The investigator, they allege, is inherently part of that which is under investigation; the experimenter is a factor in the outcome of his experiment. Thus, good "vibes" from the experimenter may be needed for an experiment's positive outcome—for instance, for a demonstration of ESP or of plant sentience. Nothing, it is alleged, is established by the negative results obtained in experimental re-runs done by or in the presence of orthodox scientists, except that probably the latter's "bad attitudes" have distorted the results.

<sup>23</sup>Alfred W. Lawson, *Lawsonomy*, Vol. I: *Lawsonomy* (Detroit: Humanity Publishing Co., 1935), p. 64.

<sup>24</sup>How can there be motion before there is something to move? How can matter arise from motions? Although Larson doesn't duck these questions, I have little confidence in my understanding of his answers. I can only refer my readers to Larson's most recent statement of his amazing Reciprocal System, *Nothing But Motion* (Portland, OR: North Pacific Publishers, 1979). An engineer by training, Larson has for fifty years gone his own way in developing his radically different account of the physical universe. Although he is now in his eighties, he is not done yet. *Nothing But Motion* is the first of a trilogy presenting his grand summation of the Reciprocal System; as I write, the manuscript of the trilogy's second book nears completion. Meanwhile, Larson continues patiently to await a serious examination of his work by orthodox physicists.

<sup>25</sup>Dewey B. Larson, *New Light on Space and Time* (Portland, OR: North Pacific Publishers, 1965), p. 1.

<sup>26</sup>Larson, *New Light*, p. 24. "Creatures of the imagination" and, in the next sentence, "formed in the image of their fancies," are physicist Herbert Dingle's phrases, which Larson cites approvingly.

<sup>27</sup>Larson, *New Light*, p. 25, for criticism of orthodox atomic model; pp. 45-51, for criticism of special theory of relativity; p. 14, for Larson's phrase "cherished products of modern ingenuity."

<sup>28</sup>Larson, *New Light*, p. 4.

<sup>29</sup>Larson, *New Light*, p. 6.

<sup>30</sup>Larson, *New Light*, p. 6.

<sup>31</sup>Larson, *New Light*, p. 7.

<sup>32</sup>Larson, *New Light*, p. 23.

<sup>33</sup>See, for example, John Allan, *The Gospel According to Science Fiction* (Santa Barbara, CA:

Quill Publications, 1976).

<sup>35</sup>For instance, by 1980 world-wide sales of Erich von Däniken's books had exceeded 40 million copies. It is likely, of course, that most of the readers of works like von Däniken's are simply seeking romance, mystery, temporary escape, momentary titillation. Like detective stories, books under this heading provide a "good read" and, again like detective stories, they are probably tossed aside without much further consideration when finished. But not so by all readers; some will be hooked and perhaps even motivated to join one or another of the many organizations dedicated to the pursuit and study of, for example, ancient astronauts, flying saucers, or Big Foot. Even among casual readers, these works probably have their influence, especially as articles playing up their themes continue to appear for years, even decades, in daily newspapers, magazines, and tabloids like the *National Enquirer*. Periodic national opinion surveys reveal a large public belief in such things as ESP and extraterrestrial flying saucers. When the popular works of unorthodox science do not win active converts, then, they still feed what probably is, at bottom, a widespread yearning to believe that there are great realms of mystery, enchantment, and meaning lying beyond the realm which has been tapped by orthodox science.

<sup>36</sup>Cyrus Reed Teed, *The Cellular Cosmogony, or The Earth a Concave Sphere* (Philadelphia: Porcupine Press, 1975). This is a reprint (with new introduction by Robert S. Fogarty) of the revised edition first published in 1905. Although Teed is listed as author, much of the book was actually contributed by U.G. Morrow, chief of Teed's "geodetic survey."

<sup>37</sup>Alfred W. Larson, *Lawsonomy*, Vol. I: *Lawsonomy*, Vol. II: *Mentality*, Vol. III: *The Almighty* (Detroit: Humanity Publishing Co., 1935, 1938, 1939 respectively).

<sup>38</sup>Wilhelm Reich, *Cosmic Superimposition* (New York: Farrar, Straus, and Giroux, 1973). (Published in the same volume with Wilhelm Reich, *Ether, God and Devil*.)

<sup>39</sup>L. Ron Hubbard, *Scientology: A History of Man* (Los Angeles: Church of Scientology Publications Organization, 1952). One other merit of this book should be noted: although many have believed that science can be fun, *A History of Man* is probably the first book to demonstrate (by Hubbard's intention, I believe) that science can also be funny. Hubbard's discussions of the activities of the theta beings are side-splitting. There is also much good humor in his descriptions of the Clam and the Weeper evolutionary stages.

<sup>40</sup>Marshall Gardner, *A Journey to the Earth's Interior, or Have the Poles Really Been Discovered?* 2nd ed. (Aurora, IL: By the author, 1920). This is a revised and expanded edition of a book first published by the author in 1913.

<sup>41</sup>I get this fact about Marshall Gardner's employment from Martin Gardner, *Fads and Fallacies*. p. 21.

<sup>42</sup>Dewey B. Larson, *Nothing But Motion*, p. x.