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# ***New Strategy Through Space***

***Neville Brown***



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present orbit around 1500 BC, the planet Venus was a comet that had ushered forth from Jupiter. Twice in 52 years, the first occasion being during the Jewish Exodus from Egypt, it had passed close to the Earth. The oilfields of the world were 'partly' deposited by the cometary tail.<sup>3</sup> Among other depositions were — said Velikovsky — locusts, vermin, hail, manna and meteorites; and among other effects, eruptions of boils, the plague, darkness and earthquakes. He indicated in the preface that the thought first struck him in 1940. That, at least, is believable.

Then there were the best-sellers by Erich von Daniken starting with *Chariots of the Gods?* His contention was that between 40,000 BC and 592 BC, the Earth was visited by a majestic breed of astronauts. A fierce critique of this phantasy ends, none the less, with the following food for serious thought:

If scientists can learn to communicate their discoveries with the same enthusiasm as von Daniken and if we can learn to partake of the tree of knowledge without losing the innocence and curiosity that prompted our first questions, the human spirit will evolve.<sup>4</sup>

What one hopes to see is modern astronomy thus allowing wonder and integrity to blend.

Another aberrant contribution came in 1974 from John Gribbin and Stephen Plagemann. Their advice was that

A remarkable chain of evidence ... points to 1982 as the year in which the Los Angeles region of the San Andreas fault will be subjected to the most severe earthquake known in the populated regions of the Earth in this century.<sup>5</sup>

The nub of the argument supposedly was that, in that year, an almost exact alignment of all the other planets the other side of the Sun would trigger a tidal surge of molten rock within the Earth's interior, this in association with heightened solar activity. The point now is not that this dire consequence did not materialise. It is that there was no way it could have. Thus tides of air, water or molten rock do not depend on the overall gravitational pull exerted on the Earth by heavenly bodies. Rather they derive from the differences in the strength of that pull at points on Earth short distances apart. Therefore, a small body fairly close may well exert more tidal influence than a giant one further away. The very reason why the sea tides induced by the Moon have several times the amplitude of those caused by the vastly bigger Sun is that the latter is 400 times more distant.

Take Pluto, the outermost of the known planets and a mean distance of 3,600 million miles from ourselves. The differential in the pull it exerts on one point on our planet as against that on another a mile, let us say, closer or further away is one part in 7,200 million (see Appendix A). A contrast that subtle would be unlikely ever to do more than alter by a matter of seconds the timing of an earthquake already imminent. Much the same argument applies with every other planet or all of them together. We do not perceive planetary tides, either directly or through solar excitation.

Pluto has been agreeable to cite in that it was the subject of the most solid achievements of Percival Lowell (1855–1916). He was one of two American astronomers who predicted the existence of such a planet beyond Neptune; and the laboratory he founded in Flagstaff, Arizona, was where it was first observed in 1930. But, alas, the prime reason for mentioning Lowell at this juncture is

that he also afforded the most extreme instance ever of the hyperbolic promotion of pseudo-astronomy via press and radio. In 1877, the Italian astronomer, Giovanni Schiaparelli, claimed to have discerned a criss-cross spread of *canali* ('channels', meaning water courses) on Mars. In 1906, Lowell capped some years of fanciful speculation about this find with his book *Mars and its Canals*. This claimed that dwellers on the 'red planet' had dug these features to carry water for irrigation from its polar ice caps. Despite endless protestations by more responsible colleagues, the popular influence of this surmise lasted for decades.

Even today, baleful phantasies well up from deep within our folk memories. Astrology is still much relied-on in countries like India:

Newspaper advertisements for arranged marriages require the exchange of horoscopes. Marriages thus deemed lucky are then scheduled for astrologically auspicious times.<sup>6</sup>

Throughout the world, indeed, astrology recently enjoyed something of a revival, as part of an anxiety-ridden reaction against 'big science' and 'high technology'.

Hardly less dubious, however, are certain inclinations within established strands of religious expression, notably within the United States. The High Frontier wing of the pro-SDI movement in that country has drawn a lot of its impetus from Protestant fundamentalism and lately, too, from similar tendencies discernible within the rabbinate. Indeed, the latter input strengthened after Israel signed an understanding with the USA on SDI collaboration. The Protestants in question are, of course, pretty much those who also lead the 'creationist' offensive against Darwin, a matter about which they received some carefully judged support from a Ronald Reagan running for the Republican nomination in 1980.<sup>7</sup> Maybe they find the vision of an SDI 'peace shield' vaguely redolent of the 'firmament' of the Middle Ages.

Those concerned are not technocratic ignoramuses. Nevertheless, they are always ill at ease with the broader implications of scientific progress. It may be pertinent to note that the High Frontier particularly extols the virtues of the mini-missile, the most conservative mode of Space-based defence.

Advocacy of the more exotic beam weapons has to date come most zealously from that flamboyant convert to the radical Right, Lyndon La Rouche, and from the thousands once said to support his Fusion Energy Foundation plus his hundreds of political candidates. Tens of thousands received *Fusion* and *Executive Intelligence Review*, two quite esoteric journals emanating from this quarter. What the La Rouche fraternity have looked forward to with starry optimism is the colonisation of deep Space. So have they to beam weapons in near Space. So have they as well to the commercial exploitation of nuclear fusion, the energy source of the stars, to solve the energy crisis and curb pollution. Not for them the erection anew of the firmament or other shells of heaven. Their heavens have been boundless.

Even so, they have still sought to define their own identity in terms of the boundaries of the realm they inhabit. To them, however, the most critical boundary has been one drawn across the surface of the Earth itself. It is a frontier of separation, beyond which satanic forces rule. In the middle of this witches' brew is a USSR depicted thus in 1985:

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Unless we change US monetary, economic and defence policies rather immediately, ... the Soviets will assuredly be positioned to launch, survive and win general warfare as early as 1988. Then, unless we submit, they will launch war.

This tract also talked of an emergent Tel Aviv–Moscow–Damascus axis, furthered by ‘the new Right movement in Israel, heavily penetrated by the KGB’.<sup>8</sup> No distinction was drawn between the action – reaction phenomenon (see Chapter 3) and wilful collusion between ostensible adversaries. Salvation will lie in SDI, nuclear fusion and ‘bringing civilisation to Mars’.

Early in 1989, La Rouche was committed to jail for tax offences. What he and the High Frontier had together articulated were the contemporary responses of the American far Right to a very primordial drive. Have not human beings, not least those in positions of authority, often been pleased to be persuaded that all good men and women must stand together against the threats that surround the world they know? In Medieval Europe, these threats might variously be perceived as Mongols, Turks, comets, goblins, basilisks or sea-serpents. In *Nineteen Eighty-Four*, the 40-year old Winston ‘could not definitely remember’ a time when Oceania had not been in a state of modulated conflict with Eurasia or Eastasia. Most instructive in this regard is the interest both Baghdad and Tehran so long evinced in spinning out the Gulf War. In 1989, with a cease-fire at last in force, Tehran has turned to an author, Salman Rushdie, to serve as its bogey without.

At present, however, few people, in the West at any rate, are likely to manifest this sense of aliens without as overtly and intensely as their forbears so regularly did. They are more educated towards dispassionate enquiry. They see less in the way of blatant injustice in the course of their daily life. They are not constantly exposed to early death from natural causes. They presently have less to fear from the vagaries of weather and pestilence. They are very aware of the close-minded excesses that led to Auschwitz and the Gulag Archipelago. They are loth to risk a modern war. On the other hand, this generation does suffer much more from feeling rootless and aimless in a world that has a chaotic past and is moving into a future that is desperately unpredictable, even in terms of factors like climate and disease. So in the ultimate, we may be as ready as mankind ever was to sublimate, through the use of the ‘friend and foe’ polarity, our anxieties about where we have come from and where we are going to. We will not be slow to see the Turks and basilisks out there still. We may not be unhappy to have them stay around. If they are absent, we may resort once more to invention.

In a script originally due to be broadcast as one of the annual Dibleby Lectures on the BBC, Edward P. Thompson, the social historian and nuclear neutralist, interpreted this phenomenon thus:

There appears to be a universal need for *the Other* as a means of defining the identity of any group and the individuals within it.... Technology, communications and missiles are all shrinking the world. The ‘cold war’, by dividing this world into two opposing parts,.... has become necessary to provide both bonding and a means of regulation within each part.<sup>9</sup>

Moreover, the attitudes thus engendered are potentially unstable, being compensations for an all too prevalent alienation and anomie. As such, they can translate into self-glorifying fanaticism more readily at group level than they would within a solitary individual:

The narcissistic image of one’s own group is raised to its highest point, while the devaluation of the opposing group sinks to the lowest. Devilish qualities are ascribed to the other group; it is treacherous, ruthless, cruel and basically inhuman.<sup>10</sup>

What ought to be queried, however, is this. Many on the political Left or among the literati are disposed to explain the aimlessness that somehow has to be corrected as produced by a ‘bomb culture’, a milieu dominated by the dread of sudden extinction in a nuclear holocaust. A progressive British playwright, Harold Pinter, uses this syndrome to try and excuse several years of low activity on his own part: ‘I have got a funny feeling that is why I am not writing anything now. Because anything one might write appears to be trivial in relation to what is going on’.<sup>11</sup> Meanwhile, interest burgeons in the presumed influence of the ‘bomb culture’ on the young:

A healthy ego ideal builds out of possible goals or standards that are both realizable and worth struggling to achieve. But the building of such values, or of an ego ideal, depends on a present life that is perceived as stable and a future upon which the adolescent can, at least to some degree, rely.<sup>12</sup>

Instead of this, children and young adults are said to perceive ‘a world that is out of control and on the brink of destruction’.<sup>13</sup> Many of those teaching in universities have gleaned a similar impression these last several years.

However, such protestation fails to validate (or even much address) the notion that the younger generation of today is, in fact, wracked by insecurity as previous ones were not. After all, the latter had their ‘ego ideals’ undermined in countless ways. Educational deprivation was one. Appalling mortality in infancy and even childhood was another. Sheer ignorance and brutality on the part of their ‘elders and betters’ could be a third. War and conquest were often a fourth.

Besides, even though one may allow that rootlessness and aimlessness are more evident among the young than might have been hoped, at this stage, that does not prove this stems directly from a morbid preoccupation with a thermonuclear sword of Damocles. Might it not stem much more from the following five factors: the weakening of family and extended family ties; less neighbourhood consciousness; the disappearance of ‘nature’; undue urban hustle; and the waning of formalised religion. Ever more unsettling, for adolescents as much as for older people, is the way ethnic and religious cultures are melding into mass society while, at the same time, the value of just about every occupational skill is repeatedly called into question for one reason or another.

At all events, the vacuity that results may make Western societies still quite prone to seek definition in terms of their deterrent shields. A similar (and often stronger) disposition may affect our potential adversaries. The resultant interactions could become more menacing as the world situation deteriorates overall (see Chapter 11).

So might a stronger awareness of Space, in scientific and philosophical terms, help us relate more stably to our planetary situation? Might it satisfy our yearning to wonder and reverie while bounding and thereby bonding our global mass society? Could it induce fears less hysteric, less trivialised and more sublime than those too often entertained?<sup>14</sup> Let us take at random some examples, from the presumptively sophisticated twentieth century, of things

feared in a silly fashion: the descent on New York by Orson Welles' Martians; the Chernobyl incident as, according to the La Roche camp, an integral part of Soviet war strategy;<sup>15</sup> the current threat, as obsessively exaggerated, of air terrorism;<sup>16</sup> and the many sightings, from 1945, of visitations either from outer Space or else from some fourth dimension of Unidentified Flying Objects (UFOs) alias 'flying saucers'. Carl Jung inclined to see the worldwide reports of the last-mentioned as a manifestation of a universal craving for psychic unity as symbolised by those discs.<sup>17</sup> Yet that may be too esoteric. It may be enough to treat UFOs as one of the more generalised examples of the phantasies that help fill the vacuum many people feel in their lives. Mystical notions about vehicles or other gadgetry often figure in new religious or paranormal cults.

Above all, a fresh search for an authentically cosmic perspective might induce within us, at long last, a proper appreciation of the unity of life within the confines of this planet. Take the Gaia principle enunciated by James Lovelock, a British biologist. This says that all life on Earth interacts to mutual benefit. He believes that already Space research has helped promote this new paradigm or framework of reference:

Ancient belief and modern knowledge have fused emotionally in the awe with which astronauts with their own eyes and we by indirect vision have seen the Earth revealed in all its shining beauty against the deep darkness of Space.<sup>18</sup>

Not that such revelation is an easy way through. More intimate acquaintance with the 'deep darkness' beyond does not *ipso facto* reassure us about anything. On the contrary, our commitment to truth, reason and open-minded enquiry is severely tested by the sheer grandeur of Space discovery, measured simply in terms of our normal experience of distance, time and diversity. As was acknowledged many years ago by Sir James Jeans, an eminent British astronomer:

Our first impression is one akin to terror. We find the universe terrifying because of its vast meaningless distances, terrifying because of its inconceivably long vistas of time ... terrifying because of our extreme loneliness and because of the material insignificance of our house in Space — a millionth part of a grain of sand out of the sea-sand in the world.<sup>19</sup>

Mankind in earlier ages had less dread on account of comprehension but more on account of incomprehension. It may be helpful now to review what History can teach us about our interaction with the cosmic environment. From that we may the better judge how to strike the balance, as we probe the Space environment, between aims that are severely utilitarian and those that are more philosophical; between military utility and civil; and between national purposes and international ones.

### An historical perspective

A striking aspect of cosmology is how regularly it blossoms once nomadic mankind starts to assume a more settled lifestyle. Take the pre-European civilisations in and around central America. By such yardsticks of progress as

writing or wheeled transport or metallurgy, each and every one was backward to the last. Yet watching the night sky, they between them 'encompassed a vast range of skills and abilities, from the informal lunar calendars of many North American hunting tribes to the startling precision of the Mayan bark books'.<sup>20</sup>

Such virtuosity cannot be explained simply in terms of a desire to navigate over featureless desert or open sea and to regulate harvests. Lunar calendars are a test case. They had appeared in Sumeria by 3000 BC; and were eventually to help guide the respective rituals of the three great religions of the Arabian desert fringe: Judaism, Christianity and Islam. Yet their functional utility has always been limited severely by two plain facts. The lunar month is not a whole number multiple of the Earth day. Nor is it a whole number divisor of the Earth year. The former fact means that the Moon rises so variably as to be unsuitable as a navigational beacon. The latter means that it is similarly flawed for harvest regulation. For much the same reason, the planets offer no substantive guidance to either farmers or travellers. Nevertheless, Mayan civilisation was observing them centuries before the emergence (around AD 200) of what is deemed its classic era.<sup>21</sup>

No less instructive is the explosive birth, in AD 1054 of the supernova we know as the Crab Nebula, a feature of great beauty if viewed by telescope. Its advent goes unremarked in all the writings which survive from Christian Europe at that time, visible though this sudden smudge on the undersurface of heavenly perfection must initially have been to the human eye by day as well as by night. It is recorded in the eastern hemisphere only in China and Japan and perhaps among the Arabs. Yet already over twenty allusions to it have been identified in Amerindian rock art, in locations from Texas to northern California.<sup>22</sup>

What is more, the astronomy of 'mesoamerica' (California to Peru) seems to have emerged, across a plurality of polities, in total isolation from the Old World. Much the same applies in China where astronomy evolved to AD 1500 without external influence, except a little from India during the Tang period and from Islam during the Yuan.<sup>23</sup> Nor did 'mesoamerica' owe anything to the 'Austroasians' advancing east island by island from the New Guinea region. These sea-rovers used their considerable astronomical prowess only to assist their intricate navigation.<sup>24</sup> In any case, they seem never to have ventured beyond Easter Island; and that not until AD 800, a thousand years after the first 'mesoamerican' calendar and about the time the Mayas were passing their peak.

Evidence does exist around the world, of course, of people studying the stars as systematically as they could, even in the Old Stone Age.<sup>25</sup> So the rudiments of an astronomy culture could have been taken to America via the Behring land bridge, maybe 25,000 years ago. However, that possibility merely lends weight to the argument that astral wonder and magic are rooted very deep in our psyche. On these grounds alone, the themes thus engendered ought never to be treated vulgarly or flippantly in our contemporary culture, nor in our public policies.

What is odd is how comprehensively the historical profession has ignored the interaction between the evolution of cosmology and that of society, not least in Europe. The Cornell historian, Martin Bernal, contends that, for a century past, a neglect of mathematics and astronomy has preserved the myth that the civilisation of Ancient Greece owed little to Ancient Egypt.<sup>26</sup> Arthur Koestler,

somehow legitimate the atavistic hatred he had generated towards the German people during the conflict itself.<sup>52</sup>

Meanwhile, the Einsteinian revolution in physics was permeating the public outlook, quite often through more faithful transposition than creative thought has sometimes been subject to. This was soon to apply to nuclear energy as observed in the stars and on Earth. It applied even sooner to the philosophical connotations of the Einsteinian view of matter, space and time.

However, the next paradigmatic change within physical science — that associated with quantum mechanics and the principle of uncertainty — has still not diffused to that extent, not after sixty years. This is regrettable because it, too, has a lot to teach us all about the nature of knowledge and, more particularly, of causation.

Yet now astronomy may be poised to uplift physical science as a whole, in terms of its intrinsic development and of its seminal role in the overall shaping of thought and values. Its peculiar ability to mobilise mathematics has, for thousands of years, ensured its pre-eminence as — to quote again the late Jacob Bronowski — ‘a test of the cast of temperament and mind that underlies a culture’.<sup>53</sup> Now this bent is being further strengthened by (a) the development of extremely advanced computers, (b) their special relevance to Space travel, and cosmological investigation and (c) the diffusion of a rather lower order of mathematics across many disciplines.

Another facet of the contemporary impact of astronomy is this. At least since the thirteenth century, so far as Europe is concerned, there has been speculation about life (in truly corporeal forms) on other heavenly bodies. Indeed, a prime reason for Melanchthon’s rejection of Copernicanism was alarm lest it ‘lead to the belief that Christ died and was resurrected in more worlds than one’.<sup>54</sup>

Naturally, astronomers have long interested themselves in these ruminations about extra-terrestrial existence. What they have been little able to do, however, is inform the debate. Galileo’s invention of the telescope may have opened huge new vistas in celestial mechanics but it has never done anything, in itself, to promote celestial biology, the ‘canali on Mars’ being the exception that conclusively proves the rule. That imbalance may be correcting itself a bit (see Chapter 7). Even so, one can understand why Dr Jacob Bronowski, as a keen student of biology and social science, went rather out of his way, in the passage just cited, to deny that astronomy is ‘the queen of the sciences’.<sup>55</sup>

It is important that enhanced cosmic awareness be informed wherever possible by definitive research in astronomy and, of course, such related areas as particle physics. All else apart, that aesthetic and ethical critique of SDI that is informed by the precept that ‘the heavens are made for wonder not for war’ may otherwise slide into a callow Romanticism that itself could be susceptible to sinister manipulation. A case in point may be the remarkable book, *Star Wars and the state of Our Souls* by Patricia M. Mishe, the founder of Global Education Associates. With eloquent sincerity, she argues the case that SDI is a morbid diversion from a proper study of Space, a study that might help us understand better our human situation. But she concludes: ‘We are the soul of the universe. How each of us responds to the conflict in our own souls is what we will bequeath to the universe, that is what will become the soul of the universe’.<sup>56</sup> The rejoinder has to be that such Rousseauish abstraction could encourage a political utopianism that could be either irrelevant or downright

destructive. The empirical rigour of hard astral science is a needful corrective to verbal exuberance, however edified.

Nor should we forget that many first-class intellects are drawn towards the complementary realms of astral and nuclear science. This is by virtue of the scope they afford for combining philosophical subtlety with tight numerical analysis. Naturally, people performing thus professionally are not necessarily drawn towards political activity. But they are committed to a quest for truth in exceptionally taxing scientific domains; and that quest may extend to public affairs.

To quite an extent, history already bears this expectation out. Thousands of skilled engineers and applied scientists, in Germany and elsewhere, worked on readily for Fascism. But a significant cadre of top-rate nuclear physicists left continental Europe during that time. Family links with Jewish people will have affected the decision in some cases but in others they played no part. Names that come readily to mind include Hans Bethe, Nils Bohr, Albert Einstein, Enrico Fermi, Otto Frisch, Rudolf Peierls and Edward Teller. While securing at Los Alamos the ‘atomic bomb’ for the Allies, such men also launched the on-going debate about its wider implications. Some years later this community of scholars was to be traumatised by the ‘cold war’ with its spy scandals and the ugly clash between Edward Teller and Robert Oppenheimer about nuclear policy and national security. But one has only to glance through a few editions of the *Bulletin of Atomic Scientists* (founded in 1945) to appreciate that its liberality has remained much alive, as witness its strong contribution to the SDI debate. Similarly, in the USSR two of the leading nuclear physicists, Peter Kapitsa and Andrei Sakharov, have successively been prominent in the struggle against overweening authority. Similarly, China’s leading dissident as of 1989, is an astrophysicist (see Chapter 9).

This brief review would appear to confirm the thesis that cosmology, interacting with basic physics, recurrently makes a bigger impact on social perspectives than historians have allowed. It does so especially at times of paradigmatic change in science and society at large. Unfortunately, however, that impact is not assuredly positive. Instead, it may induce a backlash of ‘know nothing’ bigotry. One implication is that the whole question of the development of Space, in its civil and military aspects, needs thinking through more carefully and synoptically than any government has yet attempted.

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56. Patrick M. Mische, *Star Wars and the State of Our Souls*, Minneapolis (1985), 130.

touch with. They make astronomy, if not the queen of the sciences, then at least a queen among them: equivalent in regal status to her cousin, particle physics and to the more fundamental branches of biology.

Inevitably, however, the inspiration that astronomy should thus give to her practitioners is often obscured by workaday conflicts and anxieties. Take the great debate in the 1950s and 1960s between the 'expanding universe' school (led by the late Sir Martin Ryle) and the 'steady state' one led by Sir Fred Hoyle. It became, by all accounts, every bit as personalised and petty as a near concurrent one (also, as it happened, reverberating through Cambridge) about 'structuralism' in literary analysis. Nor do we get consistent advice from the astral domain on other subjects of public concern, even when these relate to advanced physics and high technology. In 1977, Hoyle insisted that an expansion of civil nuclear power was 'urgently required'.<sup>36</sup> Four years later, Ryle averred that the civil nuclear industry could and should be closed down, partly in pursuance of nuclear arms control.<sup>37</sup> Even on the weaponisation of Space, indeed, a consensus of opposition is not quite complete.

### The music of the spheres

Not that those who have practised astronomy as a modern profession have ever aspired to be an esoteric priesthood, elevated above the confusion that besets ordinary mortals. Rather, there is a strong tradition of public communication via the written and spoken word. That was evident 300 years ago with the Royal Society. It was evident 50 years ago with such as Sir James Jeans and Sir Arthur Eddington. It remains so today. Despite it, though, there are pressures towards greater exclusiveness. These relate to the evolving nature of research and the institutional back-up it requires. As Philip Morrison, an Institute Professor at MIT, warned at a NASA colloquium in 1976, 'We have founded such great social structures to pyramid our exploration upon, that those at the base often do not get to see the stars shine above the apex'.<sup>38</sup>

No doubt this is why the Space age has thus far failed to penetrate the way it might have the consciousness of political leaders, social scientists and philosophers. However, it has already got through, albeit in fanciful presentment, to a broader community especially of the young. One in every ten of all novels sold in the USA this last decade has been a work of science fiction; and the three authors deemed the 'grand old men of the trade' (Robert Heinlein, Isaac Asimov and Arthur C. Clarke) have much recourse to Space themes.<sup>39</sup>

Even so, there are dangers here. One is that too much of the literature on Space has been too uncritical, too exhortatory. Another is that an ever wider field could thus be opened up to the anti-scholarly extravaganzas of the Velikovskys and the von Danikens, the La Rouches and the Lowells (see Chapter 4). Such as they might benefit from but also reinforce the irrational tendencies within modern mass society.

Thankfully, however, the evidence on this latter score is not entirely one way. Orson Welles later sought to justify his Martian invasion scare of 1938 on the grounds that he had been trying to jolt people out of believing all they heard on the radio. Nowadays, precious few would dream of doing so, with or without shock therapy. Then again, attitudes to health and sickness may be less

superstitious than before, notwithstanding much uncritical endorsement of acupuncture and other 'alternative medicine'. Likewise, 'flying saucers' are not yet in vogue again to anything like the extent they were at the height of the 'cold war'.

On the other hand, a quasi-belief in astrology or in the occult, not to mention fundamentalist religion, is riding higher than most humanist progressives would have thought conceivable around the turn of the century. One should not forget that, at grass-roots level within the United States, much of the impetus behind SDI can be said to have come from fear of 'close encounters' with a distinctly Satanic version of the Soviet threat. Much the same would have applied, of course, to the brief surge of 'shelter mania' that followed President Kennedy's pro-civil defence speech of July 1961.<sup>40</sup> In strategic defence now, as in civil defence then, more commonsensical criteria are likely to decide the final outcome. Nevertheless, such episodes do bespeak a certain flight either from reason as such or else into too blinkered a rationality.

The worst-case scenario should probably be this. Suppose, in the decades ahead, the world 'the scientists have made' does slide out of control as social alienation and environmental degradation worsen. Then the scene could be set for a descent into modes of Fascism (Blue, Red or hybrid) that were all too narrowly rational. By this is meant ones that might no longer be influenced by obsolete mythologies about racial purity and past heroic ages but which see the hand of God or destiny as revealed in technocratic aplomb and crudely material ascendancy.

In which connection, we ought not to forget the contribution made to the progress of Benito Mussolini by Filippo Tommaso Marinetti and his *Vita Futurista* movement, with its celebration of armed force and aeroplanes and hatred of Renaissance munificence. More immediately, one cannot ignore a marked upwelling of pessimism, these last few years, among the thinking young. It is disconcerting to be reminded that 'by far the largest number of futurist films' have lately derived from 'dystopian scenarios in which humans are trapped in a horrible future'.<sup>41</sup> This may not be a 'bomb culture' as such. But it could mark the beginnings of a 'catastrophe culture' in the broader sense.

Clearly, Space development would make such tendencies worse were it to become too much the creature of international competition. So could it if store was set by making available to those able to pay such benefits as orbital tourism or, even more dubiously, the projection towards infinity of the ashes of the dead. The remedy has to lie in sharing as widely as possible the fruits of the revolution in astronomy. Moreover, this sharing has to be active. This cannot mean mass involvement in pure research, still less in Space travel. But it can mean a broad debate about the implications of Space research for our place in the cosmic order and hence our future on this planet.

What students of the new cosmologies may most usefully do, in fact, is challenge and influence the many-sided revival of religion and of interest in religion lately under way across much of the world. Can the yearnings this bespeaks be informed by a deeper awareness of the exquisite majesty of all creation or are they doomed instead to recharge bigotries, be these communal or whatever? Will the revival be obsessed with human mortality or will it cherish all life, on this planet and elsewhere? How will it define 'the other', the challenge from without that all societies seem almost eager to perceive? At a higher level of understanding, that definition could relate to our planetary