

SPACE, WORLD GOVERNMENT, AND 'THE END OF HISTORY'

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For although our voyage is to be outward, it is also to be inward, to the sources of all great acts, which are not out there, but in here, in us all, where the Muses dwell[1].

Francis Fukuyama's recent speculations concerning the Hegelian 'end of history' are examined within the context of an ambitious world space programme. It is argued that a major space programme could help maintain the stability of global democracy, by acting as a plausible 'moral equivalent of war' and would also be a major source of cultural stimuli, thereby helping to prevent the stagnation predicted by Fukuyama for a world which has reached this state. However, it is argued that only a world government will be able to organise a space programme on the necessary scale, and a symbiotic relationship between space development and world government is postulated.

1. INTRODUCTION

In 1989 Francis Fukuyama, a former deputy director of the US State Department's Policy Planning Staff, published a remarkable essay entitled "The End of History?" in an obscure American Journal [2]. The essence of Fukuyama's argument (subsequently expanded in his book *The End of History and the Last Man* [3]) is that liberal democracy marks an endpoint in the evolution of human political organisation, and, as such, may indicate arrival at 'the end of history' in the sense postulated by the nineteenth-century German philosopher Georg Hegel [4]. Fukuyama is careful to stress that 'the end of history' in this sense does not mean an end to *events*, even to big events, but merely an end to humanity's long ideological evolution towards a stable form of political organisation.

The underlying argument is therefore essentially optimistic, and one which is supported by the trend towards democratic and liberal values which has been apparent in world history for the last several centuries. The recent collapse of communism in Russia and Eastern Europe certainly fits this trend, and although obvious obstacles remain to the *global* establishment of liberal democracy, we may agree with Fukuyama that history is moving in this direction. However, in spite of the fact that the universal victory of liberal values would mean an end to ideological conflict, Fukuyama himself is ambivalent towards this outcome because he believes that an end to human ideological competition would also mean an end to human achievement and creativity. As he puts it [2]

"The end of history will be a very sad time. The struggle for recognition, the willingness to risk one's life for a purely abstract goal, the worldwide ideological struggle that called forth daring, courage, imagination, and idealism, will be replaced by economic calculation, the endless solving of technical problems, environmental concerns, and the satisfaction of sophisticated consumer demands. In the post-historical period there will be neither art nor philosophy, just the perpetual caretaking of the museum of human history"

Ideally, of course, we would like to build a democratic and peaceful global civilisation that is both stable and *dynamic*. That is, a civilisation that has come to the end of its ideological evolution (in favour of liberal-democracy), but which is nevertheless an exciting place in which to live; a civilisation which

is at peace with itself, but whose *history* is still open. I shall argue here that space developments may bear strongly on both aspects of this vision for the future of humanity.

2. THE THEORY IN OUTLINE

In order to put the subsequent discussion into perspective, in this section I will attempt briefly to summarise the main points of Fukuyama's thesis. It turns out that this can be done quite satisfactorily by quoting appropriate extracts from Ref. 3, as follows:

- (1) "The growth of liberal democracy ... has been the most remarkable macropolitical phenomenon of the last four hundred years" (p. 48).
- (2) "The success of democracy in a wide variety of places and among many different peoples would suggest that the principles of liberty and equality on which they are based are not accidents or the results of ethnocentric prejudice, but are in fact discoveries about the nature of man as man" (p. 51).
- (3) "If human societies over the centuries evolve towards or converge on a single form of socio-political organisation like liberal democracy, if there do not appear to be viable alternatives to liberal democracy, and if people living in liberal democracies express no radical discontent with their lives, we can say that the [ideological] dialogue has reached a final and definitive conclusion." (p. 137).

It is Fukuyama's thesis that once the whole world has reached this point the Hegelian 'end of history' will be at hand. There will be an "end of wars and bloody revolutions [because] agreeing on ends, men would have no large causes for which to fight." And, in Fukuyama's view, there will also be an end to cultural progress, because the principal sources of creative stimuli would have dried up.

3. WORLD GOVERNMENT

There is an interesting political conclusion which seems to me implicit in this analysis, namely that the ultimate end point of human ideological evolution would be marked by the creation of a (liberal-democratic) world government. Indeed, it is difficult to see how, in Fukuyama's terms, history could truly 'end'

without the establishment of some kind of international government, because unless the existing nation-states are locked into a rigid political structure, there would remain the possibility of continued international competition (and therefore 'history'). Fukuyama is probably correct in believing that the risk of violent conflict between democratic states is less than between non-democratic ones, but it will remain *possible* for such conflict to occur for as long as nation-states (even liberal-democratic ones) remain independent actors on the world stage. In a sense, therefore, a world government would put an institutional seal on the 'end of history' as Fukuyama understands the expression. And, although Fukuyama himself fails to draw this conclusion explicitly, he does acknowledge that the triumph of liberal democracy is associated with the rise of international institutions linking individual democracies together (and at one point even identifies the European Community as an "institutional embodiment of the end of history").

Fukuyama's failure to realise that his analysis points in the direction of world government is even more surprising given his indebtedness to the political writings of Immanuel Kant, and especially to Kant's 1784 essay, *Idea for a Universal History with a Cosmopolitan Intent* [5]. Unlike Fukuyama, Kant was very clear that the 'end' of human political evolution lay with a world government, or, as he put it, with

"the great body politic of the future, a body politic for which antiquity provides no example. Although this body politic presently exists only in very rough outline after many revolutions of reform, nature's supreme objective - a universal cosmopolitan state, the womb in which all of the human species' original capacities will be developed - will at last come to be realised" (Kant's emphasis).

The advantages of world government have been discussed previously by a number of political thinkers, and I refer the interested reader especially to the works of Kant [6], Kerr [7] and Russell [8]. I justify a discussion of this subject in the present context, not only because I consider it to be implied by Fukuyama's historical analysis, but because I believe that it will prove to be intimately bound up with the whole question of humanity's future in space.

Indeed, a conceptual link between space development and world government has long been suspected; it was mentioned as early as 1948 by A.V. Cleaver in a paper published in this Journal [9], and it forms a backdrop to much of the most thoughtful space fiction (for example, consider Gene Roddenberry's *Star Trek*, where the underlying political institutions are imagined to form a federal government not only for planet earth, but to embrace worlds inhabited by other intelligent species). To my mind there are at least three reasons for postulating a link between these, at first sight, quite unrelated subjects:

(a) The cosmic perspective

Space exploration, like astronomy before it, provides a cosmic perspective from which to view human affairs, a perspective which makes the division of our planet into a couple of hundred warring nation-states seem ridiculous, even obscene. This perspective, powerfully reinforced by photographs of Earth taken from space, carries with it a potent, if implicit, argument for the *political* unification of our world. Any thoughtful consideration of space exploration necessarily entails a switch from an earth-bound to a cosmic perspective, and with it (to my mind at least, and I suspect to many others) comes a feeling that space programmes *ought* to be undertaken by a united humanity.

(b) The unifying influence of space technology

In addition to providing a unifying cosmic perspective, space technology has contributed materially to the incredible shrinking of our world which has occurred in recent decades. The drawing together of previously widely separated regions, through the improvement of communications, is an important factor in political unification. It is for this reason, for example, that the constitution of the United States made the provision of post roads a federal responsibility [10], while H.G. Wells [11] has drawn attention to the crucial importance of the railway and the telegraph for the expansion of that federal constitution into the interior of the North American continent.

In the context of global unification, Arthur C. Clarke has noted that satellite communications technology (together with the modern passenger aircraft) is today fulfilling a similar role on a world-wide scale. In an important sense, communications satellites have already helped make the entire planet far smaller than were the original thirteen American states in 1787, and have, to that extent at least, prepared the ground for a world government. Indeed, following this logic, Clarke [12] has described the INTELSAT agreement as amounting to nothing less than "a first draft of the Articles of Federation of the United States of Earth."

(c) The provision of adequate resources for space development

Finally, there are grounds for believing that only a world government will be able to satisfy the political and economic conditions which must be met before humanity will be in a position to undertake any really large-scale space activities. I have presented these arguments in detail elsewhere [13], and will not repeat them all here. In large measure, they focus on the provision of resources for the development of space infrastructure, and the probability that only a *disarmed* world will be able to channel sufficient financial, material, and intellectual resources in this direction. As it seems certain that the world will not disarm until such time as a competent world government can guarantee international peace and security, such an institution would appear to be a prerequisite for large-scale space development.

Thus, while the cosmic perspective means that space programmes *ought* (logically and morally) to be carried out by a world government, and space technology has already helped to make world government technically *possible*, I would argue that economic and political considerations imply that world government is actually *required* for any really large-scale programme aimed at the exploration, utilisation, and colonisation of the solar system.

4. SPACE AND THE STABILITY OF GLOBAL DEMOCRACY

Given that Fukuyama's analysis points in the direction of a world government, two interrelated questions present themselves. Firstly, would a world-wide liberal-democratic state remain stable for an indefinite period? And secondly, if so, would this, as Fukuyama so provocatively suggests, also bring an end to meaningful human achievement? It seems to me that space developments may prove to be highly relevant to the satisfactory solution of both these questions.

To Fukuyama, there is a fundamental contradiction at the heart of liberal democracy, a contradiction that he mostly fears (but in places seems almost to hope) may cause his predicted liberal peace to break down, and history to "restart". The

problem arises from the alleged inability of a peaceful world to provide sufficient outlets for human energies. As he puts it (p. 314), some fraction of the citizens of such a world will

“want to have ideals by which to live and die, even if the largest ideals have been substantively realised here on earth, and they will want to risk their lives even if the international state system has succeeded in abolishing the possibility of war. This is the “contradiction” that liberal democracy has not yet solved”

To readers of this Journal, the phrase “even if the largest ideals have been substantively realised *here on Earth*.” (my italics) is likely to appear especially significant, although Fukuyama himself appears oblivious to its implications.

Fukuyama is not the first to have worried about this problem. Perhaps the most famous discussion of it is that due to William James in his essay on The Moral Equivalent of War [14]. Although a pacifist, James was concerned that pacifism *per se* is unable to provide substitutes for the ideals of heroism, glory, adventure, *etc.*, which (arguably) provide powerful psychological attractions to war for many people. As he put it, the

“romantic-minded everywhere ... refuse to admit for a moment that war may be a transitory phenomenon in social evolution. The notion of a sheep’s paradise like that revolts, they say, our higher imagination. Where then would be the steeps of life? If war had ever stopped, we should have to reinvent it, on this view, to redeem life from flat degeneration.”

Essentially the same conclusion was reached by Bertrand Russell [15], when he expressed the view that:

“if the world is ever to have peace, it must find ways of combining peace with the possibility of adventures that are not destructive”

It is important to realise that the problem does not lie solely, or even mainly, in the minds of governments and military men, but in the collective consciousness of public opinion. This led James to argue for a *constructive* alternative to war which would satisfy many of the same psychological needs. His own suggestion was a ‘war against nature’, a great collective effort to tame the natural world. However, technological advances have now rendered many of his specific suggestions obsolete, and, in any case, the idea of a *conflict* with nature offends against the more enlightened environmental views which currently prevail. Moreover, this suggestion appears inherently weak, as it is far from clear that chopping down trees or building roads would possess sufficient excitement to coax the ‘romantically minded everywhere’ away from a fascination with military conflict.

Any plausible ‘moral equivalent of war’ must satisfy two rather different criteria:

- (1) It must provide opportunities for self-fulfilment, recognition, adventure, and (arguably the most important) a degree of *danger*, for the relatively small fraction of humanity who may wish risk their lives in pursuit of a “purely abstract goal”.
- (2) It must be able to catch the imagination of vast numbers of people who will never become personally involved. That is to say, hundreds of millions of people must be able to *feel* that they are involved with something worthwhile and exciting as they watch developments reported by the mass media.

War itself satisfies both of these criteria, and any non-destructive alternative must do likewise. Certainly, James’

‘war against nature’ satisfies point (1) only weakly and point (2) hardly at all, and the difficulty he had in suggesting anything better illustrates how hard it will be to find a non-violent alternative.

It seems to me that the exploration and colonisation of the solar system (and ultimately of the galaxy) would constitute a grand, *non-destructive*, human adventure which would satisfy these criteria to a considerable extent (a possibility which has, of course, been noted previously [16]). It is able to satisfy point (1), by providing an exciting, glamorous, and inherently risky activity for those who may wish to volunteer for it. And experience (particularly from the Apollo era) has shown that it is also capable of satisfying point (2), in that millions of non-participants all around the world can get caught up in the wonder of it all. Indeed, I suggest that the exploration of space is, at least in principle, better able to fulfil these criteria than any other peaceful activity yet advanced as a ‘moral equivalent of war’.

If, as James, Russell, and Fukuyama all suspect, a non-violent alternative to war is necessary in order to stop a peaceful world from tearing itself apart out of sheer boredom, an ambitious world space programme may be of considerable importance. However, if space exploration is to play this role effectively, it will have to be organised on a scale much larger than any space programme yet considered. In particular, if it is plausibly to satisfy condition (1), it would seem that hundreds of thousands of people, *worldwide*, must be able to feel that they have a realistic chance of participating in the programme directly. Indeed, we begin to see that, if it is to provide the necessary opportunities for participation, such a space programme may have to be on a scale comparable to that of the military establishments it is designed to replace. In addition, and most importantly, it would have to be *global* in scope.

It seems certain that only an *organised* world would be able to afford a space programme on the necessary scale, and we see here a link with the idea of world government discussed above. Indeed, there are grounds for believing that space development, and the long-term stability of any future democratic world government, may prove be linked symbiotically: a world government may find an ambitious space programme to be desirable for social reasons, but, equally, only a world government will be able to organise one on the necessary scale.

5. SPACE AND THE FUTURE OF CULTURE

The other part of Fukuyama’s argument is that the ‘end of history’, as marked by the triumph of liberal democracy (and, as I would argue, by the creation of a world government), would mean an effective end to human creativity. Summarising the views of Hegel’s twentieth-century interpreter Alexandre Kojève, Fukuyama (p. 311) puts it thus:

“It would no longer be possible to create the great art that was meant to capture the highest aspirations of an era, like Homer’s Iliad, the Madonnas of da Vinci or Michelangelo, or the giant Buddha of Kamakura, for there would be no new eras and no particular distinction of the human spirit for artists to portray. [T]hey could not say anything fundamentally new about the human situation.”

Now, it is certainly true that many of humanity’s most creative phases have coincided with socially and/or militarily turbulent times, and the possibility of a causal connection between the two cannot be excluded. Indeed, it would seem to be self-evident that *some* kind of stimulus is required for any creative act - human creativity does not, and cannot, occur in a vacuum. Fukuyama believes that creativity will cease at the

'end of history' because, by his definition, many of the traditional sources of artistic and intellectual stimuli will have ceased to exist, and he cannot think of any new sources of inspiration which might adequately replace them.

Here again, I think Fukuyama makes an important point, albeit one marred by a failure of imagination. We may agree that a uniformly peaceful world, desirable though that most certainly is, would indeed be in danger of intellectual stagnation if it could find no new sources of stimuli to replace those which it had lost. Fortunately for the future of humanity, however, a vast new field of activity, full to the brim with potential stimuli, would be open to such a world. I refer, of course, to the exploration of space.

It has to be admitted that, when measured against our enormously rich cultural heritage, space exploration has, to date, led to only relatively minor artistic achievements. It has inspired great scientific and technological creativity, but its influence on the fine arts, literature (excluding science fiction), poetry, and music has been small, perhaps disappointingly so. This was well expressed by Joseph Campbell [1], when he voiced his dismay that NASA had selected, of all things, the Book of Genesis to be read by the crew of Apollo 8 on Christmas Eve, 1968:

"how sad that we should have nothing in our own poetry to match the sense of that prodigious occasion! Nothing to match, or even to suggest, the marvel and the magnitude of this universe into which we then were moving!"

On the other hand, the space age is less than forty years old, less than 1% of the history of human civilisation, and the fact that it has not yet influenced our culture to a significant degree does not mean that it lacks the potential to do so in the future. Indeed, there are good reasons for believing that the vastly enlarged perspective, and the flood of new discoveries, which must inevitably accompany any large-scale space programme would have a major cultural impact. As Campbell put it

"with each expansion of horizon ... there has been, as there must inevitably be, not only an expansion of consciousness, in keeping with ever-widening as well as deepening insights into the nature of Nature but also an enrichment, refinement, and general melioration of the conditions of human physical life."

Campbell realised the space age meant that "a new life has opened, richer, more exciting and fulfilling ... than was known, or even thought of or imagined, before". Indeed, that it marked "one of the very greatest leaps of the human spirit to a knowledge not only of outside nature but also of our own deep inward mystery that has ever been taken, or that ever will or ever can be taken." Seen in this light, Fukuyama's prediction of cultural stagnation seems terribly short-sighted, for the space age actually is a 'new era', with vast potential for the "distinction of the human spirit." And the more space activities come to dominate human thought and affairs, the more this potential will come to be realised.

As this special edition of *JBIS* is devoted to a consideration of the impact of space on culture, it may be worth exploring this aspect of the subject in a little more detail. I will therefore attempt to outline some of the potential sources of cultural inspiration that may be provided by an ambitious space programme. For convenience, we will consider them under the three sub-headings of 'science', 'art', and 'philosophy', although we should realise that these distinctions are wholly artificial: the cultural world, like the physical world, actually forms a continuous whole.

5.1 Science

Science is a part of human culture, although its status is qualitatively different from the other broad cultural sub-categories of art and philosophy. This difference arises from the fact that science is rooted in the 'real' world (*i.e.* the physical universe) to a degree that other aspects of culture are not; it is creative, but its creations are *discoveries* about the actual nature of world. In addition to their bare technological utility, these discoveries often have a powerful influence on other aspects of cultural activity, inspiring both artistic creativity and philosophical speculation. Thus, any activity which stimulates scientific enquiry would be expected to lead not only to increased *scientific* creativity (new hypotheses, theories, and discoveries about the natural world), but also to increased productivity in non-scientific areas of culture.

Fukuyama does not explicitly claim that the Hegelian 'end of history' would mean an end to scientific creativity, but he does imply that it would degenerate into "the endless solving of technical problems." Regardless of whether or not we consider this to be likely, in the present context we may note that a major programme of space exploration would, by its very nature, be sufficient to save the scientific enterprise from this fate.

The space age has already produced vast quantities of entirely new scientific data, and has revolutionised our understanding of the solar system and our place within it. However, all this pales into insignificance when compared with the scientific yields to be expected from a major programme of solar system and, especially, of interstellar exploration. It is important to realise that it is not only astronomy and planetary science that would benefit, or even the physical sciences generally, but also biology (which would be stimulated even by the failure to discover extraterrestrial life, and which would undergo explosive developments in the event of such a discovery), sociology (both human and, in the event of discovering advanced alien species, non-human), and possibly even 'anthropology' and archaeology. In fact, I cannot think of a single major branch of scholarship which might not hope to be stimulated by the expansion of humanity through the Galaxy.

5.2 Art

The exploration and colonisation of space cannot fail to provide new artistic stimuli, and to some extent has already done so. Think of the limitless new vistas of alien landscapes that will present themselves for artistic interpretation. Consider the experiences of the explorers and colonisers, unique in all of human history, that will be available to inspire authors and poets. If the Trojan War could inspire the *Iliad*, may not the colonisation of Mars, or the first venture into interstellar space, inspire epics of comparable cultural significance?

Moreover, it is not just that particular space scenes, and particular space events, will inspire particular works of space art (although they will undoubtedly do so), but the increasing dominance of the 'cosmic perspective' on human thought will change the whole paradigm of artistic expression and interpretation. As Campbell noted [1], while considering this very question in the new light of the space age:

"All the old bindings are broken. Cosmological centers now are any- and everywhere all poetry now is archaic that fails to match the wonder of this view."

Art, in all its forms, will reflect the growing 'cosmicization' [17] of the human mind.

In addition, expansion into space will provide vastly greater opportunities for the *diversification* of culture. Consider the enormous diversity of artistic traditions on this one planet, and

the fact that these cultural differences have arisen, often within less than a thousand years, between geographical areas just a few thousand kilometres apart. What diversity of cultures would we expect to see within an expanding ecumen of dozens (growing to perhaps hundreds or thousands) of colonised *worlds*, each with their own local, and presumably unique, sources of artistic inspiration?

5.3 Philosophy

A case can be made that space has already had an impact on certain aspects of moral and political philosophy. Specifically, it seems to me that the growing awareness of the 'cosmic perspective' has influenced the subject of environmental ethics (which falls under the umbrella of moral philosophy) and, as I tried to show in § 3, has stimulated thought on world government (which forms a part of political philosophy).

Be this as it may, it seems clear that an open frontier, expanding into an infinite and unknown universe, cannot but provide the practitioners of this ancient subject with intellectual raw material into the indefinite future. For what it's worth, I sketch below some new philosophical topics which may arise, but we should realise that this vast and mysterious universe must contain within itself the germs of entirely new fields of philosophical speculation waiting to be discovered.

(1) *Moral philosophy*

We can already identify a number of moral-philosophical issues which may arise as a result of humanity's expansion into space:

- (a) The subject of environmental ethics will have to be extended to cover the interaction of humanity with the material objects of the solar system and beyond (particular problems will arise concerning economic exploitation, colonisation, and experiments in terraforming) [18].
- (b) The moral relationships between humanity and extraterrestrial life, in all of its probable infinite diversity, will need to be addressed. Note that the mere *possibility* of coming across other life in the universe acts as a stimulus for moral philosophy, irrespective of whether such life is actually discovered.
- (c) Not unrelated philosophical problems may pertain to the relationships between human explorers and their (increasingly complicated, and possibly intelligent) retinue of robots and computers (for example, just what would be the moral rights and duties of an artificially-intelligent space probe?).
- (d) Profound questions relate to the morality of colonising planets which harbour indigenous forms of life, or which may do so in the future. To put these issues in perspective, consider the following question: At what point in the Earth's past would it have become *morally* unacceptable for spacefaring extraterrestrials to colonise *our* planet? We may be sure that *any* such colonisation would have precluded our own evolution. Does this mean that the colonisation of certain types of planet is immoral, and, if so, what types of planet? Would the colonisation of Mars be morally unacceptable?
- (e) On the other hand, does there exist a moral *duty* for life in one part of the universe to spread it to parts where it is absent. Should we actively spread terrestrial life as far and wide as possible, just in case there is no life anywhere else? Far from the colonisation of Mars

being immoral, is it perhaps a moral necessity?

These are examples of questions which no existing moral philosophy can address adequately, but which are likely to become of major importance to a space-based society.

(2) *Political philosophy*

Fukuyama appears to believe that all progress in political philosophy ended with Hegel, apparently on the grounds that, if history 'ends', the philosopher who predicted this must have reached the pinnacle of his subject (ref. 3, pp. 311-12; inc. note 21). However, passing over all those other contributions which have, as a matter of fact, been made to political philosophy since Hegel, this assertion is flawed as a consequence of its circular reasoning: if we can show that history need not, in fact, 'end', then there are no grounds whatever for claiming that Hegel represents the ultimate in political philosophy. If, as I argue in this paper, an ambitious space programme can keep history 'open', we may expect entirely new political philosophies to appear. In particular, new philosophies are likely to arise out of the new political situations resulting from any programme of space colonisation.

All political philosophy to-date has been concerned with the organisation of, at most, a single world; often it has been concerned with only tiny portions of that world (city-states, for example). However, it is not difficult to see that whole new fields of political speculation open up once the possibility of *many* worlds is admitted. As examples, consider the following questions:

- (a) If the Earth develops a federal planetary government, could this be extended to cover human colonies throughout the solar system. Is a solar system-wide government possible in principle? Would it be desirable?
- (b) What would be the political status of interstellar colonies? Here the distances are so vast that (at least in the absence of faster-than-light communication) we might expect any attempt at political unification to be hopeless. But is this necessarily so? Are interstellar political institutions possible in principle? If not, is anarchy on interstellar scales inevitable?
- (c) Consider the political evolution of individual, isolated, interstellar colonies? They might all be established as liberal-democracies, but would they remain so? Is there a danger of political backsliding into dictatorship, or (heaven forbid!) of initially unified planetary colonies disintegrating into a multitude of warring states? Are there steps that could be taken to prevent this, or should colonial independence be sacrosanct?
- (d) If human colonisers should encounter comparably advanced extraterrestrial societies, would *political* relations (or even political union) be possible? If so, would it be desirable? Just what limits would *biological* differences place on the resulting political institutions?

5.4 Scale of the required space programme

From the above discussion, it seems clear that an expansion of humanity into space would provide novel cultural stimuli in the fields of art, science, and philosophy. However, it is also clear that many of these advantages would only be fully realised by a very large-scale space programme - far larger than anything seriously considered to-date. Here I have in mind a programme aimed at the *in-depth* exploration of the entire solar system (so that we come to know the other planets, in all their varied

aspects, to the same extent that we currently know the Earth); the development of an economic and industrial space infrastructure; the establishment of colonies and scientific outposts on (at least) the moon and Mars; the purposeful development of the technology needed for rapid ($v \sim 0.1c$) interstellar space flight (as reviewed, for example, by Mallove & Matloff [19] and Crawford [20]); and eventually the initiation of a programme of interstellar exploration and colonisation.

I have argued previously [13] that a space programme on this scale would have to be a *global* effort, most probably organised by a world government. Thus, we may perceive another symbiotic relationship (possibly even a positive feedback loop) linking space, world government, and the amelioration of Fukuyama's 'end of history': cultural stagnation may be avoided as a result of new stimuli flowing in from outer space, but only if the world develops its political institutions in such a way as to be able to organise a sufficiently ambitious space programme in the first place.

6. CONCLUSION

In his interesting and provocative work, Francis Fukuyama [2], [3] has suggested that the world is heading towards a uniform adherence to the ideals and institutions of liberal-democracy. In his view this will mark arrival at the Hegelian 'end of history', and I have argued that this is likely to be marked *institutionally* by the establishment of some kind of world government. This essentially optimistic 'outcome' to the political evolution of human societies may be marred by two further considerations:

- (1) the possibility that a peaceful, liberal-democratic, world would be unstable (in part owing to its inability to provide sufficient outlets for human energies); and
- (2) that, if stability *could* be ensured, it might result in cultural stagnation, and an end to what (at least in the view of Fukuyama and his philosophical predecessors, Hegel and Nietzsche) makes us truly human.

Fukuyama's analysis has come in for a certain amount of criticism since it was first published in 1989, but it seems to me that he has raised a number of issues which deserve to be taken seriously by all those with an interest in the future of humanity. With one very important qualification, I am prepared to accept that a uniformly liberal-democratic world, presided over by a world government, could, for all of its other advantages, turn

out to be quite a dull place in which to live. It may indeed lack sufficient outlets for non-violent adventure, and possess too few sources of intellectual and artistic stimuli for the maintenance of a vibrant culture. My one qualification is that this rather depressing vision of the 'end of history' could be avoided if such a world could find exciting, challenging, and *outward-looking* activities with which to keep itself occupied indefinitely.

In this paper I have tried to show that an ambitious space programme would offer a world in danger of reaching the Hegelian 'end of history' an opportunity to alleviate many of the accompanying social and cultural disadvantages. In particular, I have argued that a large-scale space programme would have the potential to act *both* as a workable 'moral equivalent of war' (§ 4) *and* as a major (perhaps a limitless) source of cultural stimuli (§ 5). I am prepared to assert that there is no other peaceable activity open to us which could fulfil these different, but equally essential, functions to the same extent.

I have argued that a space programme on the necessary scale could only be organised by a world government. Thus, to the extent that Fukuyama's analysis points in this direction (§ 3), we may note that his own theory implies the *possibility* of opening a new frontier which would largely negate his predictions for the 'end of history'. However, while a world government may be *necessary* for the development of this new frontier, it would not, in itself, be *sufficient*: it would remain necessary for a major world space programme to win political support. Fortunately, there exist strong reasons (based on the 'cosmic perspective', the desirability of finding a 'moral equivalent of war', and possible economic requirements for extraterrestrial raw materials) [13] why a world government may consider a major space programme to be an important undertaking, and perhaps even necessary for its own survival.

In summary, I suggest that space development and world government need each other, and that their interaction will enable humanity to avoid the cultural stagnation predicted for the 'end of history'.

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