

Keynote Address

TO BATTLE FOR THE BIOSPHERE

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One of the most important prerequisites for mutual understanding and desirable unison, and indeed for stability in our modern world, is precise definition - so that, for example, when I speak about The Biosphere, you all know precisely what I am referring to, and vice versa. This impressive gathering of minds from many parts of the world is assembled to consider and I hope honour The Biosphere, so first I would ask each and every one of you to think of what you understand by that key term for a vital concept, while I count eight seconds - sotto voce so as not to disturb you from your thoughts. Thank you!

I will now tell you what I myself understand The Biosphere to be, and if any of you differs seriously, please raise a hand when I call for any dissent, and we'll discuss the matter with Mr. Chairman's permission before proceeding any further.

DEFINITION OF THE BIOSPHERE

The Biosphere seems best defined simply as "the peripheral envelope of Planet Earth, together with its surrounding atmosphere so far down, and up, as living things exist naturally. It thus ranges from the deepest [rock strata] and bottoms of 'troughs' in oceans, upwards to the highest levels of the atmosphere, in which any form of life - [including chemosynthetic, bacterial or other cells or dormant spores] is present at all normally, for we exclude artificial projections into space" and other man-engendered feats (Polunin 1982; cf. also 1980a, 1980b). First as a descriptive outline and subsequently as a definition, this has latterly become widely adopted and seems likely to prevail (e.g. Anon. 1982 etc.; Pauling et al., 1982).

Now how does this strike us, individually and collectively? If we all agree, I suggest that we adopt it for the workings of this Symposium, and moreover give it extra weight towards stability by adopting a supportive resolution. So now is your chance and the time to indicate any disagreement or dissent. This "zone of life" employment should at once dispel the other main use of our term as "the web of life" that is popularly attributed to Jean-Baptiste Lamarck and is still apt to be confusingly used even in learned journals and papers submitted to mine. It should also obviate Webster's alternative (and in a sense intermediate) definition of

The Biosphere as "living beings together with their environment", though this last usage seems nearer to our choice than to "the web of life".

As for the living organisms themselves, I believe they should all be considered as an integral part of The Biosphere, even as Mankind is an integral part of it and, of course, utterly dependent on it. This modern use of the term "Biosphere" appears to be attributable to the far-sighted Russian Vladimir Ivanovich Vernadsky, who was born in St. Petersburg (now Leningrad) in 1863 and died there as recently as 1945. Widely considered the founder of biogeochemistry, he wrote a book entitled La Biosphère, of which I have so far not been able to obtain a copy even to cite, but cf. e.g. Kovda (1970).

#### KEY FACTS ABOUT THE BIOSPHERE

Not only are we humans part of, and absolutely dependent on, our only one Biosphere, but we are faced with a number of widely-accepted facts about it which surely impose limitations and, often, concomitant obligations, on all our living races of Homo sapiens, whatever our colour or creed, as the predominant stewards of our Planet Earth. Let me spell out a "round dozen" of them, largely following the treatment in the Declaration of the World Campaign for The Biosphere (Anon. 1982).

1. The Biosphere - that vast system of living and non-living matter which forms the outer envelope of our Planet Earth - is an integrated whole of which the components are widely interdependent.
2. This system has, in its operation evolving over several thousand million years, given rise to numberless millions of species and other taxa of biota of which many continue to live within it.
3. Mankind is one of those species with, however, the unique endowment of conscious intelligence that makes him practically all-powerful.
4. As consumers, we humans draw our essential resources of air, water, food, warmth, and spiritual energy, from The Biosphere, and are therefore completely dependent on its great cycles, vast production, and ecological integrity, for our well-being and very existence.
5. The carrying capacity of The Biosphere for satisfying human life, which may be raised by technology but all-too-easily and widely lowered by its aftermath, is nevertheless limited under specific conditions and times.
6. What these limits are now, or may turn out to be in the future, is neither known nor perhaps even knowable except in retrospect.
7. Because of the present uncertainties concerning human populations and their effects on The Biosphere, it would be prudent - bearing in mind always our absolute dependence on The Biosphere - to guard against imposing constraints on it of any conceivable kind.
9. The most dangerous threats to life, including those to (and com-

monly perpetrated by) Mankind, are often the quietly insidious ones - such as those to the stratospheric ozone shield - against which we must be constantly on the alert and should be ready to take action when necessary on a global scale.

10. Yet the most dangerous and immediate threat to life as we know it is that of thermonuclear holocaust, against which we should all do everything we possibly can - for there are not only the great powers threatening (who seem unlikely to start anything intentionally as they know the appalling consequences, and that nobody would really win), but also smaller ones, as well as grave possibilities of mechanical failure or malfunctioning, human or computer error, or sheer accident (cf. Tolba et al., 1983). There is also the problem of mental imbalance in our increasingly crowded world, and of somebody in a tither "pressing the wrong button".
11. A grave aspect of the point about human error is the psychological one - that under the extreme pressures and stresses of hyper-responsibility and in time doubtless also incapacitating fatigue, leaders could make wrong decisions and, perhaps based on misinterpretation or misinformation, start nuclear holocaust; and if you doubt the biospherical importance of this horrendous possibility, consult, for example, last year's papers of Ehrlich et al., Tolba et al., and Turco et al., cited in our references.
12. The one thing that Mankind seems incapable of doing, though now amply possessed of the knowledge and means, is peaceful limitation of its own population, which continues, increasingly if insidiously, to impose the next-greatest threat after nuclear ones; yet even Mankind cannot go on growing - demographically and, still less, demographically - on a finite globe: the further it goes, the greater will be the fall, which surely poses our gravest long-term dilemma.

Those are my "round dozen" choices for our present occasion, but one could almost as well have added another dozen of such concerns as:

1. governmental indifference to the welfare of The Biosphere,
2. economic disparity between the so-called rich and poor nations,
3. the debt-engendered instability of both these factions,
4. toxic pollutions including long-range airborne acidification,
5. deforestation and other devegetation,
6. ever-more and -wider soil depletion and erosion,
7. inexorably expanding desertification,
8. increasing salinization especially with more and more irrigation,
9. breakdown of communications,
10. carbon dioxide build-up engendering climatic changes,

11. threats to the stratospheric ozone shield,

and various other grave possibilities that, it seems, keep cropping up practically all the time inter alia as what I used to call and write about as "conceivable ecodisasters".

## WHAT CAN WE DO?

It is a trite thing to say, but surely our world needs saving from itself - from destruction perpetrated by Mankind, its uniquely intelligent component! Many of you in your learned papers to be presented to this Symposium will be helping in this direction, and I plead with you to do it consciously in the context of the global whole. Thus even the tiniest bits may be vital to the welfare of that whole, such that it cannot continue healthily - or perhaps even at all - without them. For as we said in our No. 1 point about The Biosphere, it constitutes one integrated whole of which the components are widely interdependent.

I'll now spell out my further and last "round dozen" - of considerations and actions to support the World Campaign for The Biosphere as an educational device and largely as recorded in more detail at earlier stages of the Campaign's development (Polunin 1980b; 1982). These are as follows:

1. Publishing and broadcasting information and support by all appropriate means: This should include editorials, survey articles, and research topics in high-level journals, and also invoke the "popular" press through chronic involvement of leading internationally-oriented newspapers. If the big internationals lead the way with persistence and inspiration, the local but often widely-quoted press will surely carry on the message.
2. Using other vehicles of desirable publicity, including posters and stickers: Persistently involved should be such further "media" as television - in which several recent initiatives based particularly on London, England, are to be welcomed - documentary and even fictional films and writing, radio broadcasting, the pulpit, and possibly the "legitimate" stage. Explanatory posters should be used, for example, at appropriate conferences and meetings, and attractive stickers on vehicles of all kinds (e.g. Gaekwad & Oza 1981; Oza 1982; Polunin 1982). Some of the most effective of these have been manufactured quite gratuitously in India in support of our Campaign for The Biosphere.
3. Employing instructive advertising and audience-attracting showmanship: One of the prevailing means of changing peoples' attitudes is through improving their knowledge and understanding by dignified advertising in various media - including those already mentioned, and accurate newspaper notices and announcements. Unfortunately, media advertising is apt to be far too costly for the widely impecunious environmental movement to pay for, whereas governments and major industries cannot afford to let happen the kinds of things that ecologists and realistic demographers feel bound to warn them about: herein should lie the basis of bill-footing for advertising on behalf of The Biosphere.

4. Books on The Biosphere and illustrated study manuals: Obvious desiderata which scarcely need explaining, as are our colleague Dr. John R. ("Jack") Vallentyne's displays of "audience-attracting showmanship" with his sonic globe and broadcasting to many millions.
5. Specialist research and its vigorous application: Although it is true that the answers to many looming or predictable questions are known (at least to enlightened workers), and that what is now widely needed is due application of such knowledge, there can scarcely be too much basic research and applicational testing of pertinent results emanating from it. Moreover, who can tell, at any particular stage, what research results are pertinent and even important for application?
6. Need to control human numbers and behaviour: Perhaps the most fundamental thing that modern Mankind has so far failed to do is to control his own numbers and their demands, despite having the necessary knowledge and means to do so humanely. So the remedy is left to Nature's ways of shortage and deprivation, famine and/or pestilence, or to Mankind's own way of increasing violence and slaughter. Yet this ever-worsening situation has to be remedied if our world is not to deteriorate further into a plethora of dreary monocultures and widespread squalor. On the need for proper remedy, environmental education and due awareness should at least provide an overdue warning, while widely pointing the way to stewardly care and ultimate amelioration - hence our new WCB-ISEE dual establishment to carry on the World Campaign for The Biosphere (cf. Davis 1983).
7. National Parks, Biosphere Reserves, and biological gardens, etc.: The National Parks and Protected Areas movement has gathered considerable momentum in recent years, *inter alia* in relation to the rights of indigenous peoples and some integration with development and even military preparedness. It is now extending actively into the marine environment, while further valuable educational tools include the Man and The Biosphere (MAB) programme and the now practically world-wide network of Biosphere Reserves (Batisse 1980; 1982). The inspiration to be derived from communion with Nature in a wilderness area can be supreme, as the poets have repeatedly demonstrated, and such communion can be an aesthetic experience leading to productive enlightenment. As for such devices as the World Conservation Strategy, it often seems to us that such an educational one as the World Campaign for The Biosphere is a prerequisite to sufficiently wide public understanding for their successful implementation. In any case, all the remaining wild wilderness areas that can be preserved should be protected, where possible with buffer zones, and to such ends we recently suggested the establishment forthwith of what might be called a "world wilderness alliance" - of similarly-oriented bodies that would, for instance, stand and act together if any of their members were threatened by developmental incursions or unenlightened officialdom (Polunin 1983).
8. Pertinent conferences, meetings, and other "free" deliberations: These should be organized and duly publicized to foster and

further the World Campaign for The Biosphere - particularly through the new dual world body concerning which you will be hearing from its Secretary-General, Professor Craig B. Davis (cf. 1983), in his Banquet Address to this Symposium.

9. Imperative to change human attitudes and priorities: Whether or not there is need to change to a so-called "new international economic order", it is surely important that peoples' attitudes toward the future should change widely in consideration of "generations yet unborn", and only right to preserve options for them by such means as limiting ourselves to efficient use of the remaining stocks of certain essential minerals and fossil fuels. There is also a dire need to change radically our attitudes vis-à-vis "workers on the land" and "traditional peoples", for they are the ones who surely know most intimately their own small pieces of The Biosphere - whatever they may call it - moreover understanding its needs and how it can best be maintained and fostered. Indeed it may well prove to be ultimately on them, rather than on politicians or industry or even Big Agribusiness that, with the erosion or ignorant destruction of more and more of our life-support system, contemporary humanity may find itself dependent for food and much else.
10. Need to establish due ethics and laws: In their aggregate paper, "Ethics of Biospherical Survival", contributed from the vantage-point of cultures based on four different continents, Willard et al. (1980) emphasized the need for fresh thinking and ethics on behalf of The Biosphere, while Widman & Schram (1980) dealt with the hopes for "Common Laws for Earth and Mankind" in a similarly innovative fashion. These papers were prepared for, and presented in outline at, our Second International Conference on Environmental Future, and engendered long and lively discussions which are published for the most part in the Conference proceedings (Polunin 1980c). But much more of that kind of consideration - of ethics and laws, and concomitant action towards their ultimate implementation - is urgently needed. For without duly ethical thinking "in the corridors of power", and along the wider roads that lead to them and in edicts that stem from them, there can be little room to hope for a better world, while one of the most obvious needs for the future will surely be suitable laws and their enforcement for Mankind and Nature.
11. Institutional and organizational involvement towards survival: It is important that a large number and wide range of leading international organizations and institutions, national and other academies and associations, and university and other departments and research institutes, etc., comprehend the concept and full significance of The Biosphere, and participate in fostering the Campaign for its healthy maintenance in perpetuity.
12. "Guardians of The Biosphere" Recognition and Awards: We are firmly convinced that substantial betterment would accrue to the prospects for survival of our tottering world if only people everywhere would learn about The Biosphere and realize their responsibilities, as its intellect-endowed stewards, to preserve and foster it in all possible ways,

applying this stewardship to their day-to-day as well as longer-term actions. Should not such learning and cognate behaviour take the place of the fervoured discipline (for example, stemming from religious beliefs but without the spiritual tyranny that is still imposed by some even today) whose erosion in the modern world is so deeply to be deplored? To become thus the profoundly conscious (and why not officially recognized?) Guardians of The Biosphere, should give to all such adherents a missionary feeling of hoped-for accomplishment and lasting "togetherness". A pervading attitude of "this is Our Biosphere to cherish and maintain", should then underlie their concerted resolve to preserve peace on Earth and do all in their power, individually and collectively, to assure for Mankind and Nature a lastingly robust future. True Guardians of The Biosphere should be universally recognized as feeling and duly practising their full responsibilities toward ensuring this. By them, any human act that is clearly contrary to the interests of sustaining a healthy Biosphere should be denounced as wicked, and should therefore be prevented or countered at all costs.

That is my "round dozen" of points of concern and desirable actions on behalf of The Biosphere as our threatened life-support — as focal points of attack in an on-going educational, etc., battle that must somehow be won if our world is to survive in anything like its present, precious but fragile form.

#### CONCLUSION

To end my pleas I cannot do better, after drawing too extensively on my own earlier writings and now having little more time to spare, than to quote, with some paraphrasing for which I'll ask his permission if there is any question of publication, the warning penultimate paragraph of the worthily detailed article on "Biosphere" in the latest edition of Encyclopaedia Britannica, by that versatile American botanist David Murray Gates (1981 reprinting): The point has been made abundantly regarding the untoward effects of Man's activities which amount to a veritable attack on The Biosphere. Past centuries of public profligacy and private greed may now cost Man whole centuries of deprivation — or millenia, or even annihilation if we think (as we surely should) of thermonuclear conceivabilities. Hope diminishes with each decade, even in some years or shorter periods. There is a persistent unconsciousness regarding the innumerable individual actions that affect Nature; these seemingly insignificant events, when multiplied by Man's ever-increasing numbers and compounded by his demophory, constitute a tremendous assault on The Biosphere. As a civilization develops, its technology improves and the needs of its citizens become displaced by wants or, in time, demands — even if they are for the merest trappings of technology. Can our world survive this wasteful phase? We must all help to show that it can.

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