

## Space age management and space age learning

Statement by Soedjatmoko, Rector, United Nations University  
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I am grateful for the opportunity to address this conference which marks the twenty-fifth anniversary of our first steps into outer space. In these twenty five years so much has happened that we seem justified in reversing the old saying that happy people have no history by adding that some periods seem to suffer from an overdose of history. In fact, our overdose of history has become such that we might well be facing the most momentous crisis in the career of our species, and of earth. And by crisis I mean something close to what Ilya Prigogine has seen in his work on complex living structures: crisis as danger and risk but also as opportunity, challenge and precondition for a new beginning.

There are four phenomena which together mark our unique position.

First, the human population explosion which means that for the first time earth is overrun by one species which has the capacity so far has refused to the responsibility for putting its habitat in order.

Second, the atom bomb which irrevocably symbolizes the power we now have to destroy ourselves and, with us, life on earth.

The third phenomenon is represented by the image of the global village or from a somewhat more elevated perspective the concept of the noosphere.

These provide the context for the fourth event, the one which is the very reason for this conference: our first moves to explore and use outer space.

These phenomena demonstrate the ambiguity of our situation. They speak of power and of vulnerability. They show that progress can be measured by the problems it creates. They illustrate our approach to outer space as a mixture of "staggering glory and strange blandness". They prove that our situation is one of closure and of opening.

It is in this perspective of closure and opening that outer space activities take on their true significance. For years now we have had to cope with the concept of limits: Einstein set limits to the speed of light, Heisenberg set limits to the human capacity to comprehend reality, the second law of thermodynamics seems to set limits to the evolution of the universe and of time. More recently, we have had to cope with the notion of limits closer to home: limits to growth and limits to the carrying capacity of earth. As a counterpoint to the closure is, however, the opening conferred by outer space activities: intellectually, morally and practically.

In this perspective we can articulate the real challenge, the critical choices facing us.

We can choose to act so that outer space becomes a further dimension of our destructive capacity or an added dimension to the growth potential of the human race.

We can choose to transform outer space into a new arena for our conflicts on earth. The easy way is of slipping into outer space our fears and distrust. The Outer Space Treaty, perhaps the most advanced international legal instrument we have been able to formulate seems lately to be creaking at the seams: there are warnings about space laser weapons, killer satellites and space platforms fuelled by military interests. Taking this road we would project into space human self-destruction, we would contaminate outer space with moral pollution and exercise human folly at a cosmic scale.

The other road is more difficult, challenging and requires an immense intellectual and managerial effort.



At this conference it should not be necessary to dwell on the benefits of outer space: the increase in knowledge, the advances in the monitoring of our environment, in communication and navigation, the possibility of new materials, perhaps even of new sources of energy. But here again we face a choice: who will reap the benefits? Will our use of outer space, even for peaceful purposes, do no more than aggravate terrestrial disparities?

Thus, even to reap the potential benefits of outer space we must put our earthly home in order. If only we care to look out and up, space exploration itself provides the opening. As early as 1948, the prediction was made that once a photograph of the earth, taken from outside, is available - once the sheer isolation of earth becomes plain, a new idea as powerful as any in history will be let loose. This idea is the concept of one world, of spaceship earth which combines a space image with a global approach to the environment. The "operating manual for spaceship earth" concerns the management not of nations, nor of regions but of a planet and corresponds to the call for evolving legal bases securing the earth-space environment. Outer space has given us a new and valid perception of the place of humanity and of earth in the cosmic order. And more: we have been given a widening environment. Our immediate neighbourhood is now no less than the solar system, and if, as seems to be the case, there is no other intelligent life-form in this small chamber of a big universe, our responsibilities have also expanded. These new images of reality thus reflect the unity of mankind - and of our larger environment. How can we translate the new reality, the new perspective we have learned from outer space into practical action?

We should - and we must - grasp the historic opportunity now offered by outer space. We might not be given another chance. We have to prove mature enough to deal with outer space on its own terms and use the lessons from space to assist in solving our problems on earth.

We will have to start with what we already have. The partial failure of the law of the sea conference proves the importance of the Outer Space Treaty. There is in the Treaty an underlying principle of global commons which we need to develop. We can also draw upon what have been forced to

learn in the management of another, space-related resource: the radio frequency spectrum. Nature forces us to obey her laws more than purely human laws in our recognition that radio waves and outer space cannot be subject to appropriation but only to negotiated rights of rational and equitable humane use. This implies the need for new notions of property and sovereignty in keeping with the concept of global commons as resources we hold in trust for coming generations.

The next step is to forge the instruments for managing our activities in outer space. We will need to move towards a world regime for the management of outer space to the benefit of all and for the commensurate institutional arrangements, a collective space entity based on the principle that seen from Mars we are all Terrans.

One dimension of our task thus concerns the construction of regimes for the management of new resources, of new management institutions. The other dimension implies giving each man, woman and child on this earth the possibility of intellectually and morally participating in this enterprise, by becoming citizens of earth - and of space. This means learning for the space age. In this learning process which is crucial for our survival, science fiction has done better than our educational institutions. In keeping with the basic tenets of the UN University, I am not talking about education in the conventional sense but of learning as an approach to life, to knowledge and to practice. We must learn to manage the widening context which the space age has brought us, exactly as we must learn how to cope with accelerating complexity. We need an opening up of learning equivalent to the opening up implicit in outer space activities. And we have made a beginning in identifying the ingredients of this innovative learning: anticipation and participation.

Only by working towards space age management and space age learning can we provide interaction between the nature of space and the needs of earth, the interconnexion between space and human civilization. Only then can we learn to cope with the vision of humanity's basic unity and give the planet the institutions of co-operation that express this insight. Only then can we



cope with the tremendous vistas we expect from the space telescope: a glimpse of the edge of the universe and the beginning of time. And only then can we prepare ourselves for what to my surprise has moved from the realm of fantasy to the serious documentation of this conference: the search for extraterrestrial intelligence. Because, as stated by the starnomer Fred Hoyle: No species with real confidence in the future would hesitate to search the galaxy for the other intelligences which must surely have emerged and which may have triumphed over the difficulties that still confront the human species today.

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- colonisation

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and more  
going up  
on earth

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