A review

Lincoln P. Bloomfield (ed.), *Outer Space: Prospects for Man and Society*

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This is a collection of essays, not a book, as editor Bloomfield points out in his introductory perspective. Consequently, there is no thought or concept which forms the central core of the work; even the unifying effect of having one author write all of the essays is lacking. In a real sense, therefore, no analysis can be made; rather one must treat each piece as a separate and distinct entity. Nevertheless, two things give rise to a general reaction to the whole collection. First is the editor's attempt in the introduction to give a perspective for evaluating the purpose and need for such a collection of papers. A second and related cause for giving a general reaction is the obligation which every reviewer should at least consider if not feel compelled to meet; i.e., answer the question, "Is this a book that should be read?" (Reviewers, of course, have been known to seize the opportunity for other somewhat more self-centered purposes.)

Quite aside from the fact that some papers within the collection may have value for one group and others for different groups, no categorical answer to such a query is possible without knowledge of the background of the reader. For most of those who are in positions of authority and who must make or help make decisions of importance other than the very general one of whether or not to explore space at all, surely the answer to the question posed is a resounding and confident "No!" As Bloomfield points out, however, "Education of the layman is the prime aim of this book."

For those who have done any studying about space, no particularly new information is presented and probably the same is true as to insights into fundamental policy questions and possible solutions. If there is an exception to this statement it would be Bloomfield's own contribution. Put in concrete terms, this reviewer's reaction is that most Congressmen would benefit from reading the book, but certainly those who serve on committees which have to deal with matters relating to the national space effort would gain nothing, except possibly from Bloomfield's and Killian's pieces. One who is not a member of such a Congressional committee but who has read the *New York Times* with some care and regularity during the last year or so would have at least as much information as can be gleaned from this book, although some new insights undoubtedly might be gained by those who have spent *no* time working in this area. If these were the papers made available at the American Assembly meeting, surely the participants found them rather unrewarding

reading, again with one or two possible exceptions. Surely, most of those who attended had this information. Those who prepared the papers must have underestimated their audience. Such a sophisticated group was ready to start considering much more specific policy questions and suggestions than those represented by the generalities palmed off on them in most of the contributions.

On the other hand, as a collection of information and general policy questions relating to our space efforts, the book should serve as a welcome and adequate primer for the layman. Unquestionably the exploration of space is one of the vital issues of our time and the American Assembly is to be applauded for preparing this first book for such a purpose. The editor clearly is right in reminding us of Jefferson's admonition that in our kind of political society in which we entrust the ultimate powers to the people, it is important that at least a significant fraction of the lay public has an understanding of both the basic informational and policy assumptions on which the federal space program is premised. I recommend the book to the layman who is concerned about the important policy questions which our governmental leaders are now facing and already answering in one way or another.

If in the perspective the writer is suggesting that our present efforts to explore space will be as scientifically significant as the discovery of fire, the wheel, gunpowder, and the printing press, or as the theories developed by Copernicus, Galileo, Newton, and Einstein, to name only those mentioned in the introductory piece, this reviewer disagrees. By far the greatest part of the time, energy, and money which will be spent for our space program will be engineering development work, the primary aim of which is to achieve politically oriented psychological goals, such as by putting a man on the moon by 1970. This is not to suggest that the United States should not enter and win, if possible, the race with Russia, but it will not be the kind of scientific seismic breakthrough which the formula $e = mc^2$ was. Nevertheless, space is our present great frontier of geographical and informational exploration and indubitably it will attract important explorers and financial support in large chunks. Our job, therefore, is to perform the task with as much perception and imaginative common sense as possible. The book makes a contribution towards meeting the problem of creating an informed public which can change, or veto if necessary, the policies adopted by our elected and appointed representatives.

Even here, however, a suggestion may not be out of order. The American Assembly should now attempt to prepare a second volume which should prove much more valuable, for the layman as well as the experts. Too often in an attempt to simplify complex technical subjects experts also talk down to their audiences. It is one thing to simplify and generalize about scientific theories and information; it is quite another to fail to be specific about the basic policy questions which are presented by the scientific developments which have been summarized in general, nontechnical terms. It is time now for such experts as those who attended the first American Assembly on Outer Space to attempt to identify specific policy questions, to present the arguments and assumptions needed to make decisions, and to make recommendations about which an answer or answers should be adopted. If this kind of person is unwilling to make concrete suggestions, at the admitted risk of being found to have overlooked some facet of the problem or to have drawn wrong conclusions, there is no hope whatsoever that the layman in whose hands the ultimate powers of government rest will or can make intelligent

judgments about either governmental policies or the men who make them. For example, Dr. Killian in his monograph (p. 188) raises the extremely crucial question of how much of our national resources should be put into the space effort and of that so allocated how much should be directed to putting man on the moon. He has no suggestions, however, except to be wary of spending too much effort and money on these goals. Instead we now need to be told by those who have access to the knowledge upon which policy should be made what they think is enough but not too much—*and why*! The intelligent and interested layman can effectively influence governmental decisions only if alternative proposed policies and the arguments pro and con about each are prepared for him by the experts. The American Assembly is an ideal sponsor for bringing together these experts from government, industry, labor, and the academic groups. Only next time the group should aim much higher.

Perhaps the one author who comes closest to laying out the arguments for a specific policy position is Dr. Odishaw. He makes a clear call for continuing nongovernmental international scientific cooperation, pointing to the successes of COSPAR. What should be done by an American Assembly of experts now is to explore the con arguments as well as the pro and then to suggest specific programs for implementing whatever basic policy is adopted. All Dr. Odishaw did was to act as an advocate. This is fine if there is an adovcate of the other point of view. If there is none, then a disservice to the lay public is done because it may assume there are no reasons for taking a different view. This is cited as an example, not as a criticism of Dr. Odishaw. He at least recognizes that there are some problems in cooperation through nongovernmental organizations when so much of the financial support must come from government agencies and when the results of research may have such impact upon governmental programs of the utmost importance to the various countries, programs which may concern the very existence of these countries. What is suggested is that now the layman needs to be told in specific detail what the problems are with an approach of this nature and what alternatives are available, such as official intergovernmental cooperation. This kind of official cooperation may have its best chance for success in these areas which come closest to pure scientific research, and therefore such attempts might serve as pilot projects in developing official cooperative effort techniques to be used in more controversial areas.

If the Assembly experts would now undertake to lay out specific problems, marshal the arguments pro and con, and present alternative solutions, the intelligent lay public should then be able to make sound evaluations of the merits of basic policy decisions adopted by his representatives in government. Unless the general public is so informed, the ultimate power of decision which is theirs will be useless and we will have changed our form of government. The disturbing thought that creeps in is that the rapidity of our technological growth may already have removed effective control from the electorate and perhaps from their elected representatives in Congress. Increasingly we are the unwitting and, for the most part, unintended victims of those in government (including those privately owned but largely governmentally financed corporations who do our defense and space work on government contract) who in effect have almost a monopoly on the information needed to make intelligent policy decisions or judgments about their validity. Reports and evaluations from nongovernmental experts who have or can be

given access to pertinent technical information is probably our only hope to prevent the undemocratizing of our governmental processes.

The American Assembly should undertake a more controversial role and encourage groups of critics (in the best and constructive sense of the word) to evaluate governmental policies in these crucial areas. If the results of such critical evaluation can be made available to the public, a truly magnificent service may have been performed. The American Assembly could play a vital role in this process. Our system cannot live, however, if the experts are satisfied to dish up only generalized noncontroversial pap.

One comment made at the end of the perspective evoked another general reaction to the book. Here, Bloomfield states ". . . there is nothing in the record so far to guarantee that man is capable of transcending in space the conflicts which have kept his earthly home in turmoil and peril. All we can do is hope that the ever-accelerating thrust into this new realm will in turn push social invention to the point where it has a chance of catching up in the race of history" (pp. 5–6). In the opinion of this reviewer, Bloomfield is to be greatly complimented for placing the whole problem in this perspective but if nothing more than what is found in this volume is done about the matter it is a most forlorn hope which he expresses. Of the almost 200 pages of text in the book, only Bloomfield's own excellent contribution of 30 pages deals primarily (although not in any depth) with the social engineering problems that accompany space exploration and the supportive earthbound research on which it depends. One could argue that the last 8 pages of Dr. Brennan's piece on "Arms and Arms Control in Outer Space" also deals with social engineering but this too is not much more than a cataloging of suggestions without significant critical evaluation and only within this one field of arms control (pp. 141–9). Perhaps Dr. Killian's contribution could be counted in this category but basically, it only attempts to point out one problem, albeit a crucial one: the need to utilize our national resources wisely. No attempt is made to discuss any specific proposal or to weigh the merits of trying to reach the moon first. Certainly no suggestions are made about the social impact of such an achievement, except possibly the mention of national prestige which would accrue to us if we are first.

At the risk of being accused of motives other than to advise the reader of this review as to whether or not to read the book, a suggestion came to mind in thinking about the hope expressed by Bloomfield that our space effort might so push social invention that the social sciences will catch up with progress in the physical sciences. Of the 3.5 billion dollars being spent this fiscal year by NASA alone and the probable 6 billion to be appropriated in the next fiscal year, it would be interesting to compare the amount allocated to machine (both mechanical and human) engineering to achieve a successful landing of man on the moon in this decade with the amount to be spent on social engineering. Hazarding a guess without any actual figures, surely the amount used for the latter is at best *de minimis* if not almost nonexistent, even if indirect effects on social engineering problems are included.

Although this is a biased opinion, the reviewer is inclined to rank the social problems as more important than the technical. Without meaning to suggest that similar amounts should be spent on social research, it seems fair to suggest that a part of NASA's appropriation be specifically designated for research on social problems created by the space program. To some extent this is the thinking which led to the creation

of the Arms Control and Disarmament Agency and the appropriations for the National Institutes of Health. Each is much more limited in scope of work, however, than would be necessary to delve into the many social conflicts which will be created by almost crash programs for developing space technology and capabilities. Is it not time that we recognize that social engineering of a difficult nature cannot be done without specific direction and time, energy, and money, any more than we can solve the problem of how to land a man on the moon and return him safely merely by predicting that it can be done or by leaving it to general technological evolution? It is not enough to hope that other government agencies and academicians will do this work. People directed to work on social problems specifically created by space technology work and who have complete access on a daily basis to all that goes on in our space program should be working on these problems of social engineering. It is not enough that some agencies outside the government are beginning to work on these and related problems. Bloomfield's own work as director of the MIT Arms Control project and the work of the University of Michigan Center for Research on Conflict Resolution which publishes this journal, to mention only two groups, are doing valuable work. But do we not need the same kind of concentration on the social problems of space exploration which we give to designing and building machines and almost even the men who man them? We do not depend on engineering schools or even industry to do this as a part of their regular work without specific support from government. It is time we recognized that this will have to be done for the social problems created by each new technological development such as atomic energy and space.

In addition, of course, we must constantly look over the shoulder of the government personnel, and outside critics, like the assembly of experts at Arden House which produced this volume, should be encouraged to make their views known to the public. Nevertheless, social planning to meet these new problems of space work needs the drive and incentive which comes only from direction and support by Congress and NASA. The research should be done with the same sense of urgency that surrounds our attempt to get to the moon first. Anything short of this is certainly unsatisfactory and perhaps catastrophic.

The book is a start in the direction of creating an informed public. Those who have done no particular thinking about the problems of space exploration (and surely this includes most people) should read it. We are badly in need of a follow-up volume, however.

REFERENCE

BLOOMFIELD, LINCOLN (ed.). *Outer Space: Prospects for Man and Society.* Englewood Cliffs, N.J.: Prentice-Hall, 1962.