

# P. I., Photogrammetry, and Public Policy\*

Public policy must be established with regard to the exploitation of remotely sensed imagery.

THIS SESSION can be considered a departure from the normal technical sessions held at the ASP/ACSM meetings and, as such, comes under the umbrella of the "Science and Public Policy" area where the social sciences interact with the physical sciences and technology: in this case photo-interpretation and photogrammetry.

The selection of the title, "P.I., Photogrammetry, and Public Policy" as against "Remote Sensing and Public Policy" or "Earth Observation and Public Policy", was deliberate. In addition to reflecting the major professional character of the American Society of Photogrammetry and its Divisions in exploiting photography and imagery for specific uses, it also reflects a bias of the moderator.

Simply stated, it is only when remote sensor imagery is optimally processed, interpreted, and measured (heretofore, in the vast majority of cases, by human beings aided by machines) that it becomes important for whatever use is contemplated.

Vehicles, sensors, data links, film on the shelf; images on tape, disc, or manipulated in a computer; or pretty pictures on a wall or display screen, by themselves, neither solve

problems, nor, for that matter, should they cause problems for policy makers. Problems do occur, however, when a particular vehicle, sensor, or other hardware system technology is overexaggerated or overemphasized at the expense of practical exploitation and use. In this vein, interpreters and photogrammetrists realize that any given remote sensor image is a *tabula rasa* or is in an essentially blank or informationless state with everything of importance or unimportance, of national or international application or misapplication, for whatever purpose, national/international security or resources/environmental, coming only after proper interpretation and photogrammetric exploitation. Thus, it is suggested that it is precisely in the imagery interpretation and photogrammetric data handling area that more attention and effort should be focused both for responding to the technical user problems and for helping to ameliorate the political ones.

It is the great range and variety of user problems and potential uses to which remote sensor interpretation and photogrammetric techniques can be brought to bear which has us in this room this morning discussing public policy concerning it. Such an exploitation capability, of course, is made possible by the fantastic capability of modern sensor-carrying satellites and aircraft, particularly the former, for acquiring enormous volumes of imagery worldwide. These two primary technological factors, then, (1) Multiuse interpretation and photogrammetric exploitation potential and; (2) Virtually unlimited worldwide imagery acquisition horizons; impact directly and vitally into the political, economic, legal, social, and organizational spheres at local, national, regional, and international institutional levels. As in other areas, technology (let us call it *information technology* since in the last analysis that is

\* The ASP Plenary Session, *P. I., Photogrammetry, and Public Policy*, held on March 14, 1975 at the Annual Meeting of the American Society of Photogrammetry, was organized, chaired, and introduced by A. Biache. The session included presentations by R. Stowe, F. Doyle, J. Porter, W. Harris, and A. Katz. The introductory paper by Biache and the papers by Stowe, Porter, and Harris are printed in this volume substantially in the form given at the session. Because the presentation by Katz was not given from a prepared text, his paper represents a compilation of thoughts put together since the meeting. Although the paper by Ida R. Hoos was not given at the ASP Plenary Session, it is included with this group of papers because of its related subject matter.

what we are really dealing with) appears to be somewhat ahead of our institutional ability to properly adapt and use it.

U. Alexis Johnson, now Head of our SALT negotiating team and then Under-Secretary of State, at a March 2, 1970 American Institute of Aeronautics and Astronautics meeting in Annapolis<sup>1</sup>, reflected on the space technology and earth resources space observation areas. After reviewing the ultimate (and as he stated, "invariable") international application of science in general and space science in particular he suggested that "the challenge is to seize opportunities and create the international institutions and arrangements which will be needed to take full advantage of them." His concern five years ago was "our ability to meet this challenge." It is felt he could make that same statement today. Mr. Johnson also reflected on certain international issues which would have to be resolved as the ERTS program, now LANDSAT, unfolded and as its full potential was to be realized. These included:

- (1) Who will receive the data and results both at home and abroad? In what form? By what means?
- (2) How are the potential users of these data and results to be prepared to handle them, to understand them, and of most importance, to apply them in development and resource management?
- (3) How is the program to be organized and managed, both domestically and internationally?
- (4) What countries will be interested and able to participate actively in the program? In its space-borne operations? In the ground receipt of the data? In the analysis and understanding of these data? In the distribution of the information based on these data?
- (5) What is to be done about those countries who are either unable, or unwilling to participate?
- (6) What controls and procedures will be needed to meet the legitimate proprietary interests and national sensitivities of those whose resources are being surveyed?
- (7) How, and by whom, will this program be financed on a continuing basis?

Political, economic, legal, social, and organizational opportunities and problems can be readily seen in his 1970 comments and again these questions are certainly still with us, still valid, and still being addressed as we shall see in our session this morning.

<sup>1</sup> U. Alexis Johnson, Under Secretary of State, *The Uses of Space in International Affairs*, American Institute of Aeronautics and Astronautics meeting on Earth Resources Observation and Information System, Annapolis, MD, March 2, 1970.

It might also be of interest that Mr. Johnson, while emphasizing the international complexion of space-observation programs, also said that "Even before we can sensibly define new international arrangements we need to move ahead in our own domestic organization for the development of this program." Just as existing international institutions (e.g., INTELSAT) might not be good models, he felt that the Federal Government's user agencies and NASA also were unlikely focal points for the overall development of such programs. In his concluding remarks, Mr. Johnson again returned to the theme that "problems of domestic organization and management are but a microcosm of the long-range problems abroad which will follow from the international development of the program." He was saying: Get our own national house in order with our sights set on the ultimate international case.

Thus, we can see an inevitable wedding of national and international areas with the latter being the long-term aspect, calling for long-term policy making at the highest level of government and a similar necessity for jointure of the imagery exploitation interests and capabilities of those diverse "vertical" user communities which are crossed by this "horizontal" imagery exploitation technology. In short, getting one's house in order might very well concentrate on the *image interpretation, photogrammetry, and associated data-processing community* as it currently exists in the U.S. and as it might exist and impact internationally in the future<sup>2</sup>.

Such a rational and integrated policy making in regard to the interpretation and photogrammetric potential and use of remote sensing, should involve *all* user areas including those concerned with international and national security and arms control<sup>3</sup>, as well as

<sup>2</sup> A beginning at such a national ordering process is represented by the efforts of the Federal Mapping Task Force. See Executive Office of the President/Office of Management and Budget, *Report of the Federal Mapping Task Force on Mapping, Charting, Geodesy, and Surveying*, U.S. Government Printing Office, July, 1973.

<sup>3</sup> For instance: In regard to the U.N. as a model, Alva Myrdal in an article in the October, 1974 "Scientific America", *The International Control of Disarmament*, argues for a "new U.N. Agency charged with the collection and dissemination of information regarding the fulfillment by nations of the obligations they incur under disarmament agreements and regarding ongoing changes in national armaments." This included information derived from satellite imagery.

earth resources, energy, land use, environmental, mapping, disaster and crisis management, and so on, at the same time that *all* current and future imagery sources and processing capabilities are included.

For it is suspected that if we in the long run willy nilly operationally develop, use, and disseminate imagery acquisition, interpretation, and photogrammetric capabilities openly to all others and have not developed a coherent, long-term, across-the-board, and step-by-step policy along the lines of answers to the types of questions asked by Mr. Johnson, but again including considerations of *all* potential uses to which state-of-the-art imagery can be put, the proliferating technology itself will call the tune. Consequences from such an open-ended policy might not be in the national interest, could cause unnecessary diplomatic problems and, in the worst case, could be internationally destabilizing. Furthermore, separate national programs developed under such a policy are likely to be duplicative and not very cost effective. In summary, "as the program proceeds"<sup>4</sup>, the great promise it holds out might

not be what we intended and, more important, positive opportunities in international problem-solving and stability building could very well be neglected or lost because of inattention to technical and organizational possibilities in the interpretation, photogrammetry, and associated data handling areas.

Perhaps this type of session can be helpful in refocusing and perhaps initiating attention to such opportunities as well as providing new approaches in this complex public-policy-and-technology area so that we can participate in, help move forward towards, and become part and parcel of, what a great philosopher-scientist, Pierre Teilhard de Chardin<sup>5</sup> termed "the organization of research developing into a reasoned organization of the earth."

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United Nations, New York, Sept. 18, 1969 emphasized that the American earth resources program was to be international in scope and was to produce information for all countries "as the program proceeds and fulfills its promise."

<sup>4</sup> Richard M. Nixon, *Toward an Open World*, President's address before the 24th session of the

<sup>5</sup> Pierre Teilhard de Chardin, *The Phenomenon of Man*, Harper & Brothers, New York, 1959.

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