SPACE STATIONS: INTERNATIONAL LAW AND POLICIES. By Delbert D. Smith. Boulder, Colorado: Westview Press, Inc., 1979. Pp. xvi, 264. $28.75.

With the space age now fully upon us and assorted remnants of the first true space station being collected by NASA, the public is becoming cognizant of the fact that space stations will be a fixture in the immediate future. The field of space law is burgeoning, with many new articles and books being written. One of the newest entries in the publishing derby is an excellent book by Delbert Smith which explores the concept of space stations in view of space law.

Mr. Smith divides his book into three main parts which consider the science of space stations, operational and ownership alternatives for space stations, and the body of space law presently emerging from existing international treaties. The book begins by discussing space stations and satellites from a scientific viewpoint. This section is well written and is the most absorbing part of the book. Smith divides space stations into four potential types: space information stations, power producing stations, science research or manufacturing stations and colonies. A great deal of interesting and realistic information is written about each type of space station without engaging in unsupported evangelistic preaching as some writers are wont to do. In addition, Mr. Smith's writing is solidly documented with some twenty-eight pages of notes. He even gives deserved credit to Arthur C. Clarke who gave birth to the modern communications satellite with his now famous idea of orbiting three satellites in a geostationary orbit of 23,000 miles to provide worldwide communication coverage.

In his third chapter, Mr. Smith examines institutional alternatives for the ownership and operation of space stations. After discussing federal, private and joint federal-private ownership of space stations, Smith launches into an absorbing discussion of his own component ownership plan. The proposed system of ownership and operation divides a space station into several components and may possibly be the best financial and operational plan of the future. Four groups of component responsibility would be established with the possibility of different owners or lessees for each. Group A would consist of the station frame ownership and operation while Group B would be composed of the owners and operators of individual modules of each space station. Group C would be comprised of the service providers and direct module users, whereas Group D would consist of end users.

The advantages of such a component ownership system are numerous. Cost sharing would be encouraged and the necessary massive construction funds for such stations could be more easily raised. Larger space stations could be built and the resulting economies of scale would undoubtedly lower the use cost of these space stations. With the entry cost reduced, and perhaps one or two states assuming responsibility for frame ownership and operation, the enormous risk of loss for business development in space would be reduced, enabling private enterprise to more easily enter outer space.

The component ownership plan also provides a ready-made vehicle for international development of outer space through space stations. Space stations in geostationary orbits above fixed regions of earth lend themselves to regional operation agreements by nations in the region served by the space station. The several types of component ownership provide opportunities for small as well as large and wealthy countries to participate directly in space station benefits. International cooperation would be encouraged and competition between state governments for scarce geostationary orbit space would be reduced.

The central treaties and proposed international conventions for the development of outer space are quite adequately discussed and their ambiguities and shortcomings exposed. As Mr. Smith has suggested, the existing space treaties need to be clarified to deal properly with the subject of space stations. My applause, however, is reserved for that portion of the book devoted to a presentation of the legal issues involved in direct satellite broadcasting to individual receivers, and earth sensing, the remote observation of natural resources by satellite or space station.

The basic legal conflicts which arise between the United States' view of free and open use of space without prior restraint and those of the Third World and communist countries which favor prior consent for direct satellite broadcasting and earth sensing, are thoroughly dissected. Although Mr. Smith and I both favor the United States' view, it seems quite obvious that most foreign countries will have little to do with direct broadcast programs that they cannot control. As for the earth sensing issue, most of these same countries are likely to be equally stubborn in their belief that the size and location of their crops and natural resources should be national secrets.

Although one should commend Mr. Smith for presenting solid scientific information and many opposing legal viewpoints and issues in a very readable fashion, some criticism is also due. Except for reprinting one article of the Spacelab Agreement, Smith ignores Spacelab, which will, in just a few years, be the first space station operated on an inter-

national basis. Additionally, the claims of equatorial nations to outer space above their land masses are inadequately explored. For several years now, equatorial nations have been claiming that segments of the important geostationary orbit which lie above their countries are their natural resources, subject to their sovereignty. Such an important issue deserves a more complete discussion, particularly in light of the growing international power of the Third World, to which the equatorial nations belong.

On the whole, Mr. Smith has written an excellent book. Anyone with a serious interest in the development of space law or space stations will enjoy reading it.

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