9. ______, *Several complex variables*, Univ. of Chicago Press, Chicago, Ill., 1971.
10. H. Rossi, *Topics in complex manifolds*, Les Presses de l'Université de Montreal, Montreal, 1968.
11. V. S. Vladimirov, *Methods of the theory of functions of many complex variables*, M. I. T. Press, Cambridge, Mass., 1966.
12. H. Whitney, *Complex analytic varieties*, Addison-Wesley, Reading, Mass., 1972.

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Algebraic methods in the global theory of complex spaces, by Constantin Bănică and Octavian Stănăsilă, J. Wiley, London, New York, Sydney, Toronto, 1976, 296 pp., $21.50. Revised English version of original Romanian text published in 1974.

The algebraic methods referred to in the title are primarily those of sheaves and cohomology. This book presents an account, with complete proofs, of recent advances in the theory of complex analytic spaces.

Complex analytic spaces are complex manifolds with singularities based on the local model of zeros of a finite number of holomorphic functions in an open set in $\mathbf{C}^n$ (an analytic variety). A sheaf over a space is essentially an assignment to each point of the space of local data near that point (e.g. holomorphic functions near a point, holomorphic functions which vanish on a given subvariety, etc.). Sheaf cohomology is an obstruction theory which encodes information on passing from the solution of certain local problems to certain global problems. For instance, a subvariety is defined as a closed set which is locally the zeros of holomorphic functions, and one can ask whether this same subvariety is the zero set of globally defined holomorphic functions. The use of sheaves and cohomology in the study of complex spaces has been extremely fruitful since the initial work of Cartan and Serre in this direction in the 1950s.

The statements of results in this book are closely parallel to the analogous results in algebraic geometry, mostly due to Grothendieck, though the proofs are different, and usually more difficult than in the algebraic case. This approach should appeal to algebraic geometers wishing to learn about complex analytic spaces, since it highlights the similarities between the two theories. It should also be useful to specialists in several complex variables, since it assembles very recent and widely scattered material. There is no index, but there is an extensive bibliography, in which 3/4 of the articles have appeared since 1960.

The idea of using sheaves and cohomology in the study of several complex variables is not new. Sheaves were introduced by Leray (1950) to study the cohomology of fibre spaces. One of their first serious applications was by H. Cartan (with the assistance of Serre), in his Paris seminars of 1951/1952 and 1953/1954, where he used them to reinterpret and expand the work of Oka, thus laying new foundations for the theory of several complex variables. Grauert and Remmert built upon this foundation with a series of papers, including the development of the concept of a complex analytic space.