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Classification theory of algebraic varieties and compact complex spaces, by Kenji Ueno, Lecture Notes in Math., no. 439, Springer-Verlag, Berlin, Heidelberg, New York, 1975, 278 + xix pp., $12.10.

Looking for a research area in which you can start at the ground floor? This is it–the classification of varieties in dimensions three and higher. Of course the prerequisites might sound a little stiff: algebraic geometry, complex analytic geometry, and the "classical" classification theory in dimensions one and two, but in reality it's not as bad as one might fear. The author of the text under review gave an informal course on the subject at the University of Mannheim in 1972, and the lecture notes (by P. Cherenack) form the basis of the text. At the very least this book is a way to take a peek at what is going on in this new field, and maybe even it is a way to get into it.

The first pleasant surprise the neophyte encounters in the study of geometry is that the two main categories in which geometers work–the analytic category and the algebraic category–actually have a very large overlap. Thus studying one category allows one to absorb "by osmosis" results in the other. The terminology is sometimes different; for example, here is a short, *rough*, transliteration guide:

Algebraist's term	Analysts' term
complete	compact
separated	Hausdorff
nonsingular variety	manifold
algebraic space (complete)	Moishezon space (compact)
projective variety	Kähler variety (compact)
rational map	meromorphic map
birational map	bimeromorphic map
curve	Riemann surface

Many other terms (e.g. proper, normal, irreducible) have the same geometric content but a particular formulation of a definition in one category may not make sense in the other. For example the characterization of a proper map as being universally closed works in both categories, while the characterization that the inverse image of compact is compact is too weak in algebraic geometry. The author basically works in the analytic category with compact, reduced and irreducible, complex spaces, but he devotes much of the first chapter stating the details of the correspondences which connect these two categories. He also reviews the basic theorems in geometry–Stein factorization, Grauert's theorem on the coherence of the higher direct images of a coherent sheaf, resolution of singularities, modifications, etc. There are of course few proofs given here, but references to the literature are given, and the presence of the statements greatly enhances the clarity of the entire exposition.