1025-32-3 **Emil J. Straube*** (straube@math.tamu.edu), Department of Mathematics, College Station, TX 77843. *The $\overline{\partial}$-Neumann Problem: Analysis, Geometry, and Potential Theory.*

The $\overline{\partial}$-Neumann problem provides a prototype of an elliptic operator coupled with non-coercive boundary conditions (in much the same way the Dirichlet or Neumann problems for the Laplacian are prototypes for elliptic problems with coercive boundary conditions). From the point of view of Several Complex Variables, its importance stems from the Hodge decomposition, and the attendant elegant machinery, that its solution provides in the context of the $\overline{\partial}$-complex. This is the purpose for which the problem was formulated in the fifties by Spencer; that is, to extend the theory of harmonic integrals, i.e. Hodge theory, to noncompact complex manifolds.

In this talk I will illustrate, in the context of the $\mathcal{L}^2$-Sobolev theory, how geometric and potential theoretic properties of the boundary influence the analysis of the problem. (Received January 16, 2007)