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In the tropical social wasp Metapolybia aztecoide some subordinate egg-layers are sterilized by being forced to leave the colony or become workers. Dominance relations involved stereotyped displays: two workers "dance" at a queen (left center), while another queen (right) bends aggressively as they approach. See page 441. [Drawing by Gerardo Ravassa, Cali, Colombia]
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Needed: Better Data About Academic Science

The information system which provides data for policy decisions about
U.S. academic science has fundamental flaws. Yet the quality of such deci-
sions rests, to some degree, on the quality of these data.

Paradoxically, fewer information requests could be made by federal agen-
cies (and related national organizations) but the data would be more useful
if presently diverse retrieval activities were better coordinated. Spriesters-
bach and Farrell recently documented the burden of federal demands for
information on one university. Redundant requests for data about graduate
science—enrollment, Ph.D.'s produced, expenditures, and so on—consti-
tute a modest portion of this burden.

More to the point, it is difficult, if not impossible, to relate data from
different agencies. In recent studies—an evaluation of the National
Science Foundation's Science Development Program and research com-
misioned by the President's Biomedical Research Panel—my colleagues
and I have attempted to create such a merged data file. This was necessary
because different agencies or groups retrieve the best (or the only) data
about different characteristics of science departments. For example, NSF
has the best data on federal expenditures by discipline, while the National
Research Council has virtually complete information about Ph.D.'s and
their job placement. The following are some of the problems we en-
countered.

- Academic fields are defined and classified differently. For example, in
  the NRC Doctorate Record File Ph.D.'s indicate their own fields (which
  may not match their departments), while the key file about National
  Institutes of Health funding references actual departments, and NSF's
  funding file aggregates departments into "disciplines."

- During the past decade many state universities developed strong branch
campuses with graduate programs. Agencies vary in whether they report
activities at the main campus only or at the main campus and branch cam-
puses identified separately, or lumped together. As a further complexity,
  the point at which a branch campus is considered sufficiently active to be
  recognized by an agency (or, in fact, by the university itself) varies.

- Some files fail to separate data about the medical or agriculture schools
  from data about the main unit. Thus, all federal expenditures for biochem-
  istry are reported as one datum for a particular university.

The astute reader will realize that successive sections of Science Indi-
cators 1976 had to be based on data derived from different definitions.

Policy analysts frequently discover that indicators of the same pheno-
menon provided by two agencies do not agree. One reason is that different
organizations use different sources. For example, the NRC polls doctorate
recipients. The NSF gets enrollments from department chairmen. The Na-
tional Center for Educational Statistics retrieves both enrollment and Ph.D.
statistics from university-level administrators such as registrars.

Each agency has developed its own definitions and retrieval techniques to
be consistent with its organizational objectives. And agency officials may
fear that the loss of control over these activities that standardization might
require will undermine the realization of those objectives. Although it is
problematic, this need not present an insurmountable obstacle.

Thoughtful policy-makers and analysts have reviewed these issues and
suggested a variety of solutions. For example, last year both the Paper-
work Commission and a federal interagency committee chaired by NSF's
Robert Wright issued detailed recommendations for agency cooperation
about this problem. But the implementation of these recommendations
has been glacial at best.

In my opinion the university science community, which has much to gain
from more consistent data and less burdensome requirements, should press
for more government action on this problem.—David E. Drew, Rand Cor-
poration, Santa Monica, California 90406