

Humanists and Scientists Gregory Wheeler

C.P. Snow observed that universities are largely made up of two broad types of people, literary intellectuals and scientists, yet a typical individual of each type is barely able, if able at all, to communicate with his counterpart. Snow's observation, popularized in his 1959 lecture *Two Cultures and the Scientific Revolution* (reissued by Cambridge 1993), goes some way to explaining the two distinct cultures one hears referred to as "the humanities" and "the sciences."

Snow's lecture is a study of these two cultures, their rules, hierarchies, and educational traditions, which raises the following question: to what degree are "the humanities" and "the sciences" a consequence of how we organize and fund modern universities? Rather than a happenstance of interests and temperament, perhaps "humanist" and "scientist" are largely bureaucratic categories.

Certainly there is some basis for grouping academic subjects as we do. Physics, chemistry, and biology are the pillars of experimental science. Although the skill-sets and methods differ from each, all aim to reconcile theory purporting to govern some part of the natural world against the evidence. However, the subjects studied by the humanities typically don't yield to experimental data; there are no experimental branches of history, no laboratories of literature. It is tempting to view the importance placed on experimental data as an indication of how scientific a subject is. The hard sciences put experimental evidence front and center, whereas the humanities either do not or cannot.

Although this is a familiar picture, it is nevertheless misleading. Mathematics has no more to do with experimental data than poetry, and professional cooking is as concerned with experimentation as any of the social sciences. But cooking is clearly a trade, not an academic subject, much less a science.

I want to suggest that we should instead think of academic subjects as dividing into three categories rather than two. There are *formal* disciplines, *experimental* disciplines, and *interpretive* disciplines. This three-way distinction was proposed by Henry Kyburg in *Science and Reason* (1990, 16) to better represent the activities which make up a field of study. There is much to recommend this way of thinking about academic disciplines, particularly to those who are engaged in interdisciplinary work.

Mathematics is essentially a formal discipline, the empirical sciences are largely empirical disciplines, and the traditional fine arts and letters are the leading exemplars of the interpretive disciplines. But nearly all fields draw upon skills from each category. Biology and literature are often concerned with formal structures, mathematics and psychology are sometimes concerned with interpretation, and psychology and literature are at various times interested in the facts about the society or group that produced an observed behavior, or whose members wrote a series of plays.

Moreover, some fields are a turbulent mix of disciplinary types, and one can trace many ideological disputes which erupt in those fields to a disagreement over what type of discipline the subject is taken to be. Philosophy is often regarded to be a turbulent field, although I think that it is primarily a formal discipline and that most of the fuss is misplaced. Artificial intelligence, on the other hand, is a good example of a turbulent field: there are very sophisticated formal and empirical branches to the field, and these types continue to clash in nearly all of the main branches of research.

It is unclear whether this 3-way distinction would help in organizing a university, as Kyburg suggested when he proposed it. But the categories are helpful for a researcher to have in mind when working on a topic like *reasoning*. It is not so much that the topic of reasoning calls upon results from the cognitive, computational, and decision sciences, and insights from philosophy, mathematics, and linguistics---although it certainly does. Rather, the more important point is that a topic like reasoning (and biology, I would add) calls upon a range of formal, experimental, and interpretive *skills*. And these demands do not readily match the university culture that Snow described.