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Mathematics for social science students: who to teach what, how, and by whom?

Mathematics and the teaching of mathematics, have long traditions in some fields of application, and almost no tradition in others. The fields of relatively short tradition are the social sciences, such as law, sociology, or public policy, each considered in its descriptive and prescriptive senses. However, the overabundance of social data, and of computational means for its processing, are very rapidly opening doors to these fields for mathematics, especially for discrete mathematics and statistics.

Mathematics educators are here facing dual challenge: to keep track of the ways, in which mathematics is entering these fields, and to teach their students suitably. Both tasks furthermore decisively involve good overall knowledge of computers, as algorithms for mathematical methods, and as practical working tools for the social scientist.

The problem of the problem, and of all the actors in the knowledge game, is that no single person is normally expert in multiple disciplines and technologies, which are moreover disparate and volatile. A practical way out is to collectively work out a library of scalable computational application problems, which students may play with at will, and which would reasonably faithfully represent rudiments of professions.

Examples are discussed.

The key condition for this idea to take off is good contact across disciplines, rankwise, and across ranks. It must in particular be then understood that undergraduate programmes do not prepare students to tackle non-standard professional problems by themselves, but rather to recognize and voice such problems, and to know where to seek help to tackle them collectively. Apart from plain English, say, the common language for contact across disciplines is, and always has been, mathematics.

In conclusion, the role of mathematics, and of the mathematics educator, in undergraduate education in the social sciences must be urgently and thoroughly revised. The engraved view of mathematics as a collection of computational techniques must give way to the view of mathematics as a language for communication across disciplines.

Who should know what mathematics, who should teach it, and how? is then not different a question from the one about the English language, say.