



Chapter III

Imagining E-Science beyond Computation

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Abstract

This chapter problematizes the relation between the varied modes of knowledge production in the sciences and humanities, and the assumptions underlying the design of current e-science initiatives. Using the notion of “epistemic culture” to analyze various areas of scientific research practices, we show that current conceptions of e-science are firmly rooted in, and shaped by, computer science. This specificity limits the circulation of e-science approaches in other fields. We illustrate this using the case of women’s studies, a contrasting epistemic culture. A view of e-science through the analytic lens of epistemic cultures therefore illustrates the limitations of e-science and its potential to be reinvented.

Introduction

The promise of technology and the dreams of what a tool might be good for are important in shaping its development and adoption. The futures of new technologies such as the Grid are not determined by the extrapolation of its technical possibilities. It is not even enough to postulate complex interactions between the social and the technical domain as the determinants of e-science. Rather, the future of e-science is, at least partly, created at this very moment, namely in the expectations with which the e-science enabling technologies are inscribed. The way proponents of e-science configure their dream can be analyzed as a “future script” (Brown & Michael, 2003). This script carries assumptions and presumptions that create boundaries between users and nonusers of the Grid and other e-science technologies. Moreover, the writing of the script itself already foreshadows these processes of social inclusion and exclusion by inviting some actors to coauthor the script and effectively excluding other voices. In this light, our chapter examines current concepts of e-science with the aim to uncover the foregrounding of certain future practices, and the backgrounding of others in this “practice of promise.”

E-science is a particularly interesting case for the sociology of expectations because the creation of promise is a central feature of its current practice. The writing process of the future script includes the design of e-science web sites, the drafting of funding proposals and national programs as well as the creation of demonstrators and pilot projects. It is a very practical affair. And an open one—the nature of e-science as a dream about the future is not hidden but made quite explicit by its protagonists:

. . . whereas the Web is a service for sharing information over the Internet, the Grid is a service for sharing computer power and data storage capacity over the Internet. The Grid goes well beyond simple communication between computers and aims ultimately to turn the global network of computers into one vast computational resource. That is the dream. But the reality is that today, the Grid is a “work in progress”, with the underlying technology still in a prototype phase, and being developed by hundreds of researchers and software engineers around the world. (CERN, 2005)

The dominant discourse about e-science is one of revolutionary changes in the way research will be conducted. In the words of the Grid Cafe: “The Grid is attracting a lot of interest because its future, even if still uncertain, is potentially revolutionary” (CERN, 2005). This dream hinges upon the difference between the web and the Grid. Whereas information-sharing is the core of the web, the

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