

more evident that there is not analytical answer to the question: is it good for science to patent discoveries? Or the question: is it good for the nation to patent research tools? Or even the question: is it good for technology transfer to patent discoveries? Answers to these questions will no doubt differ from case to case, but analysis of the factors that distinguish cases might well lead to more sophisticated, and more successful, national policies and international agreements regarding intellectual property and the sharing of data, materials, and technologies.

Those grounded in the pharmaceutical industry often take the benefits of patenting as an article of faith, as well they might since the entire industry truly rests on a foundation of patent protection for chemical entities. There is nonetheless a disturbing dearth of literature on the transaction costs of patenting, or the untoward effects on the research enterprise from a need for complex cross-licensing and constraints on sharing of data and materials, especially in the domain of research tools. Those grounded in the ethos of science, in contrast, take the benefits of free exchange as an article of faith, but there is here a dearth of data about the therapeutic innovations foregone for lack of private investment.

Patent law has historically proven to be a flexible instrument, and a powerful engine for innovation, but it is equally clear that much of the debate about patent policy and technology transfer takes place in the absence of empirical data about outcomes, let alone analysis of long-term social impacts. The permissive interpretation of biotechnology patent law of the 1980s combined with a series of "technology transfer" statutes and executive orders to make a volatile mix. These trends moved policy strongly toward heavier reliance on patents, but with little analysis of their impact on the pace of discovery or on international science. Where facts are sparse, ideology fills the void. Even a cursory inspection of technology transfer policies relating to genome research leads to one obvious conclusion: all nations will be better off if the contending ideologies are disciplined by carefully designed empirical research.