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Book Note

BIOBAZAAR: THE OPEN SOURCE REVOLUTION AND BIO-TECHNOLOGY, by Janet Hope¹

JUSTIN LIM

IN THIS ORIGINAL AND THOUGHT-PROVOKING BOOK, Janet Hope discusses how open-source principles could be placed within a new context—biotechnology. Using empirical research, interviews with key stakeholders, and, especially, case studies, Hope analyzes the success of the open-source movement from both inside and outside the software industry, before ultimately applying it to medical (red) and agricultural (green) biotechnology. Rather than making any definitive conclusions, the book is meant to serve as an important contribution to the literature on intellectual property and biotechnology by providing an analytical framework on which open-source biotechnology, or a biobazaar, could be implemented.

In the introductory chapter, the author draws an analogy between software and biotechnology in the context of the open-source movement. Like a bazaar, open-source biotechnology exists where decision-making is autonomous, the parties control themselves and their resources, and participation is entirely voluntary. Chapter two provides the background by explaining the proliferation of intellectual property rights (especially patents), and how it may lead to what the author refers to as the tragedy of the anti-commons—a situation where a resource is under-utilized due to excessively fragmented intellectual property rights, leading to higher transaction costs as researchers enter a veritable patent minefield. Chapter three explains the theoretical basis and underlying assumptions for these intellectual property rights, before dismissing their applicability to biotechnology, which largely consists of uncodified information. The author argues instead that the true purpose of intellectual property rights in biotechnology is to protect monopolies within the knowledge game, where key players strategically ac-

1. (Cambridge: Harvard University Press, 2008) 428 pages.

quire as many patents as possible, while employing various blocking strategies to neutralize the value of competitors' intellectual property.

To address the failure of traditional proprietary biotechnology, chapter four proposes a bazaar-like governance structure with incentives and control mechanisms centered on promoting the widespread distribution and sharing of the object of production to anyone who wishes to participate in its development. Not only does this reduce transaction costs, but it also enhances the use value of an invention, increasing the likelihood that it will be improved in the future. Chapter five articulates the underlying characteristics of open-source licensing (independent of the software industry) as a way of exploiting technology through non-proprietary mechanisms. The author distills these into a set of general principles that could be used to guide open-source biotechnology: the credible commitment of participants, competition, reciprocity/disclosure, and a compiler-centered approach. After comparing case studies in both the software and biotechnology industries, Hope concludes that none of the differences pose an insurmountable obstacle to implementing open-source biotechnology.

With the theoretical foundation of the biobazaar set, Hope analyzes the feasibility of applying open-source principles in the context of biotechnology, with reference to three key principles: technology development, licensing, and commercial exploitation. The next two chapters deal with these three principles, adapting them to provide the framework for the biobazaar. First, biotechnology is sufficiently modular (it is divisible into components that can be independently produced), granular (it can accommodate various types and levels of contribution), and integrated to be developed through an open-source approach. As is the case with the software industry, the development of biotechnology would rely primarily on the internet as a tool for coordinating every stage of knowledge production. Second, open-source licenses, especially those complying with a voluntary standard, would provide a mechanism for establishing and maintaining connections among open-source participants. Lastly, open-source provides a mechanism for incorporating contributions from both non-commercial and commercial sources on a non-proprietary basis, whether through an increase in process value or use value. The final chapter attempts to counter the prevailing proprietary culture of key participants in the biotechnology industry. After analyzing a number of fledgling open-source biobazaar initiatives, Hope concludes that a small number of stakeholders can act as a catalyst for shifting biotechnology away from operating solely on the basis of proprietary exclusivity.