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Comment

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The Role of Disclosure in R&D

Political and economic debates about innovation policy tend to center on intellectual property, and its defects as an incentive mechanism. This is because intellectual property involves a complex set of rules and objectives that interact and are hard to evaluate, and also because intellectual property is a well-defined body of law in law school curriculums. However, the complexity of intellectual property law pales beside the complexity of the public funding system. A nice contribution of the Gans and Murray chapter is that it illuminates the complexity of the public funding system.

The focus of the chapter is on disclosure requirements. The chapter begins with a survey of the rules that are imposed by various funding agencies. These requirements have apparently accreted over time without a well-articulated objective. The rules consequently seem fragmented. My take-away from this hodge-podge is that the purposes of disclosure are not well understood.

There is a very immediate purpose for disclosure in patent law, namely, notice. Without disclosure, what is protected? Notice is clearly important, but does not leave much room for economists to think strategically about why patent applicants want to minimize what is disclosed, or why disclosure is good for society as a whole. There are clearly other issues involved, else patent applicants would not seek to minimize their disclosures.

For example, an industrial context where not much disclosure is required is computer software. Patent practice has evolved such that very little useful knowledge needs to be disclosed by the applicant (see Lemley et al. 2002, 204–205). For copyrighted works, disclosure ought to be automatic because copyright protects "expression." However, it is not quite clear what is expressive in computer software, especially since software can be distributed in compiled form. Oddly enough, for copyrighted source code, US Copyright Circular 61 contains an explicit exemption from full disclosure, rather than a requirement for full disclosure. This raises more questions than it answers.

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Is there anything different about software than other industrial products that would demand different disclosure rules? Gans's and Murray's survey suggests that the public funding system has similar inconsistencies throughout, again calling for a theory.

The chapter is not focused on theories of disclosure *per se,* but rather on how disclosure requirements can induce firms to choose a proprietary, unsponsored mode of development in order to avoid the disclosure rules. The first best is for all projects to be disclosed and competitively supplied. That cannot be accomplished without public funding, because competitive prices cannot support innovation. If all innovations were publicly funded, the first best would be to require disclosure, and the resulting knowledge should enter the public domain.

However, the point of the Gans and Murray chapter is to illuminate that it is counterproductive for public sponsors to choose rules that try to implement the first best. Requirements for disclosure and nonexclusive use may only cause innovators to eschew public funds in favor of an unrestricted right to protect their discoveries with intellectual property. Disclosure rules and other details of public funding should be chosen with an eye to how they affect the funding choices of innovators.

The authors assume that innovators dislike disclosure because disclosure lowers the cost of rivals who want to enter the protected market. This is a credible story, but perhaps it is useful to close by listing some other ways that disclosure can be socially useful. Disclosure has had less attention from

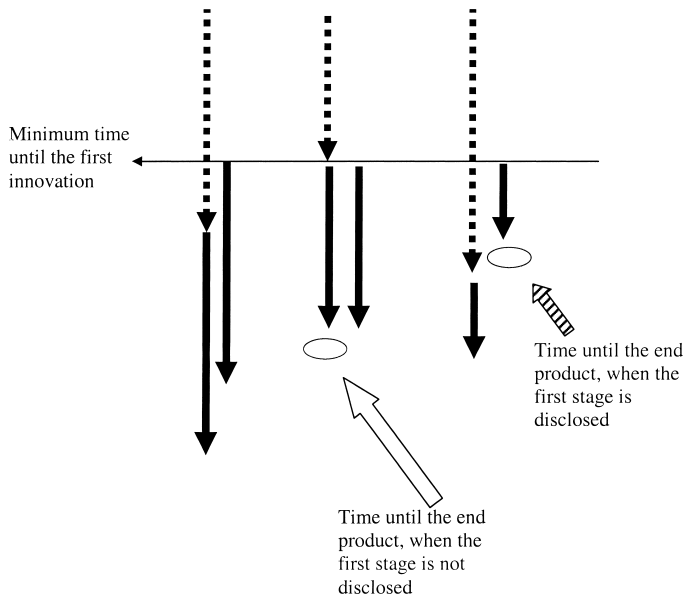

Fig. 1C.1

economists than in the public policy literature; for example, the contribution by Paul David (2003).

- In patent law, disclosure gives notice of what is protected.
- Disclosure reduces the costs of entry into the protected market (Gans and Murray).
- Disclosure can reduce the costs of rivals trying to make further cumulative progress, and can thus accelerate innovation for the economy as a whole (Scotchmer and Green 1990).
- Disclosure can stimulate imagination in the sense of allowing other firms to think of new investment opportunities.

The third bullet point occurs through what I call the "concatenation of order statistics." This is shown in figure 1C.1, where an innovation that is useful for end users requires two stages of progress. Time is measured vertically. It is assumed that the time required for each firm to accomplish each task is random, either because innovators think of research ideas at random times (Erkal and Scotchmer 2009) or because the R&D process is stochastic. There are three potential innovators. The dotted arrow (the top arrow) shows a realization of how long the first discovery takes for each of the three firms. The solid arrows (the bottom arrows) show a realization of how long the second (final) discovery takes. If the firm that achieves the first stage does not disclose, so that the others keep working on the first stage when they could alternatively be working on the second stage, the expected time to discovery is longer.

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