6 Some Concluding Comments for Designers

The foregoing discussion is intended to explain how alienability, rivalry, and exclusion cost become incorporated into technologies, and why these features are particularly important from an ethical or political perspective. But perhaps it is still not obvious how they are relevant to design. In one sense, designers (by which I, with the other authors in this volume, mean those who make decisions about key features, standards and configurations of a tool or technique) have long been attentive to these features. When engineers develop a feature for a product that will be technically difficult or costly for competitors to duplicate, they are affecting the rivalry and exclusion cost of the product. When they develop "work-arounds" to avoid licensing costs, they are responding to aspects of alienability, rivalry, and exclusion cost that have been formally institutionalized through patent law. When equipment manufacturers utilize a strategy of "planned obsolescence," they are ensuring rivalry between the product they make today and a product they will make in the future.

There has, however, been little previous attention to these institutional features in the philosophy of technology. This chapter thus brings some fairly standard aspects of design into view for philosophers. Yet some of the examples discussed above had institutional impacts that no one foresaw or intended. It is doubtful that those who developed roads and wagons intended to affect farmers' ability to alienate the grain growing in their fields from the local village economy. It is also worth noting that any attempt to make a normative evaluation of how a given design affects institutions will depend a great deal on very specific aspects of the technology in question, as well as the socio-economic environment in which it will be deployed. Thus there does seem to be some room for designers and philosophers alike to give renewed attention to institutional impact in developing a new product or a new configuration of technical means. Any *ex ante* use of the considerations described in this chapter to plan and evaluate technical design will need to be fleshed out with an economic analysis (see North, 1990), as well as a great deal of specific detail that only designers themselves can provide.

Lawrence Lessig's detailed studies of the way that technical codes affect alienability, rivalry, and exclusion cost for software and the Internet provide one of the best examples of how recent design questions involve institutions. Lessig contrasts the design of internet architecture at Harvard and the University of Chicago, showing how the Chicago system has inherently high exclusion cost incorporated into its code. The result is that the Harvard design permits system administrators to make case by case decisions about when barriers will be lowered for a given user (Lessig, 1999). Lessig also argues that net protocols might have been designed so that movement of bits over the network was application specific. That is, the protocol for transferring text files might have been different from that of moving bits that code for MP3 or video. This would have introduced a form of rivalry into the system that would have facilitated centralized control, as opposed to the information commons that currently exists (Lessig, 2002). Lessig's work shows that when we question the institutional implications of technology, we will need to look closely at the actual implications of a specific technical change before we will

be in a position to speak about whether it is good or bad. It is to his work that designers wishing to operationalize the ideas in this chapter should turn.

In conclusion, achieving a clear understanding of alienability, rivalry, and exclusion cost can help both designers and philosophers of technology do some of things that they have long aspired to do better. In the case of designers, alienability, rivalry, and exclusion cost represent parameters that go a long way toward predicting some of the most socially sensitive and historically contentious elements of a technical change. Be advised that such modifications will require careful planning and a well-crafted participatory process of design and implementation. For philosophers, alienability, rivalry, and exclusion cost help us to look for at least some of the details that really matter when technical change occurs. A focus on alienability, rivalry, and exclusion cost thus provides a promising way to integrate the philosophy, sociology, and economics of technology, and to clarify some of the more obscure mechanisms that have been associated with technological determinism and social history. Alienability, rivalry, and exclusion cost also represent elements of specific technologies such as genetic engineering or information technology that serve as boundary objects linking alternative networks of actors, and bridging normative with classically technical domains. As such, alienability, rivalry, and exclusion cost provide a focal point for the ethics of technology, and should be considered in any attempt to identify the elements of a novel technology that are most in need of deliberation and public discussion.

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