When should there not be property rights?

Coase's First Question

By Lawrence Lessig
Stanford Law School

THERE ARE TWO KINDS OF COASEANS: "proper-Coaseans," and "property-Coaseans." Both adopt the framework of analysis described by Nobel Prize winning economist Ronald Coase. But a property-Coasean simplifies that framework in one important way: For a property-Coasean, property is a simple. Every resource that can be, should be the subject of property. In other words, no resource capable of being propertized should be left free.

For Coase, however, property is not a simple. As he famously wrote in a 1959 *Journal of Law and Economics* article about the Federal Communications Commission, "All property rights interfere with the ability of people to use resources. What has to be insured is that the gain from interference more than offsets the harm it produces." Thus, before deciding *in whom* property rights for some resource should vest, a proper Coasean should determine *whether* the resource should be the subject of property at all. That decision should be based upon whether propertizing the resource would produce a gain that "offsets the harm it produces."

Bruce Owen is a property-Coasean. His recent *Regulation* article "Assigning Broadband Rights" (Summer 2004) considers two resources: "the right to control access to a local broadband system" and "the right to determine the technical standards that describe which transmissions will or will not be processed for local distribution." And while he initially raises the idea that such rights can be "assigned... to no one," that possibility quickly disappears from the balance of his analysis. Instead, with each "right," he immediately moves to consider who, between the owner of physical assets and users of the network, should have the right he has identified.

Lawrence Lessig is professor of law and the John A. Wilson Distinguished Scholar at Stanford University Law School. He is the author of *The Future of Ideas* (Random House, 2001) and *Free Culture* (Penguin Press, 2004). Lessig may be contacted by e-mail at leissig@pobox.com.

So framed, the question has a simple answer: Because the transaction costs of fixing a mistaken allocation are less if we allocate the rights first to the owners of the physical network, and because the owners of the physical network would be in the best position to internalize any gain that might come from adding different, or proprietary, protocols, it follows that they, rather than users, should be granted the exclusive right in "broadband rights."

I do not want to question the analysis that Owen has given. My question is about the analysis he omits: whether the resources that he has identified should be subject to a property regime at all. For it is increasingly common among some economists to forget the first step that Coase took.

PRODUCTIVE AND NONPRODUCTIVE PROPERTY RIGHTS

A "property right" grants the owner an exclusive legal power to force the world to negotiate with him before his control over the resource protected by the right is displaced. By so doing, it is a device that facilitates assignment of a resource to its highest-valued user through the allocation mechanism we refer to as the market.

No one serious denies the general utility of property rights. No one serious believes that utility is limited to tangible, rather than intangible, resources. I am as convinced of the good that tradable pollution rights produce as I am convinced of the good created by my having exclusive control over my Mac. The line between productive and nonproductive property right systems is thus not drawn by tangibility. Nor is it drawn by any other simple feature of the resource at issue. But however complex, Coase's first question presumes that there is such a line. That presumption invites us to map the conditions under which property rights regimes might be productive.

That some property regimes would be unproductive is an obvious point, even if, as Coase said of his own work, "like the postman in G. K. Chesterton's Father Brown tale, 'The Invisi-

ble Man,' [it has] tended to be overlooked." Yochai Benkler gives a ready example in a 2002 *Harvard Journal of Law and Technology* article addressing spectrum rights:

> Imagine that once upon a time the policymakers of the emerging British Empire believed that a nation's wealth came from the magnitude of its trade with distant nations. In pursuit of this belief, they set up the Imperial Trade Commission, which in turn decided that the way to optimize trade with India was to create the East India Company and give it a monopoly over trade with India. Along came Adam Smith, and classical economists began to understand that planned trade was inefficient. Competition among many would give rise to efficiency. After half a century or more of hemming and hawing, the Imperial Trade Commission decided to embark on a radical plan to introduce a market-based system for trade with India. It would eliminate the monopoly of the East India Company, and instead would create 1,000 exclusive property rights to trade with India. These rights would be perfectly flexible — their owners could aggregate, divide, and sell the property right to East India trade as they wished. The Commission would hold one Big Bang auction, where all rights to trade with India would be auctioned at once, allowing efficient investment decisions and reducing gaming possibilities. A trade exchange would facilitate a robust, flexible, and efficient secondary market in these rights.

The freedom to trade with India is a valuable resource. Like tradable pollution rights, we could allocate it to particular individuals and allow them to enter a market to reallocate such rights as they choose. But the example should give even the most committed property-Coasean pause: What efficiency would be gained by this costly property system? What gain would we get over simply permitting free trade?

The same questions should play a more significant role in Owen's analysis.

PROMOTING INNOVATION

By "the Internet," we ordinarily mean a network of networks built upon a set of basic protocols called TCP/IP. Owners of physical equipment choose whether to run the protocols on their technology. Obviously, that choice should be unconstrained: No one is forcing cable companies, for example, to modify the protocols that stream video to television across their cable wires so that they include the protocols of the Internet. So, put more precisely, the question Owen and I must address is whether the provider of a "broadband Internet service" should have the freedom to supplement the basic protocol suite with other technologies, including "proprietary" technologies.

The answer to that question is "yes" — indeed, "obviously yes." Of course a network provider should have the freedom to supplement the basic Internet protocols with other technologies, including proprietary technologies. Owen attributes to me, without citation, the opposite view. But I do not believe I have ever said anything of the kind. My concern is not whether the technology that "pipe" owners use is proprietary or not. My concern is how those technologies alter the environment for innovators and developers at the edge of the network.

For example, the vast majority of routing technology on the Internet is provided by Cisco. Most of that technology is "proprietary." But there is no problem with the proprietary technologies running the network core, so long as they implement the TCP/IP protocols properly or, if they extend those basic protocols, they do so in ways that do not interfere with other network functionality, conflict with network values, or create negative externalities for the Internet generally. The Internet was meant to be extended. So long as any extension respects Internet values, I have no problem with it.

THERE'S THE RUB Thus, network owners should have the freedom to add whatever technology they like to the basic suite of Internet protocols, just as network users should have the freedom to attach any device or technology to the edge of the network so long as that device or technology does not create a negative externality for the Internet generally. Such freedom, in my view, is central to fast and efficient growth of the network, and to the dynamic innovation in applications and content that the network has produced.

The rub, however, comes in defining "negative externalities." My work, and the work of many others whom Owen purports to criticize, has been focused on one such externality: the harm to innovation caused by compromising the end-to-end principle. And while the question of how one regulates externalities is independent of the question of whether a certain resource should be propertized (one can regulate the externality whether or not the resource is propertized), understanding that externality more clearly will strongly signal how one should regulate the resource.

To make the point as simply as possible, consider the following (not so) hypothetical case. Imagine a network that provides telephony services as well as broadband services. Before Voice over Internet Protocol (VoIP) technologies emerged, those services were complementary, not competitive. After VoIP, the services become competitive. Using VoIP, customers of the broadband network can get voice telephony without paying for "a telephone."

Imagine that many users of the broadband network drop their subscriptions to voice telephony, relying instead upon VoIP. In response, the network provider has at least three options. First, it could drop its broadband offering completely. Second, it could do nothing, and simply accept the cannibalization of its telephony service. Or third, it could deploy a set of "policy-based routing" technologies for its broadband services that could discriminate against this particular application. That discrimination could, for example, block packets for VoIP applications. It could slow down packets for VoIP services. Or it could impose a toll on VoIP applications used on the broadband network. Which — if any — form of discrimination the network provider selects is an economic (and possi-

bly legal) question. The technologies for facilitating such discrimination are all well described.

As the Internet was originally designed, such "policy-based routing" was not part of the basic protocol set. The network instead was "end-to-end." An end-to-end network pushes the "intelligence" in the network to the edge, or "ends," of the network and keeps the network protocols themselves as simple as possible. As applied to the Internet, the network could not know enough to know which packets should be slowed or which packets should be blocked. It was blind to the packets and worked only to serve what it was to deliver.

The network thus followed an hourglass design. A rich and varied array of applications and content (the content layer) interacts with physical devices for communicating across a network (the physical layer) through a simple (or as simple as possible) network or logical layer — the neck of the hourglass. Because everything gets translated into this common protocol, a wide range of diversity can be built either at the top or bottom of the network without requiring any clearance or permission from the network owners first. The transaction costs for innovation within an end-to-end network are thus fewer, as innovation needs no permission and permission is a cost.

So continuing the VoIP example: when application designers first built VoIP applications, they did so by using the standard tcp/ip protocols to "fool" the Internet into carrying voice. To get that application to run on the network, they needed only to comply with TCP/IP protocols. To get the application adopted, however, they needed only to find users who wanted to use the application. Because the quality at first was not terribly impressive, few people adopted the technology. But as bandwidth improved, demand for inexpensive and versatile voice applications that ran on the network grew dramatically. And because the network was end-to-end, no permission from network owners was needed before this new application could be adopted.

VoIP was thus possible *technically* because of the flexibility of the TCP/IP design. It was possible *economically* because the end-to-end network eliminated the obvious barrier to its entry: permission from a network owner to deploy an application that would cannibalize its own revenue. Had permission been required, investors in VoIP would have significantly discounted its value. The uncertainty of securing permission would have jeopardized any investment. Thus, this technical design has a competitive consequence. Shifting control out of the core creates stronger incentives for innovation that might compete with the core.

RIGHT TO INNOVATE

This feature of the end-to-end design — inspiring innovation by outsiders — has produced many confirming examples. Indeed, when you consider the source of some of the Internet's most significant innovations — from the Web itself, invented by researchers at CERN in Switzerland, to HTML mail (HoTMaiL), invented by an Indian immigrant, to the first successful peer-to-peer chat technology, invented by an Israeli student and then developed by him and his father — they are all the consequence of shifting the right to innovate to the edge of the network. Many of the most significant innovations were developed first by kids or non-Americans — precisely the population of innovators least likely to manage the transaction costs of negotiating with network owners before their innovations get deployed.

Technically, this design creates an "innovation commons." Everyone has the freedom to innovate in this space without seeking the permission of anyone else. Technological constraints, of course, constrain the innovation horizon that the network provides; you cannot make coffee across the network (though in a famous application from the beginning of the Internet, you can use the network to run a coffee machine). But everything that can be done with packets of data can be done across this network. That opportunity — offered equally to all who would innovate for this network — has inspired an astonishing range of innovation.

The Internet is not the first network to create such end-to-end effects. Compare, for example, the electricity grid. In the sense in which I mean the term "innovation commons," the electricity grid, too, is an innovation commons. It provides a simple set of protocols that innovators rely upon to develop new electrical devices. And so long as the innovations comply with the rules of the network, they will "run" on the network.

Or consider newspapers in the early days of this Republic. As Paul Starr recounts in his amazing new book *The Creation of the Media,* newspapers at the start of the Republic were heavily subsidized. Mailing privileges meant that literally thousands of papers could be published and then spread broadly across the young nation. This network, too, was an end-to-end network, for news and commentary at least. Within a broad (but not unlimited) range of freedom, newspaper publishers created content, the government funded carrying that content to an audience, and the audience purchased that content to a degree unimaginable today.

With each of those three end-to-end networks, we could imagine changes in either the rules or technical design of the network to compromise its character. For example, we could imagine the government (ignoring the First Amendment for a moment, as the courts generally did until the 20th century) auctioning access to the mails or selecting which publications to ship based upon which it believed served "public convenience, interest, or necessity." Or we could imagine the electricity grid architected to first check whether a device plugged into the network was authorized by the network, and then auctioning access to the network to the highest bidder. (So, e.g., a Sony television would work well, but a Panasonic would not.) Or, most directly relevant to the subject of Owen's paper, we could imagine broadband networks selling access to the highest bidder — preferred access for Yahoo, regular access for AOL, blocked access for any VoIP.

But the cost in each case would be to weaken the market incentive to innovate in ways that create stronger competition for network owners, because network owners would have the opportunity to discriminate against that innovation. Such discrimination thus creates an externality for the network as a whole, reducing the incentive of others to innovate for the net-

work because of the uncertainty such power creates.

The costs of an unrestricted right to discriminate on the Internet have been recognized by Federal Communications Commission Chairman Michael Powell. In perhaps the most significant shift in FCC policy since the Internet was born, Powell has indicated directly that network owners who interfere with "net neutrality" or compromise "Internet freedom" face a significant threat of subsequent regulation. In a speech last February, he outlined four "Internet freedoms": the freedom to access content, the freedom to use applications, the freedom to attach personal devices, and the freedom to obtain service plan information. Those freedoms build a regime of "net neutrality" that has the effect of assuring that network owners cannot discriminate in the way described above. Powell clearly signaled to broadband providers that violating the four freedoms would lead the FCC to regulate broadband provision. Neutrality is thus the rule, at least so long as Powell gets to direct the rules.

CONCLUSION

Powell's policy is correct. But formally, it is independent of the question of whether the rights to extend network protocols should be assigned as a property right. Whether or not the right was a property right, in other words, the government could regulate to require neutrality.

Yet a focus on the externality that I have described does help identify the transaction costs that a property right would create. If the government were to vest in network owners the *exclusive* right (excluding, that is, users) to extend protocols, then the law would fundamentally weaken the incentive of innovators to develop technologies that do not benefit network owners, even if they benefit network users — VoIP, again, as the most obvious example. If the freedom to deploy a technology depended upon permission from the network owner, then the uncertainty of securing such permission would weaken the incentive to innovate. Creating and vesting a property right here, thus, would weaken an incentive to innovate.

The question of whether "broadband rights" should be "assigned" thus dissolves into three separate questions: First, should the freedom to extend network protocols exist at all? Obviously, the answer is yes. Second, should that freedom be unconstrained? The answer is no — such freedom should not include a right to impose externalities on the network generally, and violating the "Internet freedoms" or "net neutrality" as described by Chairman Powell is one kind of externality. And finally, third, should that freedom be "assigned" exclusively? The answer again is no, for beyond the limitation on externalities, the power to block user innovation would most likely simply restrict network innovation and growth. A proper Coasean would thus support the freedom Owen describes but reject the means the property-Coasean presumes: a property right. R