

Capitalism and Society

Volume 7, Issue 1

2012

Article 4

Comment on “Concentration in Internet Access and Entrepreneurial Truncation of Innovation” (by Shane Greenstein)

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Recommended Citation:

Bresnahan, Timothy F. (2012) "Comment on “Concentration in Internet Access and Entrepreneurial Truncation of Innovation” (by Shane Greenstein)," *Capitalism and Society*: Vol. 7: Iss. 1, Article 4.

DOI: 10.1515/1932-0213.1095

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Shane Greenstein’s lucid and penetrating essay on Internet innovation makes two very important points (Greenstein 2011). One is about asking the right questions. In Greenstein’s view, current policy debates, such as the one on “net neutrality,” miss the most important points about Internet innovation. To put it bluntly, the points made by all sides in current policy debates, even taken together, can tell us little about Internet innovation past, or passing, or to come. This is a surprising as well as an important conclusion, for the current policy debates are framed by interested parties on all sides in terms of their own incentives for innovation.

Greenstein’s second point is that the rate and direction of future Internet innovation will depend on the industrial organization of platform supply, which he approaches very differently from policy debates or economic theory. Platform supply is typically analyzed, both in Washington and in theory, in terms of contracts between the platform sponsor (or sponsors, if there are competing platforms such as PC and Macintosh) and others, such as application developers or content providers. Greenstein’s most important analytical point lies in rejecting this contractarian view. He suggests that the most important questions about platform supply are about either (1) open systems vs. platform sponsorship, a distinction which takes him outside the contractarian approach; or (2) partially overlapping platforms (PC and Internet) with distinct leadership – putting these questions even ahead of concentration in broadband supply as key industry structure issues. This is important new thinking, and Greenstein takes care to ground his conclusions about the appropriate frame for analysis of future Internet innovation in a deep, detailed, and thoughtful examination of the recent success of the commercial Internet in innovating to the benefit of users.

I agree with both of Greenstein’s broad points, which will surprise no one as he and I have collaborated on similar analyses of innovation in platform industries and because both of our work has recently addressed similar questions. So, in this essay, I will first attempt to restate his framework in a way that highlights its similarities to and differences from conventional approaches. Although his argument is more nuanced than this, a quick summary might be that the open systems approach with divided technical leadership will dominate in circumstances where a wide variety of diverse innovation initiatives are required.

I will then attempt to rise to the two challenges Greenstein raises. Given what we know about how Internet innovation has gone so far, and given what we know about the broad economic goals we would like Internet innovation to reach in the future, what can we say about the best organizational system for it? What is the source of this puzzling disconnect between “innovation policy” debates and innovation in the economy? Both of these are rich topics, but opening them up to see what a transaction cost view of platform industrial organization can bring us is an illuminating endeavor.

1 A Proto-model of Open and Proprietary Systems

Greenstein's big analytical accomplishment is to provide a clear elucidation of a model – as yet not a formal mathematical model, but a very interesting and innovative one nonetheless – of the strengths and weaknesses of two very different ways to organize platform innovation: open systems vs. proprietary platform sponsorship.

His analysis is grounded in his deep integration of three very different bodies of knowledge: (a) the economic study of platform industries; (b) the systematic empirical study of Internet innovation and of the Internet access industry; and (c) practical and sympathetic understanding, suitable for a business school scholar, of the management challenges facing both a platform sponsor firm and the other, typically more entrepreneurial (or at least outsider/entrant) participants in a platform “ecosystem.”

Greenstein notes, correctly, that open and proprietary systems of industrial organization are not as radically different as painted by advocates. He argues nonetheless that these two different ways of organizing platform industries can and do have important differences in innovation performance, notably for radical or hard-to-foresee innovation. I will return to the factual questions of whether radical or hard-to-foresee innovation is relevant to the Internet going forward, and whether the conditions favoring openness over contractual approaches are in fact likely to be true going forward.

What is the essential difference between proprietary platform sponsorship and open systems? How does this essential difference relate to innovative performance? Greenstein has been working on these important questions his whole career. He has very different answers to both of them than either the policy debates or the relevant scholarly literatures.

1.1 Firm vs. Market Frame

Greenstein understands the essential difference as being like the difference between a firm and a market. In his view, one system of organization emphasizes widespread contracting plus leadership by a platform sponsor, and in this sense is like a firm, whereas the other is based in a more open and unrestricted flow of technical and market knowledge and more anonymous innovation, and in this sense is like a market. As a result, he conceptualizes these systems in terms of their “transaction costs,” that is, following the lines of Williamson or Coase, rather than basing his analysis in traditional competition and innovation models of incentives.

It is easy to state the transaction cost advantages of proprietary platform sponsorship as an innovation system. There are typically large externalities

associated with the social increasing returns to a platform, and contracts, formal or implicit, between a platform sponsor and other participants can internalize that externality in any of several ways. Contracts can prevent coordination failures between potential platform participants. A cluster of differentiated contracts can subsidize one class of participants at the expense of another, which is sometimes necessary for efficiency (this is one of the main points of the “two sided market” literature). Dynamic contracts can offer incentives to early adopters where arm’s length financing is hard to arrange.

Why are those advantages not always determinative? Greenstein identifies four disadvantages of the proprietary-platform-sponsor-plus-contracts organizational form, which he calls “less transparency, entrepreneurial truncation, selective blocking, and unequal treatment of the traffic of unaffiliated partners.” Some of these are familiar incentive points but the most interesting and novel ones are transaction cost points à la Coase or Williamson.

The language “selective blocking, and unequal treatment of the traffic of unaffiliated partners” is specific to the broadband context, but the points that Greenstein is making here are familiar and well understood in Economics. This refers to the *incentive* of a platform sponsor with market power to preserve or exploit that market power through selectively disadvantaging supply or innovation by some complementary platform industry participants, or, at a minimum, threatening to disadvantage it as part of negotiations. The requirement on other firms to contract with a platform sponsor with market power *may* be good for society (through coordination) but it *will* be good for the sponsor. The tricky part is to figure out when the private and social interests diverge in any particular applied context.

1.2 Transaction Cost Disadvantages of Contractarian Systems

Greenstein identifies two other potential disadvantages of the proprietary platform sponsor organizational form: “lack of transparency” and “entrepreneurial truncation.” These are new and important points, and they are not market power/incentives points, but rather they concern the flow of information among all the current and potential future participants in a platform “ecosystem.”

Greenstein first argues that it is in the essential nature of a proprietary platform to have less than transparent information flows, whereas an open systems platform has anonymous access to information. This point is recognized as essential (if not always in public) by even the most skillful practitioners of the art of proprietary platform management.¹ The most obvious information to which

¹ See an interesting (originally private) quote from Bill Gates on this point, noting circumstances in which the resulting entrepreneurial truncation is problematic, in section 13.6.5 in Bresnahan (2010).

this narrow point is relevant is information about “interfaces” or “interconnection,” that is, about the information that one firm needs to know to make its innovations work with all of the other products in a platform.

Greenstein goes on to make the obvious point that there are some circumstances in which anonymous and transparent access to information increases innovation. He has coined the lovely term “entrepreneurial truncation” for this. If entrepreneurs are the ones who do not get the requisite information in a proprietary or centrally controlled system, it is entrepreneurial innovations that will be truncated. More generally, I would say, innovations by *outsiders*, a broad class including entrepreneurs, are potentially lost to the lack of information access.

It is the points about “transparency” and about “entrepreneurial truncation” where Greenstein is the most innovative and the most interesting, for it is here where he truly engages the argument about the superior ability of contract-based systems to coordinate. His point here is that open systems can have lower transaction costs for coordinating breakthrough innovations than do proprietary systems. This is an extremely important point, one that is as yet not found in industrial organization innovation theory or organizational economics theory, despite a generation of focus on models with transactions costs (in the broad sense Greenstein uses that phrase.)

1.3 Implications for Innovation

The practical implications of these transaction costs points arise in two ways. One concerns the role of hard-to-find partners for contracting, well illustrated by Greenstein’s example of the Facebook founder in his dormitory room. The more difficult it is to find the key partners to find for contracting, the worse performance we can expect from a contractarian approach, like proprietary platform leadership.

The second practical implication is one that Greenstein and I wrote about years ago, and concerns the value of divided technical leadership (DTL) when there are multiple, partially overlapping platforms each with distinctly governance, including some with proprietary leadership. The benefits of DTL typically arise when there are different incentives or opinions about the best direction of technical progress, and where it would be difficult to arrange a system of entirely separate competing “stovepipes,” each with a single proprietary platform sponsor. These benefits have been very large in the past, for example, in the first 20 years of the PC business (if not lately in that business.)

There are two further advantages of DTL that are not obvious. The first is that DTL can mix some of the advantages of open systems and a contractarian approach. Consider today’s mobile world. AT&T’s platform partially overlaps

with Apple’s, and each of their platforms partially overlaps with one or more of the Google platforms (both with search, AT&T with Android...); each overlaps with Facebook’s platform; each overlaps with the open system which is the world wide web... and so on. Within each of these partially overlapping platforms, there is some degree of openness and some degree of proprietariness; the overall system is highly mixed.

The advantages of DTL can be seen by considering one of the specific platform contests within the broad area of the mobile Internet, the competition between mobile smartphone operating systems from Google (Android) and Apple (iOS). As a first point, these two platforms are organized very differently, one much more open than the other. Whatever arguments one accepts about the differences between open and proprietary systems of organization, a competitive innovation race between the two is attractive as long as they differ at all. Second, it would be prohibitively difficult to organize this as purely a race between proprietary systems. Each platform draws on products supplied by the others’ sponsor, and each relies on services from third parties that are near-ubiquitous. The mixed system of DTL accommodates both near-ubiquitous technologies in one layer (a frequent structure in platform industries because of the positive feedback elements) and competition in other layers.

That is difficult to achieve – there is a best-of-both-worlds flavor to DTL. It can be much more innovative than a sponsored platform, particularly when a single platform sponsor might either not see technical opportunities or choose not to take them up. Those who think that proprietary platform leadership is the best system would be well served to consider the historical example of the IBM PC. Would the world truly be a better place today if firms other than IBM had not been involved in the divided technical leadership of that platform?

1.4 Comparative Advantage of the Two Systems

A natural question arises as to when – meaning for what kinds of innovations – we should expect lower transaction costs for the proprietary platform organizational form and when it predicts lower transaction costs for the open systems organizational form. Greenstein’s incomplete answer is that the two systems are likely to be similar for incremental innovations (on the grounds that these are hard to get wrong), but that they can differ importantly for breakthrough innovations.

I would add the point that another obvious implication is that the different systems’ comparative advantage depends on the informational conditions of invention, a point I made at some length in Bresnahan (2012). The greatest comparative advantage for a proprietary platform will arise when it is known ex ante with whom to contract and to what end, and when there would be

considerable risks of coordination failure or of ex post hold-up, but for the contract to coordinate innovations. The greatest comparative advantage for an open systems approach will come when there are multiple potential directions to explore, and heterogeneity across agents in the incentive or ideas about the optimal direction (“Entrepreneurial truncation” will be an issue if only one agent chooses the direction), or when no one knows – with precision sufficient to guide investment – the nature of directions to explore. In what follows I will summarize these two areas as “exploratory,” a word parallel to Greenstein’s “experimental” but perhaps more familiar in technology scholarship.

There are some overlaps between this view and earlier frameworks for the analysis of innovation. It is a familiar point that, when the direction of technical change is not obvious, launching a wide variety of competitive initiatives can be a good idea. This is typically taken to mean a large advantage to unconcentrated horizontal industry structure, at least at the exploratory phases, and that is clearly right. Greenstein is pointing out that it also means a disadvantage to coordination – so that vertical structures that permit a wide variety of initiatives rather than coordinating on one can have innovation advantages.

Greenstein identifies open flows of information to entrepreneurs and outsiders as a key force enabling successful innovation in commercial Internet supply over the last two decades. He correctly points out that the open approach was key to a number of important developments. The advantages of openness have followed all of the main directions he suggests at one juncture or another. Open access to information has permitted outsiders to make important innovations, such as the conversion of the Internet into a mass market platform for e-commerce, e-content, and e-communication or, as Greenstein points out, the launching of “social networking” as an applications category for a mass market. Divided technical leadership has been important for other innovations and “economic experiments” – the diverse exploration of distinct directions of technical progress – have been important for a number of innovations.

Why was the use of the open approach essential in the history of the commercial Internet? Greenstein nails this one with a telling counterfactual, the contractual negotiations between a platform sponsor and a student entrepreneur, Mark Zuckerberg. Ex ante contract negotiations would be great, Greenstein suggests, if the parties only knew with whom to negotiate and over what developments. The anecdote is systematic. There have been very few new platforms in computing which have been launched by contractarian planned initiatives, typically because, ex ante, no one knows with whom to plan.

One might ask if, even though the openness was essential to the particular path taken to the commercial Internet, counterfactually a proprietary platform organization might have eventually brought us the same value – following, of course, a slightly different route. Although not every benefit of openness has been

researched carefully to see if a proprietary system might have worked, I have examined the counterfactual question carefully for the launch of the widespread use of the Internet. There was a competitive race, played out over a long period of time, between proprietary efforts to launch widespread e-commerce, e-content, and e-communications and open ones. Although the open ones had tiny budgets, and many of the proprietary ones were very well funded, it was the open ones that succeeded – in no small part because they were open and not contractarian.²

Indeed, the creation of new platforms in information and communications technology (ICT) via a planned initiative with a contractarian core is very rare. The PC, the computer itself, the minicomputer, the workstation, the widely used internet, e-mail networks – these and many others invented without a planned initiative, and all relied to a considerable extent on openness. Two examples of planned initiatives succeeding – the IBM mainframe and Apple’s mobile devices – both built upon early innovations created in a more open way.

2 Policy Debates (and scholarship) Unrelated to Reality

One of Greenstein’s messages for policy addresses the potential problems associated with having a highly concentrated industry that may bottleneck customer access for other inventors; he has in mind concentration in broadband Internet access supply. Another important message of his paper is that policy debates focus too much on the regulated sector of broadband communications, and that the other Internet platforms layered on top of it do most of the innovating. These are accurate and penetrating points. Policy debates in general, and today’s innovation policy debates in particular, tend to be very hardware-centric, or in this case, carrier-centric, in a way which is completely baffling to anyone knowledgeable about the sources of Internet innovation.

It is not that Washington has collectively forgotten the existence of software innovation. People will talk about it; they use Facebook. But, as Greenstein points out, the frame of reference of policy analysis is relentlessly carrier-centric. There is probably some cognitive basis to this, to be sure. There is a parallel hardware-centric frame of reference in the analysis of computing, equally likely to draw our attention away from the main point. But surely the carrier-centric bias in the analysis of the Internet is also reinforced by two facts. One is that there is a regulatory framework in place for communications, and that it mostly regulates carriers. The second is that the regulatory process influences the supply of policy research. Policy research tends to focus on what the

² My paper documents the failure of a large number of proprietary platform initiatives to establish mass market e-commerce, e-content, and e-communications before or coincident with the widespread use of the Internet. The platform sponsors included, inter alia, AT&T, IBM, and Microsoft. This leaves the counterfactual question profoundly uninteresting.

regulatory process is interested in, not necessarily on the center of gravity of innovation.

This point is very important for understanding the future of innovation on the Internet, as much as it is important for understanding its past.

2.1 Whose Innovations, and Whose Incentives, Were Critical in the Past?

As Greenstein points out, it has not been, historically, the carriers whose innovations have triggered explosive growth of the Internet. Of course it is important to make available more bandwidth when bandwidth-using applications and content on the Internet are growing and finding mass markets. But that is not the same as saying that innovation by carriers caused the growth of the Internet. Instead, innovation by others – server-side software firms such as Netscape and Google and Facebook, device-side software firms such as Apple and Google, market-building firms such as Apple and EBay, and many, many other firms – has raised the demand for bandwidth.

Indeed, in the long history of *failures* to ignite mass market e-commerce, e-communications and e-content, carriers are heavily represented (see my chapter cited above). They are not represented among the innovators who turned the Internet from a nerdy backwater into a mass market phenomenon, nor among those who created mobile applications markets, social networks, e-content markets, e-mail, or e-commerce. Carriers have made good money selling services in the environment where demand grows rapidly; the critical innovations that triggered the growth came from elsewhere.

There is no reason to anticipate that suddenly, today, the locus of innovation has shifted from software firms, market-creating firms, and peripheral equipment firms to carriers. Here I would include mobile carriers alongside the landline firms as ones who are much more the beneficiaries of others' innovations than they are the innovators themselves. If we look at the mobile world – a center of innovation where rapid growth in applications and content has made today a very good time to be a cellular carrier – the key innovations come from everywhere but the carriers themselves. They come from Apple (cool music player, cool smartphone, cool tablet, a music, and later an app, market), Google (open OS for smartphone and table, cool mobile apps built around maps), Facebook (both applications for mobile and infrastructure for other mobile applications providers), a wide host of newer younger startups, and from the systematic porting of content, commerce, and communications to the mobile world by large firms who are outsiders to mobile communications.

What is “the Internet”? I ask the question in the spirit of Greenstein's article, that is, focusing on innovation that has created economic value. From that

perspective, “the Internet” is a very large and diverse field that includes not only a set of technical advances but also at least two large sets of important new markets: online and mobile. Online markets range from advertising-supported content and communications (from Google and Facebook and others) to electronic commerce in wholesale and retail (at Amazon or EBay or elsewhere). Today, mobile-based markets in electronic content, communications, and commerce are emerging rapidly, and the platforms to support them are changing rapidly.

Now, I agree with Greenstein that question of whether broadband carriers will face effective competition from mobile carriers is relevant to some policy questions, to be sure. At a minimum, it will determine the degree to which broadband carriers are able to impose taxes on the innovations of others. This is an interesting query, but it only goes to one element of the question about the best industrial organization for innovation. The other open question is the value of diverse initiatives arising from diversity in capabilities, incentives, and ideas.

Whether or not you think that the mobile carriers will effectively undercut the market power of the landline broadband carriers, they are and will remain ... carriers. Putting all of the broadband and mobile carriers together, the innovative output would still be based on an extremely narrow range of incentives, capabilities, and ideas. Not to put too fine a point on it, it was not the carriers who brought us either the online world or the mobile world – not in the sense that their innovation made it possible. Relying on their leadership going forward would not be a good idea.

2.2 Innovations Going Forward

The future of Internet innovation, Shane Greenstein’s topic, is important to economic growth. I would argue that for the future an open, rather than a contractarian, approach is wise – if we have to choose. Better yet might be a system of divided technical leadership to gain many of the benefits of both contract and openness. The important economic opportunities call for innovative exploration, not mature exploitation of existing overlaps between technology and application; openness will better support innovation. I would argue that diverse innovative exploration seems needed in at least three broad areas where breakthrough platform innovations could provide value in use.

Today, the most exciting and profitable area of innovation in the Internet is consumer-oriented mobile devices, applications, and platforms. Consumer-oriented online (not mobile) “social” networks are not far behind. I will characterize most of these as “play,” including not only literal games but also the consumption of music and media and the social (as opposed to professional) sharing of information in this category.

Recent platform innovation in this broad area – from Facebook, Apple, Google, Twitter, and from dozens more – has been inventive and diverse. The current situation still calls for diverse innovation to resolve a wide range of questions about the nature of Internet-mediated play. How will our online and mobile play be paid for? Will it continue to be primarily advertising-supported? What kind of consumer information will such advertising be conditioned on, and who will control that information? We spend a lot of time debating “privacy,” but the important questions about the control of information created by and about consumers go far beyond that; the use of that information will determine the economic payoff to its creation, including the payoff to the consumer. These are not the only open questions calling for diverse exploration. How will consumer demand for games, applications, and media change as “social” communication about them grows denser? How will that growing demand be supported, and what will be the nature of the relationships between platform sponsors and the developers of content and applications? How will the use of digital information services by consumers, and by social networks of consumers, be related to their purchases of non-digital goods and services and the ways that those goods and services are marketed to us? Think for a moment about the radically different models by which consumers collaborate to identify products they might buy, ranging from Angie’s List to Yelp to Amazon, Google, Facebook, and Twitter. You can rate a product, tweet that it is a good one, “like” it, click through a search result for it, or buy it. Which of these models will work best for consumers and advertisers? Or will some mix of all work in different product categories? The different platform initiatives in the mobile and online world offer different provisional answers to these questions and to many, many others. Diverse exploration is still needed.

2.3 Two Schumpeterian Conflicts

Much of the new consumer-oriented Internet and mobile innovation brings the new platforms into complex relationships of complementarity and competition with existing “content” and media industries. The exact nature of that relationship remains to be determined. A large number of different experimental relationships exist – some so contractual as to seem vertically integrated (literally in the case of Hulu, and close enough in the case of Netflix), or employing an arm’s-length distribution channel with contract (such as Amazon or Apple), or arm’s-length and not all that contractual (in the case of Google). So, too, do dozens of other critical features of the new distribution channels for “content” and the new, distinct idea of “media.” We spend a great deal of time worrying about the impact of Internet innovations on the news and book industries, serious topics to be sure, but the largest economic impact must be positive and must come in the other

entertainment content and media industries. Surely the traditional music, television, and motion picture industries are among the most worthy candidates for creative destruction in the whole economy. Putting pressure on those industries calls for a diverse set of innovative initiatives from the Internet or, in Shane Greenstein’s useful language, for economic and business model experiments. It would be a terrible mistake to leave the determination of these relationships to the traditional media and content industries – or to any other particular kind of agent. Diverse exploration of the new business models for content delivery draws usefully on competition and experimentation by a wide range of different industries.

Finally, the traditional computer and communications industries, which until recently have also drawn their largest economic returns from the use of ICT at work, are going to come into a complex relationship of complementarity and competition with the new mobile and online consumer-oriented platforms.³ Traditional ICT vendors are strong candidates for creative destruction. We can expect the diversity and inventiveness of new consumer-oriented platforms to be the main force which puts pressure on traditional vendors. That could be an important growth pole for the rich countries going forward, especially if the part of new consumer-oriented platforms that migrates into work applications leads to the invention of new uses of ICT at work. However, the precise direction of technical progress that would make the new consumer platforms into dual-use platforms that improve productivity in large organizations would require solving some serious open questions. (No, it is not just take your iPad to work or read work materials on your Galaxy Tab; let’s be serious here.) Is there a new mode of broadly useful business communication that looks more like social networking and less like e-mail? How will social media need to change to get broad business use? Is there a new mode of collaboration that looks more like collaborative filtering? How will it be controlled in large organizations, and how will that control resemble, or differ from, existing consumer solutions? This calls for diverse exploration; it strongly calls out against a contractual solution in which the existing individual end-user computer and communications vendors, such as Microsoft or mass market telecommunications firms (whether broadband or mobile), have an important directive role.

The new industries themselves, the Schumpeterian conflict with existing media distribution systems, and the Schumpeterian conflict with existing ICT firms are all going to be economically important and all raise fundamental open questions. Highly diverse exploration is a better bet than contractarian coordination in such circumstances, for markets can find the solution even when no one knows it and even when existing dominant firms – in Hollywood, in the

³ The analysis of this section owes much to my collaboration with Pai-Ling Yin (Bresnahan and Yin 2010).

traditional media, in the computer business, and in the communications business – are ambivalent about the new competition that the future might bring them.

Given the value of diverse directions of exploration for the most likely social payoffs to future Internet innovation, a contractarian solution with leadership by a proprietary platform provider seems particularly unwise. Shane Greenstein makes two points here which I think have immediate application to the present situation. First, at times like the present, it is far better to have a wide range of distinct, potentially partially overlapping, experiments to explore alternatives. This calls for divided technical leadership and open systems, not for a contract to coordinate.

Second, any contractarian solution that involves traditional ICT platform providers or traditional media is problematic for two reasons. The first is the innovative history of these traditional firms. Who brought us the widely used Internet? Who brought us the new mobile world? It is not the traditional ICT providers or the traditional media. Hoping that they will now coordinate the next round of breakthrough improvements is unwise. Second, there is a very good chance that much of the economic return to future innovation on the Internet will come in the form of creative destruction, and thus is not in the economic interest of traditional suppliers.

3 The Puzzling Policy Debates

Finally, I return to the puzzle posed by Shane Greenstein about innovation policy debates. Why are they so disconnected from innovation in the world? Above, I discussed the oddity that policy debates about Internet innovation are carrier-centric, and came to the interim conclusion that this reflected a carrier-centric regulatory framework for traditional telecommunications firms. One cannot help noticing that a number of other policy debates about innovation are centered on other regulatory frameworks.

Much of the policy discussion surrounding innovation incentives in music, movies, television, etc., is a debate about copyrights. Copyrights are a regulatory framework for protecting the interests of creators. It is important to have a regulatory framework for that purpose, and to adapt that framework to changing technical environments, including, for example, the invention of the plain paper photocopy machine or the “pirate” website.

However, many of the policy issues in copyright today concern the degree of control over invention (not creation) that should be granted to copyright holders. Should copyright holders be able to ban the sales of certain kinds of computers or software, because the computers or software may be used in illegal copying? Should copyright holders be able to compel communications companies to block access to certain websites, because the websites may be used in illegal

copying? Policy questions like these have been on the table for decades now, with the debates’ details changing as time and technical progress occur. But both sides routinely point to their own innovation incentives as the most important thing in the economy.

The disconnect here is parallel to the one noted by Greenstein. The discussion in the copyright regulatory policy debates focuses on the questions of the incentives for creators of new copyright materials. Yet, as I pointed out above, the real innovation issue in content and media is about creative destruction competition in the distribution and marketing of content. There is a disconnect.

Similarly, much of the policy discussion of innovation incentives in hardware and software is patent-centric. Patents are a regulatory framework for providing incentives to inventors, and it is of course important to have such a regulatory framework. Granting a patent to one inventor gives that inventor an incentive to patent (and, to the extent that patents and inventions are linked, to invent).

Many of the open patent policy questions facing courts and legislatures are not, however, narrowly about the incentives to invent of a single inventor. Instead, they are about the ability of a patent holder to block or tax innovations made by others. To what extent should one inventor have the right to seek payment from another inventor if the second inventor’s product is successful and the first inventor holds a patent somehow related to it? How close a relationship between the first inventor’s patent and the second inventor’s product is needed? For what kind of invention by the first inventor should we let him regulate the second inventor’s product? Firms on all sides of these debates are good guessers about their future legal circumstances, and accordingly have firm views about what kinds of patent rules will work for them. As they apply to the traditional computer hardware and software industries, these are questions of great interest to interested parties, but they are highly disconnected from the real innovation issues. Society does not face a crisis of innovation incentives at Oracle or HP or Microsoft; society hopes for a market outcome in which those firms deal with creative destruction competition from outsiders. The most important innovation questions are, once again, disconnected from the policy debates.

In a world where all innovation could be arranged by ex ante contract, the questions of telecommunications, copyright, and patent regulation might be less important. To be sure, regulation might give one firm – a carrier, in Greenstein’s examples, or a copyright holder or a patent holder, in mine – the right to control and tax innovation by others. But faced with that prospect, firms could certainly write contracts that would take all of society to an efficient outcome, and the granting of regulatory rights would simply be a transfer from one class of citizen to another.

To the extent, however, that open systems are a better bet for society than contractarian arrangements, the regulatory allocation to one firm of the right to control innovations by another firm is problematic. Because regulatory allocation of that kind of rights is at the center of so many policy debates today, and because contractarian arrangements seem like a bad bet on so many different fronts – not just within the Internet itself, but in its relationship with traditional media and entertainment industries and with traditional computer and telecommunications firms – there is a problem.

Why, then, are policy debates so distant from the real innovation issues? We hear, from telecommunications carriers, that the most important innovation incentives for the future of the Internet are the carriers' incentives, and that they must therefore be able to regulate innovation by others. Shane Greenstein is correct that this is a very odd perspective. I would add that we hear from the traditional media and content industries that protecting *their* incentives to create new works (by allowing them to regulate the innovations of others) is the most important thing, and from the traditional computer and software businesses that to the contrary, protecting *their* innovation incentives is the most important thing (again, by letting them regulate the innovations of others) both of which are very odd perspectives on the reality of future Internet innovation. We need experiments, and picking the old guard as the most important experimenters in a time of rapid and unpredictable change is an odd perspective.

But all those ideas – that the innovation incentives of carriers, the traditional media, or the traditional ICT suppliers deserve special protection – are very important in policy debates today. “Innovation incentives,” it seems, is part of the new language of anti-market protectionism. This language has become so important, I conjecture, because of changes in regulatory frameworks that grant rights to insiders to block or tax the innovations of outsiders.

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