

FAULHABER COMMENTS AT E-2-E WORKSHOP

Thank you, Larry. Yes, I am an economist; I teach at the Wharton School. However, I can play many roles; I am currently on leave, doing a one-year stint at the Federal Communications Commission as the Chief Economist, and sometimes I feel like Spaceman Gerry, crash landing on Planet Law, so I've been force-fed enough law in the past six months to last me well beyond my current expected lifetime.

But in a previous life, I was a Bell Labs techie, who learned assembly language at the knee of Dave Farber, and helped designed the #1 ESS. And for one brief shining moment, I was also an activist, but let's not go there.

Having listened to the engineers hold forth most of the morning, let me step back and tell you about the economist's view of the world. We focus on consumers, producers, and markets. When we do normative economics, our measure of value is the economic surplus realized in markets by both consumers and producers. We view the law as establishing the rules that enable markets, such as contract law, property rights, fraud and securities law, and personal safety and security. As well, the law and regulators may choose to intervene in markets where competitive forces don't work well, presumably to maximize aggregate economic surplus. The cynical amongst us might say, maximize surplus to lawmakers, but let that pass.

How economists view technology is more nuanced. At its simplest, technology simply hands producers a technology set, within which producers select inputs to produce a good or service at minimum cost, depending on factor prices. In this simple view, technology is exogenous, given to *homo economicus* by God, engineers, or something in between.

A richer view is that technology is endogenous, in which there is a market interplay between consumer needs and innovation. In this view, technology is market-driven; the innovation we see is what consumers want.

The third view is that, as Adam Smith pointed out, producers are always conspiring how to fleece the unsuspecting consuming public; it is only the competitive market that keeps their avarice in check. But producers will always search for ways to escape competition, through marketing, customer lock-in, predatory pricing, network effects, etc. AND...technological innovation is just a part of this strategic quest for greater profits, perhaps at the consumers' expense.

And this is where e-2-e comes into play. The e-2-e advocates are essentially arguing that e-2-e is the engineering equivalent of competition, and who can argue with that? So ... Bottom line is that all economists love competition, engineers love e-2-e, so we all agree, right?

Well, not so fast. The real world is neither the economists' heaven nor the engineers' nirvana. First, markets can quite legitimately drive you away from perfect competition, or e-2-e, because that's what customers' may want. Check out the Dave Clark-Marjorie

Blumenthal paper, where they deal with those pesky real problems that break up our ideal worlds: (i) we live in an untrustworthy world, so we must protect ourselves, violating e-2-e as well as perfect competition; (ii) ISPs are trying to differentiate themselves, again leading to less-than-perfect competition; (iii) and customers are less sophisticated, happily willing to turn over to someone else the complexity of dealing with the online world. So e-2-e may well be violated for reasons of lower cost and/or higher value to customers.

Second, if e-3-e arguments are violated in the course of increasing customers value (including the foregone option value of innovation, as discussed in Mark Gaynor's paper), then too bad for engineers. Customer value (broadly understood) trumps engineering elegance, and it even trumps economists' dream of perfect competition.

Third, the engineering assumption is that once we set the system architecture then the whole game is over, and (say) the cable operator can use its control over the DOCSIS 1.2 standard strategically to destroy American society and all we stand for, all for their personal profit. But in fact, markets can push even this, at least in the long run. I recall Bell Atlantic putting into place its IQ Intelligent Network in the mid-1980s and pushing their architecture, and it was greeted by a great collective yawn from their customers.

Now let's get to broadband cable open access. Obviously, there is a merger case before us, so I'm constrained in what I can say. The arguments for open access have been based on ensuring (i) customers have full access to the web and (ii) developers are free to innovate at the edge of the network without constraint. But in actual practice the lobbying efforts for open access have focused exclusively on ISPs: we seek to ensure that ISPs can offer service over the cable IP channel. Let me make this clear: open access for ISPs on cable broadband is not the same as full content access and guaranteed developer access. It may or may not be a good proxy, but nobody has made a serious argument that it is.

Consider the core functionality of most ISPs: they provide a bridge from the undifferentiated telephone network into the IP network. Additionally, they provide e-mail, maybe some disk space, but basically they provide connectivity between the telephone network and the Internet. Now let's consider either a cable broadband network, in which the customer has an "always on" connection, dedicated to IP traffic. Of course, this has to be appropriately routed at the head end, but it is certainly possible (if not likely) that this routing function is most efficiently performed by the cable company itself, without the need for another layer of firms. I don't know whether this is true or not, but I suspect that vertical integration makes a lot of sense for dedicated broadband access. In which case, pressing for cable broadband open access for ISPs is simply an ISP preservation act, guaranteeing the continued existence of a family of firms that may have no economic function in the future, but for some misguided public policy mandate, which has nothing to do with access to content and freedom for development.

Lastly, let me address the demand that regulators need to step in and mandate open access, and lo e-2-e is preserved. I refer to this as the high school civics view of

regulation. Since engineers usually don't get to see how real regulation works, you guys can be excused for not understanding how ghastly the process really is. But lawyers are another matter: they not only get to see how it works, they invented the damn process! Nevertheless, they seem to maintain the naïve view that all we need to do is put the rule in place and it works just as we intended it to. Well, it doesn't; what it does is put in train a very long process of regulatory, judicial and legislative hearing, filings, NOIs, NPRMs, rulemaking, all of which is then followed by years of commercial disputes.

Let me tell you what has happened as a result of the last time the FCC (and Congress) mandated open access. In the Telecommunications Act of 1996, Congress mandated the FCC to open up the local telephone loop to competition via reselling Unbundled Network Elements (UNEs) to competitors, eventually creating an entire industry of CLECs (Competitive Local Exchange Carriers, contrasted with ILECs, or Incumbent ...). I could tell you the statistics on just how successful this huge and costly experiment has been, but let's do it the easy way, by conducting an on-the-spot survey of this audience. How many people in this audience buy their local home wireline telephone service from a CLEC?

[no one raises their hand]

I rest my case: this is the end result of a regulatory open access mandate.