



# DEPARTMENT OF JUSTICE

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## "THOUGHTS ON ANTITRUST AND INNOVATION"

By

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Some have expressed concern lest antitrust enforcement inefficiently discourage innovation. That would be a bad thing if it were true. I don't think it's true, however: certainly, in my experience, antitrust as practiced at DOJ is not the static, narrowly price-oriented activity that some fear.

More deeply -- and this is my theme today -- even if antitrust analysis *appears* to focus on price effects, this can and should be understood as *synecdoche*: the part standing for the whole. That is, there are reasons to expect competitive effects in different dimensions (innovation, quality, price), and their net effect, usually to go together. The shifts in incentives that are fundamental in antitrust economics apply quite broadly, so that a price analysis can often proxy for a fuller competitive analysis.

In my own mind, the essence of antitrust is preserving (against certain understandable but harmful threats) firms' incentives and abilities to offer the best deal they can, and preserving at least a reasonable number of independent actors who vie to offer the best deal.

Because this definition does not *sound* particularly close to the comparisons of price and marginal cost that still populate many economics textbooks, it's worth pausing to ask whether I am proposing something far afield from conventional notions of competition. I am not. Thus, for example, in the textbook constant-cost industry, it amounts to the same thing. But, for our purposes, it is more important to understand what competition means in an industry where sunk costs and economies of scale loom large. There, although departures of price from marginal cost have the same allocative-inefficiency consequences as in a textbook industry, they cannot represent the definition of competition. Rather, one should ask whether firms are somehow blocked or deterred from offering products and prices over time that represent a better deal than

an incumbent is offering, and whether if firms do make such offers, customers can and will take them. For example, a merger between a dominant incumbent and its (by far) most potent challenger would be a problem in such an industry, and this is true whatever the details of the pricing patterns and styles of innovation.

One way to see this, which brings out the fact that this is really conventional antitrust, is to ask about such a challenger's incentive to offer consumers a better deal. A firm that offers a slightly better deal than it had been (or than it otherwise might) is making a tradeoff. On the one hand, its *inframarginal* customers could have been charged a bit more, or given a less appealing product. Whether it's a matter of getting extra cash or of saving some quality-control or innovation dollars, that side of the tradeoff argues for giving consumers a less good deal. On the other hand, *marginal* customers are retained or attracted by the better deal. The size of this demand effect is the derivative of the firm's demand with respect to the surplus it offers; and its size relative to the inframarginal customer base is therefore in essence the firm's demand elasticity. (There's a technical issue in defining elasticity with respect to surplus rather than to price, but it's not important for today.) When the diversion ratio is large, a merger or large equity holding will significantly reduce that firm-specific demand elasticity, and will thus shift the tradeoff in favor of exploiting customers and against trying to attract customers.

Those who are familiar with conventional unilateral-effects analysis will see two things. First, that's exactly what this is. And, second, although the technical details will differ, it fundamentally doesn't matter for the qualitative analysis whether we are contemplating the firm's incentive to offer a better deal through a price cut or through a quality improvement or through an innovation. In all those cases, the basic tradeoff remains, and a horizontal merger with a close

competitor calls into play this “unilateral effect” that shifts the tradeoff in an adverse direction.

With that as illustration, I hope you will be readily able to fill in, at this grand level of generality, the parallel analysis of collusive agreements and of exclusionary behavior and monopolization. What in “old language” is a change in the incentive or ability to offer a *lower price*, in “new language” becomes a change in the incentive or ability to offer a *better deal* -- and fundamentally the analysis is the same.

It’s also worth noting that, although outcomes and behavior with respect to innovation are in some sense less subject to quantitative prediction than are prices, this isn’t necessarily a big problem for doing intelligent antitrust. What the unilateral-effect analysis shows is that incentives to offer good deals *shift* in a predictable direction. Even if one doesn’t claim to know much about the *level* of incentives, and for that matter even if precise incentives aren’t all that goes into decisions, it’s surely sensible to predict that behavior will tend to shift when incentives shift, and that it will tend to shift more in cases where the incentives shift more.

Although, as I’ve argued, the essence of antitrust readily includes competition on non-price dimensions -- so readily that one can make it (more) explicit with a simple change in wording -- there are some interesting issues just below the surface. Thus it is worth looking substantively at incentives to innovate and how they relate to some traditional antitrust factors. There are two places where people often believe they find tensions between antitrust and innovation. One is in the relationship between innovation and bigness. The second is in the field of intellectual property. In both cases, I will argue, there is much less tension than meets the careless eye.

*Innovation and scale.* The cost of innovating is often broadly independent of the scale on which the innovation will be implemented. One might be tempted to infer that a “big” firm has stronger incentives to innovate than a “small” firm. It’s not as simple as that.

First, it is not clear that one should treat a firm’s size as fixed. Firms grow; and they may grow particularly when they have a superior product. In Arrow’s classic work on innovation, a firm that begins with an infinitesimal market share can capture the whole market after (even) a small innovation. Proponents of lax antitrust in innovative industries often claim that this is a reasonable approximation to the way such industries work (the theory of “serial monopoly”).

Second, while there may well be complementary fixed assets or other reasons that limit the superiority-induced growth of a successful innovator, it is not true that the scale at which an innovation is implemented is limited to the size of the firm that innovates. Licensing, although not without its frictions, is commonplace; and there are other means to get the innovation out there without having to run the innovator’s machinery at a thousand percent of capacity. So, while an exogenously fragmented industry with some impermeable barrier to diffusion of an innovation would indeed provide poor incentives for innovation, it’s a big step from there to claim even that a narrowly anti-concentration antitrust policy would have that effect.

Meanwhile, although in the simplest models *scale* helps the incentive to innovate, it remains true that *share*, by reducing firm-specific demand elasticity, typically reduces the incentive to offer good deals. Business people, in my experience, often see attracting more customers as a bigger incentive than being able to charge them more, and the former incentive is weaker for a firm that already has a large share of the market (unless failure to innovate truly puts that share in jeopardy). At least some of the simplest economic models (notably the vertically

differentiated Bertrand models) don't fully capture this effect, because they rule out the commonplace reality that marginal sales are valuable to more than one firm and will shift in response to innovation.

Before leaving this topic, let me remind you also that focusing entirely on a single party's *incentive* to innovate ignores the very unpredictability that proponents of lax antitrust sometimes accuse us of ignoring. Diversity of approaches is extremely valuable in finding major innovations. A single view, no matter how well motivated, will almost inevitably trammel society's research portfolio inefficiently. In this connection I recall the story told by Dr. Grove of Intel about that firm's abandoned attempt to pursue both RISC and CISC approaches to microprocessor development. Dr. Grove recognized that there was real uncertainty about which approach would turn out to be best, and decided that Intel should therefore pursue both. But that approach was abandoned because it created tensions internally and with customers. I take from this that sometimes diverse approaches will be pursued only if there are multiple organizations involved. And this was a case where Intel explicitly recognized that diversity of approach was valuable: think of all the cases where a single decisionmaker is instead biased or unimaginative.

*Intellectual property.* Superficially, intellectual property, which creates what are sometimes called "monopolies", might seem at odds with antitrust, which is in some sense against "monopolies." To a large extent, however, this is illusory. Let me explain a couple of pitfalls in that language, and then say why good intellectual property policy is part of the same overall effort as antitrust in making it more likely that firms can and will offer better deals.

First, "monopoly". A piece of intellectual property, which is loosely the right to exclude others from the use of some innovation, doesn't necessarily confer monopoly in the sense used in

economics or antitrust, any more than the exclusive right to use his bicycle gives a one-man express delivery service a “monopoly”. Even when it does, “monopoly” is not itself an antitrust offense. Monopolization is an antitrust offense, but that requires acquiring or preserving monopoly by means other than competition on the merits. Properly formulated intellectual property policy *facilitates* and *permits* competition on the merits, rather than blocking it.

From an economic point of view, intellectual property protection is appropriate when (and to the extent that) an innovation would not be forthcoming absent that protection. Provided, importantly, that a successful innovation by one firm does not actually hamper other firms’ ability to offer surplus (a very different matter from hampering their attempts to make profits), economists can view IP as an institution supporting an efficient contract between a *potential* innovator and customers, under which the potential innovator in effect offers a time series of price and quality that’s better than can (or will) be accomplished without the innovation, and yet is profitable net of innovation costs. It’s no different at that rather general level from any other efficient property institution.

Again, my theme is that there is no first-order tension; my variation is that there are some interesting problems when you dig deeper. Here, let’s take another look at an innocent-looking phrase I used just now: “Provided that a successful innovation does not actually hamper unsuccessful firms’ ability to offer surplus...”. This is a natural assumption in a “simple” industry with constant returns to scale and the like. Either actually or in a direct “threat” sense, the pre-innovation offers stay around and constrain what the innovator can do and charge. If the innovation is worth  $v$  to consumers, then simple models suggest that, often, the innovator can charge a premium that’s on the general order of  $v$ . In a simple constant-costs industry, the

innovator will if anything tend to take a smaller premium, and may well be under-rewarded.

However, in an industry with large network effects, learning by doing, or the like, or perhaps even just large sunk or fixed costs, it is quite possible that the unsuccessful firms can't or don't stay around in their full prowess. Without going into detail, it is quite possible that an innovation, of value  $v$ , gives the innovator not only a product premium worth something like  $v$ , but also a dominant market position, whose value could potentially be unrelated to  $v$ . Let's call this  $n$ .

Because, in the absence of  $n$ , the innovator may well be under-rewarded, and for other reasons, it's often sensible not to worry too much about this possible over-reward. Occasionally, though,  $n$  is far in excess of  $v$ , suggesting a gross over-reward. If this over-reward is very costly, as it may well be if  $n$  represents market power, and if one can identify such cases in a way consistent with good policy, then this is an argument for not applying intellectual property protection (or not as strongly) to such cases. In general, however, although good IP policy might try to take this concern into account, such a "natural over-reward" is not in itself an antitrust violation.

It may sometimes be, however, that an innovator sees competition as limiting its rewards of  $v$ , or of  $v + n$ , and sets out to weaken that competition so as to relax the competitive constraint, and get more: call it  $v + n + m$ . If it does this by actions unrelated to competition on the merits and directed instead at weakening competition, then an antitrust violation may arise.