

We were delighted that Professor Paul Geroski, then Chairman of the UK Competition Commission, was able to join us for our expert working group meeting in December 2004. Paul's contribution to our proceedings was excellent. He was engaged and informed and made valuable contributions to our debate - provoking and stimulating input from the participants. It was the first time that many of us had met Paul. With his warm and engaging personality we had firm hopes that Paul would become a regular member of our group. Sadly that was not to be. As will be known to many readers, Paul died in the summer of 2005. We dedicate this collection of papers, to which he contributed, to his memory.

Charlotte Waelde and Abbe Brown, 2005

***Intellectual Property Rights,
Competition Policy and Innovation:
Is There a Problem?****

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** The views are not necessarily even my own final settled views on the subject. They are offered to stimulate debate, and they are certainly not the official view (or, for that matter, the unofficial view) of the*

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Introduction

Most of us share the presumption that when markets work well, they ought to be left undisturbed to get on with it. When, however, markets do not work well -- when a "market failure" of some type or other occurs -- then there is scope for policy intervention. The case for intervening is not, of course, a complete no-brainer: intervention in the face of market failure only makes sense when it is likely to produce a more satisfactory outcome than would be produced were the market to be left on its own.

Innovation -- or, more broadly, the production of knowledge -- is a classic example of an activity that is likely to involve a market failure. Knowledge has all the properties of a "public good": that is, goods which are non-rival in use and non-excludable (whether they are produced in the private or in the public sector does not matter in this context). Non-rival in use means that one individual can consume the good in question without any fear of restricting the consumption of the same good by another person. Put more simply, with public goods, there is no possibility of congestion arising to interfere with the consumption of the good or service by particular individuals. Non-excludability means that it is difficult or impossible to prevent someone who has not paid for the good from consuming it. With non-excludability, free riding by users of knowledge becomes a real possibility. Not only does this make it hard for an innovator to sell his/her increment of knowledge (and thereby cover his/her costs), but it also may make it hard to ascertain just how valuable it really is to consumers.

The production of knowledge has a further property that helps to cause market failure, namely that while it is costly to produce, it is typically costless to reproduce. That is, all the costs of producing knowledge are fixed (and they are usually sunk as well). This creates two problems: first, knowledge creators must be sure that there is a market sufficiently large to cover their fixed costs if they are to make the investment in generating new knowledge; and second, the fact that reproduction costs are zero means that prices could, and probably should, fall to zero. This, in turn, makes it hard to guarantee that fixed costs will be covered.

These problems are widely understood and a number of solutions to them exist. There is widespread agreement that one way forward is to create a set of property rights which exist for a limited period of time that will enable an innovator to recoup the costs of the investment s/he has made in generating the new knowledge. This property right effectively gives the innovator a monopoly in the use of the knowledge

s/he has created, enabling him/her to control it's subsequent use (or, at least control the terms on which others can use it). The question that I want to address in this brief paper is a simple one: is this the best policy that one might use to stimulate innovation?

There is no doubt that intellectual property rights do preserve incentives to innovate, but that is not my question. What lies beneath the question are two further questions: does the system of intellectual property rights that is commonly used have undesirable side effects? and are there other, possibly more effective, ways to stimulate innovation? My answer to both of these questions is a qualified yes. In particular, I think that one undesirable side effect of intellectual property rights systems is that they sometimes inhibit innovation. A second is that they provide incentives which are unrelated to the input made by innovators, which means that they may well distort incentives to innovate. Finally, I think that competition policy has an important role to play in stimulating innovative activity, and one that might both complement and even substitute for the type of protection offered by intellectual property rights.

intellectual property rights and innovation

My first set of observations centres on the question of whether the system of intellectual property rights which is commonly used in most advanced countries has undesirable side effects. There is no doubt that a policy of granting relatively unrestricted monopoly rights to particular agents can have undesirable side effects in markets built up around the use of the innovation. This is most obviously the case with patent licenses that grant exclusive rights or limit the geographical application of rights in ways that restrict competition in the market for the product produced using the patent. However, there is a second set of possible side effects that I want to focus on here, namely those that subvert the whole purpose of the policy, namely stimulating innovation.

Innovation is the process by which knowledge advances. The progress of learning is marked by the production of new ideas, the wider diffusion of existing ideas and the embodiment of ideas in new artefacts such as new goods and services. One important feature of the production of new knowledge is that knowledge builds on itself: new ideas are suggested by old ideas, and they often combine several old ideas in a new and quite different package. It follows that the process of innovation is likely to be more effective and more efficient if today's innovators are allowed free access to the results of yesterday's innovations. The difficulty is that the intellectual property rights granted to protect yesterday's innovation sometimes allow that innovator to

control today's innovation. When that happens, intellectual property rights can impede the rate of innovation. It seems to me that there are two particular areas where there might well be a concern that patents in particular inhibit innovation.

The first is essentially the problem of the "anti-commons". Every innovator draws from a large and deep well of public knowledge, and no one is restricted in the access to, or the use they can make of, information in the common domain in which that public knowledge resides. Further, since information is essentially a public good – meaning that it is non-rival and non-exclusive in use – there is never likely to be a problem of congestion in the public domain, and hence there can be no real justification for restricting or regulating access to it. It follows that anything which restricts access to the public domain, or restricts the size of that domain itself, is likely to reduce innovation. More generally, licenses which give the licensee rights to the innovation produced by the licensor, unduly broad patents and patent claims which cover, or lay claim to, knowledge not produced by the patent holder are all examples of practices which might pervert the purpose for which intellectual property rights were developed.

The second problem arises with complex innovations. When a new innovation draws on several different areas of technology, then the innovator will need to undertake a series of bilateral negotiations with existing intellectual property rights holders if his/her innovation is to see the light of day. This, in turn, means that any individual antecedent patent holder has the ability to hold up the new innovation, possibly using this bargaining power to extract most of the returns that it promises to produce for its creator. These "patent thickets", as they are sometimes called, basically inflate the transactions costs of developing a new innovation, and are, therefore, likely to inhibit the rate of development of new ideas or the good and services that come from them.

One of the dilemmas that patent thickets create are that clearing the ground for new innovations may – if it was anticipated by the original innovators -- well dull the incentive of those who developed the original innovations on which all the rest depends. This is, in some ways, much the same dilemma that broad patents give: the broader the patent, the greater is the incentive to innovate to get that patent; however, the broader the patent, the more difficult it is to develop spin-off innovations that are tangential to the original innovation. In both cases, strong incentives are given to develop new innovations, but these incentives can inhibit the further development of those initial new innovations. If you like, patent thickets and broad patents encourage more innovations today, at the possible expense of more innovations

tomorrow. Just how costly a policy this is depends of course on just how much of a tomorrow there really is.

the design of intellectual property rights

My second observation is that even when patents and other forms of intellectual property rights do not actually inhibit innovation, they may distort incentives in various ways that might reduce the value of the innovations which they stimulate. To understand how this might happen, it is necessary to step back and think a little about the design of intellectual property rights systems.

When a competition economist first encounters the intellectual property rights regime that is common in most countries, their first reaction is likely to be bafflement. Competition economists are used to the idea that investments -- particularly when they involve a substantial amount of sunk costs -- might need to be protected in certain circumstances, that firms ought to be able to recover their costs and earn a reasonable return on such investments. This is, or ought to be, as true in the case of intellectual property as it is as true of the construction of huge power stations, telecommunications networks and sewer systems. An inventor or innovator needs to be sure that s/he will be properly rewarded for his/her efforts, and, if s/he is not, then his/her incentive innovate is bound to be diminished.

This kind of issue typically comes up in the context of public utilities where some element of natural monopoly is present. The existence of natural monopoly means that the problem for regulators is to insure that regulated companies make enough return on their investment, but are not allowed to use such investments to extract monopoly returns from consumers. Much the same should apply to intellectual property rights, and for much the same reasons: they should be strong enough to insure that innovators get a fair return for their efforts, but not so strong that they are able to extract unreasonably high returns from consumers.

What is really puzzling about the intellectual property rights system is the way that it goes about preserving such incentives. For competition economists, the natural first step is to sum up all the investments made, allow for a bit of risk and compute a rate of return that the innovator ought to be allowed to earn on that investment. But, intellectual property rights regimes typically grant inventors monopoly rights for a fixed period of time regardless of their costs, or, for that matter, of the social value of their innovation. Further, these intellectual property rights place very few restrictions on the kinds of licensing provisions that

inventors can impose on those who wish to take advantage of their work, allowing them, in principle, to earn phenomenal returns in some circumstances.

Now, one might feel that the traditional design of intellectual property rights has the virtues of simplicity, meaning that the much lower costs of running the regime more than outweighs its limitations. It is certainly true that the one size fits all regime reduces the amount of regulation which has to occur, and giving inventors 20 years protection regardless of what they invent is undoubtedly a lot simpler than computing a reasonable rate of return for each innovation that is patented. However, simplicity has a price. In particular, one must ask just what kind of incentives to innovate does this kind of fixed time limit system produce?

There are probably two slightly perverse incentives that are worth noting. First, this kind of rights regime steers inventors towards those types of innovations or inventions that property rights can actually protect -- it is clearly more profitable to invent things that are patentable than things which are not. Further, because the upside can be unlimited, it arguably steers too many resources into such innovations. If innovators are able to extract whatever they can from users, successful innovations can generate revenues that vastly exceed their costs. Second and harking back to a point made earlier, there is little need or incentive for innovators to channel those gains into producing further innovation. The rights given to intellectual property rights holders protect the investments that they have already made, and there is no requirement that these returns are invested into further innovative activity (although it is not wholly obvious that there should be). Hence, the time limited regime incentivizes first time innovation, possibly at the cost of follow on innovation.

competition policy and innovation

My third and final set of observations centres around the question of whether there are other, possibly more effective ways to stimulate innovation. In fact, it is well known that there are a number of alternative routes to this end, and the relative merits of most of them have been widely debated. It has long been understood that procurement practices (such as those which underlie user led innovation processes) can be a major driver of innovation. Similarly, the use of R&D subsidies and more general public spending on research will clearly stimulate innovation, as may business support policies directed at entrepreneurial high tech firms. In what follows I want to

focus on yet a further alternative, namely the use of competition policy to stimulate innovation.

It has long been believed that competition and innovation are not compatible, that truly competitive markets (at least in the textbook sense of "perfect competition") are incapable of sustaining innovative activities by firms. Usually associated with the work of Joseph Schumpeter, the argument is, in essence, that in the absence of some monopoly power, firms will be unwilling to invest in innovation. The presence of some monopoly will insure that prices are above variable costs, and, hence, that fixed costs can be paid off. Further, the existence of some excess profits gives firms the option of funding innovation out of retained profits, something that might be easier to do than borrowing from uninformed, risk averse investors. Such firms may also have the capabilities to innovate, having been able to finance the development of skills and capabilities that they would otherwise lack. Finally, some degree of monopoly power may make it somewhat easier to market the new idea or the good or service which embodies it; that is, a monopolist is likely to be able to appropriate more of the returns to his/her innovation than would a firm in a very competitive market.

The big problem with these arguments is that they do not address incentives. There is very little doubt that monopolists have the ability to innovate -- they are likely to have the cash flow, market position, skills and even scale of activities to undertake R&D, and bring new products to market. Whether they actually will do so is another question entirely. Most firms who have a well established market position have accomplished this on the back of particular innovations and the development of particular expertise. They have made deep investments in serving their market in a particular way -- investing in procurement systems, customer relationships, in large scale manufacturing -- and they have shaped their organization to match what they are doing. Innovative activity is, however, disruptive, and anything that disrupts a profitable activity not always welcome.

It is worth trying to make this point more precisely by distinguishing two types of innovation: what are called "sustaining innovations" and "disruptive innovations". Sustaining innovations offer consumers more of the same basic proposition, and they draw on - and deepen -- the existing skills sets of firms. New personal computers that offer more computing speed or more memory are examples, as are cars that drive faster, or more economically, than existing cars. Disruptive innovations, on the other hand, offer consumers quite a different proposition, and they often demand the development of new skills and expertise by firms. They are sometimes called "competence destroying

innovations" (sustaining innovations are sometimes called "competence enhancing").

The point is really simple. A well established firm with some degree of market power is much more likely to prefer to introduce sustaining innovations than disruptive innovations. Sustaining innovations build on, and develop, what it is already good at; they will help to protect it's existing business against the challenge of slower, less adept rivals. Disruptive innovations, on the other hand, offer lower net returns for established firms than they offer for new players. For an established firm, the gain to introducing a disruptive innovation is the gross profits from doing so, less the loss of profits from activities that the innovation displaces. For new firms or outsiders, there is no existing activity to displace and so net loss. It has, therefore, a larger incentive to introduce a disruptive innovation.

There is a further point worth considering. The Schumpeterian arguments that I have just been discussing all suggest that it is monopoly *ex ante* which matters for innovation: it is firms who already have some market power that the Schumpeterian argument identifies as likely innovators. It follows that there is a real conflict with competition policy: if this Schumpeterian argument is correct, then any attempt to attack positions of market power is likely to retard innovation. Intellectual property rights, on the other hand, are concerned to create monopoly *ex poste* -- that is, after the innovation has been made -- order to stimulate innovation. It is the promise of monopoly -- not it's actual fact -- that stimulates innovation in this line of thinking. Any attack on existing monopoly positions will, in this view, not affect innovation since what matters is the expectation of having a monopoly (at least temporally) on the use of the innovation after it is made. This is perfectly compatible with having a good deal of competition in the market before the innovation is developed.

conclusions

I started this paper with a question -- is the system of intellectual property rights that we are all familiar with the best way to stimulate innovation? -- and the gist of what I have had to say is that the answer is "maybe". In a sense, this is not a surprising conclusion: it is just too hard to be sure just what the best policy is in almost every setting that this question comes up in. At a more sensible level, however, "maybe" is an answer that is pregnant with possibilities. Most of these arise from two different types of observations: first, that intellectual property rights systems can inhibit innovation, or at least distort it in particular

directions; and second, that competition and innovation are not inimical.

For me, as a competition policy practitioner, the argument that competition stimulates innovation is an important one, for it suggests that competition policy is not necessarily in conflict with the use of intellectual property rights to stimulate innovation. At a practical level, this argument seems to me to have two implications. First, it seems clear that one ought to regard restrictive licensing practices as just what they are: namely, restrictive practices. In this, as in many other areas of anti-trust, the rule of reason ought to apply. That is, such practices should be evaluated in the context of the benefits which they might – or might not – bring to consumers, in both the short and also the long run. Second, anything that substantially lessens, or adversely affects, competition in a particular market is, or should at least potentially be regarded as, a threat to innovation. And, the need to stimulate innovation is the one thing that both competition policy and intellectual property rights have in common.