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The Economics of Ideas and the Ideas of Economists

by

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On college campuses across the country and on millions of home computers, too, young adults download from each other digital files containing recorded music and films for their entertainment. The owners of that copyrighted material pursue the downloaders with legal action as well as the software services that facilitate it. Napster's existence as a free file-sharing internet site was shut down in 2001, and the Supreme Court has recently ruled that a successor file-sharing service, Grokster, engaged in copyright infringement by providing an easy way for individuals to exchange files. The amount of filesharing activity is not trivial; Paul Romer (2002) estimates that Napster users were downloading at the rate of 1.5 billion downloads per month before Napster was shut down and that the consumer surplus generated by downloading roughly equaled the revenues of the recording industry.

At the other end of the demographic spectrum, many of these college students' grandparents seek to buy patented prescription drugs from Canada where prices are lower than in the United States. The pharmaceutical manufacturers and the FDA try to restrict that cross-border trade but the grandparents flex their political muscle to keep their supply routes open.

These two phenomena have something in common: both represent attempts by consumers to use intellectual property without compensating the owners of that property. Public sympathy probably lies more with the grandparents than the downloading twenty-somethings but the owners of intellectual property are often viewed, if not by the public, at least by the consumers at issue as wealthy entities undeserving of further enrichment.

The prominence of these two recent episodes – along with such issues as the pricing of HIV drugs in Africa and the pirating of copyrighted material in Asia -- underscores the importance of intellectual property issues in contemporary life. My goal today is to outline both some of the contributions economists have made to understanding these problems and a few areas we have failed to pin down. I have three major themes:

First, the market for ideas, broadly conceived, is more important today than in the past for reasons that are primarily economic in origin. Second, intellectual property rights are not an absolute and the appropriate boundaries of those property rights depend both on behavioral responses and on the state of technology. Rapid changes in technology likely change the efficient intellectual property boundaries. Third, economists so far have made little headway in understanding the crucial empirical magnitudes on which optimal intellectual property policies depend. One of these magnitudes is the elasticity of supply of new ideas.

That information or knowledge is of crucial importance to modern economies is a cliché that can easily be overstated, as it undoubtedly was in the late 1990's when the dot com boom convinced some that we were well on our way to a “digital” economy in which bits of information would be the central commodity in trade. Obviously this is an

exaggeration but there is good reason to think that information and ideas take an unprecedented place in contemporary advanced economies.

The growth of income per capita in the world was negligible from the eleventh through the eighteenth centuries. In the nineteenth century, however, per capita income roughly tripled while in the twentieth century it increased eightfold. Accounting for this unprecedented acceleration of real incomes is, of course, a crucial question for economists. My reading of the empirical literature is that much of the growth over time is attributable to technological change rather than the accumulation of capital. I don't intend to neglect the role of institutions such as private property, markets and the rule of law, which appear to play an important role in explaining differences in growth across countries and are a necessary precursor to the growth explosion of the twentieth century. But the economic historian Joel Mokyr (2002) contends that one distinctive feature of the nineteenth and twentieth centuries was the development of systematic ways of creating basic scientific knowledge and using it to advance technology. Technology had advanced before (think of Gutenberg) but haphazardly. Once science became the foundation for technical change, the rate of technical change accelerated, as the production of new ideas become systematized. Now, of course, we have whole sectors of the economy devoted to basic science and the development of useful technology. So one reason that information production is so central to modern advanced economies is that we have learned how to develop ideas more productively.

A second reason distinguishes the roles of advanced economies and the rest of the world. The bulk of new ideas, at least expressed by patents, are generated by the advanced economies. Globalization and the specialization induced by world trade has to

some extent made the advanced economies of Europe, North America and East Asia the generators of new ideas and technologies and the rest of the world the users of those technologies. Or, to put it another way, these economies generate most of the world's useful ideas because they have a comparative advantage in the production of ideas.

Ideas contribute to welfare both by reducing the cost of existing goods through process innovation and by creating new goods through product innovation. Of course, sometimes it is difficult to distinguish the two ; is the DVD a product innovation or is it a cheaper way to produce visual entertainment ? While the latent demand for process innovation has presumably always existed (because we always want more), a third reason for the growth of the production of ideas emphasizes the increasing demand for product innovation for which ideas are crucial. Where has this increased demand come from ? Let's look at Robert Fogel's (1999) estimates of the shares of total consumption in the US comprised of food, clothing, shelter, health, education and leisure in 1875 compared with 1995. If we take health, education, and leisure to be the relatively idea-intensive categories of consumption, we see that the share of these idea-intensive categories has quadrupled over the past 120 years from only 20% then to 80% now. Most of that increase is in leisure. Economic growth has been accompanied by an explosion of leisure time. Looking only at the time available after sleeping and eating, Fogel estimates that Americans spent 18 % of that time on leisure a century ago, with the rest taken up by market and household work. The figure today is 67%. Some, maybe much, of that time is filled with the entertainment hardware and software of contemporary life. The software – movies, musical recordings, television programs, computer games and for at least a few of us, books – that fills much of this free time requires creativity.

One way to think of this is that as our biological wants can be satisfied with less effort (because of the advances in production technology), we increasingly demand consumption which is idea-intensive. This may stem from the income elasticity of the demand for variety. There are actually two quite distinct senses in which the demand for variety rises. The first is the demand for variety over time by a single consumer. Underlying this income elasticity may be the durable nature of many of these consumption goods. At low levels of income I eat to get calories to exist. The calories are quickly burned and I need to eat again to acquire more calories. My demand for cheap calories trumps my interest in cuisine, variety, etc. At high levels of income, eating becomes more than intake of fuel. It becomes an experience with long-lasting effects. We remember the experience of the meal well after the calories from the meal have been burned. Similarly, the memory of a movie or song or vacation lingers. To some extent the durability of these memories engenders a demand for variety in the experiences that create them. And ideas contribute to producing the variety we demand. The connection is clearest in the creative arts such as composing, movie making, literature and so on but also extends to fields such as cuisine where innovative chefs devise new dishes with new combinations of flavors. Or, at a more prosaic level, a clever entrepreneur conjectures that the American middle class will want to eat steaks and deep fried onions in a vaguely Australian-themed restaurant.

The second sense in which variety may have increased is that taste differences across consumers are increasingly catered to. The world in which most of us read Life magazine and watched the Ed Sullivan show is gone. To some extent the costs of supplying variety have fallen with technologies such as TV cable and the internet. But

also, richer societies will cater more to heterogeneous tastes because they can afford the fixed costs of doing so; compare the amount of resources used to produce television programming for three broadcast networks in 1955 with the amount used today to fill the dozens of cable networks.¹

So to summarize my argument so far, the increasing importance of ideas in the economy originates from two fundamental forces. First, as documented by Mokyr, the development of the systematic application of basic science to technological change has supplanted haphazard innovation and has raised the payoff to effort devoted to the development of ideas, representing essentially a productivity advance in the production of ideas. This, in turn, has raised the share of output devoted to the production of ideas. Second, the richer consumers made possible by this technological advance consume a greater share of their income as idea-intensive output. I speculate that part of the mechanism here has to do with the rapid growth of free (non work) time and the complementarity between leisure activities and the demand for variety, although the straightforward income elasticity of the demand for variety may also play a role.

People in this room shouldn't need much convincing that modern advanced economies depend to an increasing extent on the market for ideas, broadly conceived. That is one reason why the study of these markets takes on greater importance today than in the past. But another reason has to do with the technological changes that have recently occurred in the dissemination of ideas. These technological changes may have altered the appropriate boundaries of intellectual property rights and require a reexamination of the traditional solutions to the problem of finding an efficient market

¹ In the Dixit-Stiglitz (1977) model of product variety, the number of products is limited by the fixed or set-up cost of producing them. Richer societies can better afford these set-up costs and will produce greater variety.

for ideas. In the copyright arena, the technological changes I have in mind are centered on the microelectronics, the internet and associated software which has drastically reduced the cost of computing and of moving information around the world. In the patent world, advances in our knowledge of genetic structure have also brought some property boundary questions to the fore. While the claims for a “new Economy” made by some enthusiasts in the late 1990’s were probably overblown (especially in the light of the dot com bust),² there is no doubt that these technological changes have had a noticeable impact, especially on particular industries.

II. The Role of Economic Analysis in Thinking about the Market for Ideas

As the title of my talk indicates, I think economists have a great deal to contribute to sound thinking about the market for ideas. One of the traditional answers, legal protection of intellectual property rights, has been subjected to increasing criticism from those who think that the technological landscape has changed in such a way as to make the previous intellectual property boundaries inefficient. At the same time, other thinkers have proposed alternatives to intellectual property as a solution to the fundamental issues in the market for ideas.

Before looking at these alternatives more closely, it is worth reviewing briefly the fundamental trade-off that is confronted when devising efficient policy in this area, though it will be familiar territory to most if not all in this room. Ideas are non-rival goods; once they exist, they can be enjoyed by an additional consumer at zero marginal social cost. In a competitive equilibrium with no property rights, the creator of an idea

² As an example of this enthusiasm, the entire Economic Report of the President issued in early 2000 was devoted to various aspects of the “new Economy”.

cannot capture any revenue and hence the incentive to create the idea in the first place is nil. With this simple view in mind, it may be surprising to find historical instances in which there were no legal intellectual property rights, yet creators reaped substantial revenue for their creations. That suggests that there must be something missing from this model.

Shakespeare's plays, for example, were not copyrighted in his lifetime, yet Shakespeare earned a very good living and according to his biographer Stephen Greenblatt (2004, p. 330) "Imagination, entrepreneurial skill and unremitting labor had made him a wealthy man...". How did Shakespeare become wealthy despite the lack of copyright protection? The guild system of the time undoubtedly helped by limiting entry and competition in the printing business, but another reason was the cost of transmitting his ideas in written form. Once Shakespeare had written Macbeth, the idea of that play could not be enjoyed by others without some form of transmission. Before the printing press, expensive handwritten manuscripts were the sole method of transmitting the written word. The innovation of the printing press allowed much lower marginal cost written copies but with the substantial set-up cost of setting the type. Control of that set type could remain with the printer Shakespeare contracted with, even without intellectual property protection. Anyone could legally print Macbeth but he would have to pay the substantial cost of setting type again. It is this second fixed cost, the fixed cost due to transmission rather than creation, which allowed Shakespeare to benefit from his creation even in the absence of legal intellectual property rights by essentially giving him and his printer a temporary monopoly. Other printers could buy a copy of Macbeth and set their own type and legally sell copies and did so but not to such an extent that Shakespeare

received no revenue from his creation. George Stigler (1955) also emphasized the incentives provided by the temporary monopoly power of the innovator in arguing that a competitive market would provide some incentive for innovation even without the legal monopoly of patent or copyright.³

This second cost, the fixed cost of transmission, plays a crucial role in determining the appropriate boundaries of intellectual property rights. For example, the legal concept of fair use of copyrighted material, what a consumer can legally do with his copy of the creative work was clearly a function of the existing technology as embodied in the fixed and marginal costs of transmission. Fair use in US copyright law, for example, allows one to lend one's copy of a book to someone else. Before photocopying, there would be no economically feasible way of making multiple copies from a book, so the impact on the copyright owner of informal lending was severely limited. One could not borrow a scholarly journal from a library and make multiple copies of an article for the classroom. The same might be said of phonograph records (for those of us old enough to remember that ancient technology).

The so-called digital revolution has drastically cut this second fixed cost, the fixed cost of transmission. When written texts are stored as digital files, they can be transmitted at virtually no cost over the internet or at minimal cost on magnetic or optical media. The same goes for images, movies, and music. Now the economic protection of high fixed costs of transmission no longer exists as it did after the invention of printing or sound recording. This has two implications: 1) First, the economic incentive to disregard intellectual property boundaries has risen, increasing the amount of trespassing. It is as if

³ A variation on this theme is provided by Boldrin and Levine (2002, 2005) who argue that because it takes time to copy, a creator has some temporary monopoly power that he can exploit.

your neighbor placed a pile of gold bars in his back yard. The lure of the gold would induce some to trespass. 2) Second, the appropriate limits of intellectual property rights may change. “Fair use” allows non-commercial distribution of copyrighted material. A practice that might once have meant lending your neighbor a vinyl 45 rpm record, now means sharing digital files with many strangers over the internet.

What this suggests is that the optimal extent of intellectual property protection is not independent of economics; it depends on the cost structure of copying and transmission among other things. When technology changes these costs, property boundaries should be reexamined.

Let me return to the fundamental trade-off here. Once an idea exists, any price above marginal cost will deter some consumers whose value of access to the idea exceeds the social marginal cost but is less than its price. Although it would be welfare increasing to allow them to purchase at social marginal cost, absent the ability to discriminate in price, doing so reduces the revenue creators obtain for their creations and presumably reduces the supply of creations. Two features of demand and one of supply are crucial. On the demand side, what is important is the spread of reservation prices for a given work (which determines the elasticity of demand) as well as the value consumers place on variety. On the supply side, it is the elasticity of supply of creativity. Since consumer welfare depends both on access to a given work and on the number of works, the case for strict intellectual property rights is stronger the lower the elasticity of demand for a given work (since there won't be many consumers excluded by above marginal cost pricing), the greater the consumer demand for variety and the higher the elasticity of supply of number of works. Unfortunately, we don't have a very good idea of any of

these magnitudes, although the popularity of file sharing indicates that the elasticity of demand for copies of a given work is substantial.

Most economists, even those with strong libertarian leanings, acknowledge the need for government to establish and protect property rights. Although one may be tempted to think of property rights as an all-or-nothing proposition, in fact the efficient extent of property rights is contingent on technology and costs. A good example is the right of aircraft to fly above private real property. Before the twentieth century, this was not an issue because there were few aircraft except for the occasional balloonist. Once aircraft started flying above private property in significant numbers, the nature of property rights needed to be clarified. Was flying half a mile above someone else's land trespassing? Coasean bargaining between the aircraft owner and the landowner would be quite expensive, so this seems a clear case where the allocation of property rights affects the efficiency of resource allocation. For better or worse, property rights in land were amended to allow aircraft to intrude on some of the airspace above the land. Even traditional property rights are not absolute and depend on economic considerations and technology.

Are economists agreed that the advent of digital transmission of information militates stricter boundaries in intellectual property rights? After all, fair use now opens the door to activity which appears to threaten the revenue of creators in a significant way and many prominent economists did support the recording industry in its suit against the filesharing software Grokster, decided this past year in the Supreme Court. However, there is nothing in economic theory per se that leads to that conclusion. It is an empirical question which depends on the behavior of consumers and creators, just as the decision

to allow aircraft to trespass on the air-rights of real property owners was at bottom an empirical question not a theoretical one.

When economists talk among ourselves, as I am doing now, we tend to emphasize our disagreements since it is not particularly productive to talk among ourselves about our agreements. It is productive, however, to tell non-economists what we agree on. For example, in this area, economists should agree that the Sonny Bono Copyright Extension Act of 1998, named in memory of the late entertainer, has little merit. This act extended the term of copyright for existing creations and was viewed as a huge boon to, among others, the Walt Disney company whose copyrights on the classic Disney characters, Mickey and Donald, were about to expire. To extend the monopoly rights for copyright granted in the future might be a justifiable way to spur creativity but to extend the copyright on existing creations is pure rentseeking and must decrease total welfare since there can be no stimulus to creativity.⁴ The political economy of copyright is prone to these rentseeking episodes – the English Parliament extended the term of copyright four times in the first half of the nineteenth century.⁵ Quoting Brad de Long, “In a public-choice world ruled by lobbyists, there will be strong pressures on legislation and law to overprotect existing property. And it is the duty of intellectuals seeking the sweet spot to be an anti-lobbyist lobby.”

To the simple and familiar model I have just been sketching have come at least two additional complications. First, intellectual property owners can respond to the threat of copying in their pricing behavior. Stan Leibowitz (1985) first put forth the

⁴ The pattern of US copyright registrations over the past twenty-five shows no uptick after 1998, indicating that making copyright more valuable by extending its term did not spur more copyrights, at least in the short term.

⁵ St Clair, page 54

notion that creators can capture in the original purchase price at least some of the value realized by the ability of the buyer to make copies. In other words, a creative work that can be used to make more copies of the work is more valuable to buyers and should command a higher price. The creator can “indirectly appropriate” some of the benefits the buyer gets from being able to make copies. While it is clear that this indirect appropriability must mitigate the effects of copying to some extent, it is highly doubtful that it completely offsets the revenue loss to sellers. In fact, if it did, sellers would waive their rights and allow unlimited reproduction.

Two other pricing strategies deserve brief mention. Creators may be able to discriminate in price, charging more to those consumers who find it harder to copy. Also, creators with multiple outputs that are complements to consumers can charge more for the output that is difficult to copy. An example of the latter might be artists who produce both live concerts and recordings which are complementary. As recordings become easier to copy, the price of live concerts should rise -- a trend that seems to fit the data as since 1996 live popular music concert ticket prices have risen twice as much as other entertainments like movies and sporting events.⁶

A second complication in setting intellectual property boundaries arises from the complementarity between creators in the production of new ideas. The phrase “standing on the shoulders of giants” describes the cumulative nature of scientific discovery and the importance of access to the entire stock of ideas. Patent law is intended to encourage such access by requiring the patent holder to disclose the nature of his discovery. Even in areas covered by copyright, law professor Lawrence Lessig (2004) argues that creation requires drawing on previous works so that overly strict interpretation of intellectual

⁶ See Connolly and Krueger (2005)

property lines inhibits the production of new creations. In fact, the most intense bursts of creative activity appear to involve environments in which many talented people draw on each others' inspirations. Elizabethan drama provides a prime example. Shakespeare apparently borrowed heavily from the plays his contemporaries such as Christopher Marlowe were writing and staging in London. Stephen Greenblatt in his recent biography of Shakespeare, Will in the World, says,

”They were an extraordinary group, of the kind that emerges all at once in charmed moments, as when a dozen or more brilliant painters all seemed to converge at the same time on Florence or when for years at a time New Orleans or Chicago seemed to have a seemingly limitless supply of stupendous jazz and blues musicians.” (p. 199)

The impressionist painters in Paris in the 1870's built on each other's discoveries in the use of color and light as did the earlier Renaissance artists of Florence in the late 15th century. Economists recognize this complementarity in our own professional work and value being in a department with colleagues who will contribute to our research. Our use of the phrases Silicon Valley and Tin Pan Alley and the huge creative accomplishments of these historic episodes I have cited suggest important complementarities of location in creativity similar to models of agglomeration in economic geography. If strict intellectual property rights impinge on those complementarities, as Lessig contends, total creative output may be reduced.

III. The Supply of Creativity

The proper extent of intellectual property rights, like property rights in general, is not an absolute and depends on the benefits and costs of drawing the boundary line in a

particular place. Different societies will make different decisions perhaps for the right reasons, perhaps for the wrong reasons. The United Kingdom has been stricter on intellectual property rights (requiring libraries to pay royalties to authors based on the usage of books in the library) yet less strict on rights to real property (giving walkers the right of access to private property on established walking trails).

Economists play an important role in establishing not only the theoretical underpinnings of optimal policies on intellectual property but also the empirical magnitudes necessary to set policy. One such magnitude is the consumer response to the price of creative works and to imperfect substitutes for purchased creative works. How much will cheaper substitutes, like free digital downloads, affect the revenue of creators and the welfare of consumers ? Spurred by the intense interest in the Napster and Grokster court cases, a number of recent empirical studies have attempted to estimate the effect of filesharing on the purchase of recorded music. The trick is to find a variable that is related to the availability of filesharing but not directly to purchase decisions. In the cross section it may be the case that filesharers also buy more music but that is likely to be because an unobserved variable, individual taste for music, affects both purchasing and downloading. It does not imply, necessarily, that filesharing increases purchases. While there is no consensus on the effect of free or cheap copying on the revenues of creators, at least the empirical work on this question has begun.

The same cannot really be said for the most important empirical magnitude, the elasticity of supply of creativity. How much do creators respond to economic rewards ? We have little idea of this crucial parameter.

Was Abraham Lincoln correct when he said that patents “added the fuel of interest to the fire of genius” ? The evidence is mixed. Economic historian Kenneth Sokoloff and his coauthors have established a strong connection between economic incentives and the rate of patent activity – that is, patent activity rises when the demand for the innovations protected by those patents rises. (Khan and Sokoloff(2001)) On the other hand, as Joel Mokyr points out, the absence of patent systems in the Netherlands and Switzerland in the second half of the nineteenth century did not seem to have reduced inventive activity in those countries.

On the copyright side of the creative fence, the empirical story is also murky. How much do incentives matter for creativity ? We just do not have reliable empirical estimates. F. M. Scherer (2004) studied the important eighteenth and nineteenth century composers and attempted to estimate their lifetime wealth as proxied by data on their estates. Rossini was the wealthiest, dying with 25 times the median estate of this group, while Mozart and Schubert died penniless. Are the estates correlated with current musical reputation ? Scherer finds that the answer is no. Does this show that producing quality does not pay ? Not necessarily. Estates depend on investment and consumption decisions as well as earnings and will be sensitive to the length of life. Reputations change over time and in the nineteenth century composers who specialized in opera were relatively more popular than they are now. More damning is Scherer’s (p195) finding that the advent of musical copyright in England in 1777 and in France in 1793 did not increase the number of composers in those countries relative to the number in Germany, Austria and Italy which did not yet have copyright on music. In a similar skeptical vein is Scherer’s observation that the advent of copyright in the middle of Giuseppe Verdi’s

career appears to have caused him to reduce his rate of output along a backward-bending labor supply curve. Verdi himself said that when he could copyright his works, he no longer needed to be a “galley slave” and compose at a frantic pace. (Scherer, p. 180)

On the other hand, the dominance of Italian and German composers compared to the English and French in the seventeenth, eighteenth, and nineteenth centuries has been attributed to the early emergence of England and France as unified national states. Since most music, up to the mid nineteenth century, was composed for kings, dukes and other wealthy nobles, the disunity of Germany and Italy, which were patchworks of independent states, offered multiple sources of musical patronage and hence greater incentives to compose.

Variations in copyright protection for literary creations in England over the seventeenth, eighteenth and nineteenth centuries also provide some evidence on the relation between intellectual property protection and creativity. I noted earlier that there was effectively little copyright protection during the peak years of Elizabethan drama. However, from 1710 to 1774 copyright protection was effectively absolute (see St Clair (2004)), books were very expensive (a book cost a week’s wages), and the fraction of the English population who read books was small . Court decisions in 1774 limited the term of copyright and immediate made a body of earlier literature available to be printed without copyright. Books fell in price, publishers suffered financially and England became a “reading nation”. Although copyright gradually regained some of its pre-1774 strictness it never regained the level of what one author (St Clair (2004)) calls the “high monopoly” period of 1710 to 1774. Was the high monopoly period more creative than the episodes before or after ? Before the high monopoly period, we have such towering

figures as Shakespeare and Milton while after we have Wordsworth, Byron, Shelley, Austen, the Brontes, and Dickens. That evidence is hard to reconcile with the view that more limited property rights reduced the creative output of English literature, though this argument is a bit unfair because Shakespeare's chief revenue source was not the printed versions of his writings but rather the staging of his plays, for which unauthorized copying was much more difficult .

Data on publishing by language provide another piece of evidence on the role of incentives in creativity. Languages define markets for published materials. Neglecting translations, if incentives did not drive the creative process at all, we might expect the number of book titles published in a language to be proportional to the number of persons who use that language as their first language, assuming that ideas occur with equal frequency per capita. In other words, if creativity were strictly supply determined and if twice as many people speak Italian as Dutch, there should be twice as many books published in Italian as in Dutch. On the other hand, if incentives also induce creativity, the biggest markets (i.e. the most popular languages) should generate the greatest incentive to create in that language. We could estimate the strength of the incentive effect (or supply elasticity) by looking at the extent to which more widespread languages have higher ratios of new book titles to native speakers than less widely-read languages. The very casual evidence I have been able to find shows little extra effect of being a large language. In Japanese, for example, there are roughly 500 book titles published per year per million speakers; in German it is nearly 800 titles, while in English the figure is also roughly 500. There's no evidence in these numbers that the large market effect of English induces extra creation in English. A careful study would need to clearly separate

translations, which probably inflate the Japanese and German book data more than the English data and multiple editions of the same work, which probably afflict the English data as the same book is published in several English-speaking countries and counted more than once in this data. Also, English is a common second language which should further enhance the market for books in English.

I don't want to push this anecdotal evidence too far, except to cast doubt on the proposition that stricter copyright protection always *strongly* increases creativity ; perhaps the supply of creativity is quite inelastic. If we stick with the legal monopoly model, we face the basic tradeoff between incentives for creation and access to the innovation. The sweet spot in this tradeoff depends on empirical magnitudes like the elasticity of supply of ideas, which suggests a research agenda for applied economists.

We should also consider alternatives to patent and copyright protection. Here, more research has been done on the patent side of the intellectual property fence. The general approach has been to sidestep the tradeoff between incentives and access by seeking an alternative to monopoly rights for the creator and then opening up the creation to all comers. Burton Weisbrod (2004) proposes that the government buy out holders of successful patents (in pharmaceuticals for example) and then let anyone use the formula, thereby reducing the price of the drug to marginal production cost by untying the reward to the creator from the pricing of the drugs. The trick is, of course, to determine the appropriate buy-out price. In a public choice world, the prospect of bilateral bargaining between the government and the owner of the patent raises all sorts of red flags. Michael Kremer (1998) also proposes that the government buy out patents and has a specific mechanism in mind to elicit a price. Kremer's suggestion is to conduct a sealed bid,

second price auction among other firms for the patent and have the government pay a price based on the results of that auction. To preserve incentives for the other firms to bid intelligently, he would randomly let the auction winner instead of the government take the patent.

A variation is the proposal of Steven Shavell (2001), who advances an optional reward system. In Shavell's model, the innovator can reject the government's buy-out and retain the patent. With uncertainty about the value of the innovation, the optional reward system preserves some upside return to the firm because it can always retain the patent if its estimate of the monopoly profits under patent exceeds the government's reward and Shavell shows that in the context of his model, the optional buy out dominates traditional patents.

I hope these creative proposals convince you that thinking about the market for ideas is too important and too intellectually interesting to be left to the lawyers or the engineers or the humanities professors. I hope I have also convinced you that the particular skills of economists shine in this arena – our focus on incentives, on tradeoffs, and on the equilibria arising from the interaction of independent agents, our insistence on confronting the data and on using data creatively to get at relationships of interest, and our proclivity to be pragmatic rather than ideological. All the major research orientations embraced by the Southern Economic Association can contribute: empirical economists can estimate the response of creativity to incentives and the demand for variety, theorists can model markets with differentiated products and the game theoretic aspects of patent races, public choice economists can examine the performance of

government, law and economics scholars can delve into efficient property rights, and experimentalists can simulate alternative auction formats for patent buy-outs.

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