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udies in Industrial Organization Volume 4

artinus Nijhoff Publishers

The Political Economy of Innovation

by

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1984 MARTINUS NIJHOFF PUBLISHERS

Distributors

for the United States and Canada: Kluwer Boston, Inc., 190 Old Derby Street, Hingham, MA 02043, USA
for all other countries: Kluwer Academic Publishers Group, Distribution Center, P.O.Box 322, 3300 AH Dordrecht, The Netherlands

Library of Congress Cataloging in Publication Data

Kingston, William.
The political economy of innovation.

(Studies in industrial organization ; v. 4)
Includes index.
1. Technological innovations--Economic aspects.
2. Technological innovations--Government policy.
3. Marketing. I. Title. II. Series.
HD45.K557 1984 338'.06 83-21942
ISBN 90-247-2621-2

PRINTED IN THE NETHERLANDS

"The bourgeoisie cannot exist without constantly revolutionizing the instruments of production... during its rule of scarce one hundred years (it) has created more massive and more colossal productive forces than have all preceding generations put together... – what earlier century had even a presentiment that such productive forces slumbered in the lap of social labour?"

The Communist Manifesto

"The laws of property have never yet conformed to the principles on which the justification of private property rests. They have made property of things which never ought to be property and absolute property where only a qualified property ought to exist. They have not held the balance fairly between human beings, but have heaped impediments on some, to give advantage to others: they have purposely fostered inequalities and prevented all from starting fair in the race. That all should indeed start on perfectly equal terms, is inconsistent with any law of private property; but if as much pains as had been taken to aggravate the inequality of chances arising from the natural working of the principle, had been taken to temper that inequality by every means not subversive of the principle itself; if the tendency of legislation had been to favour the diffusion instead of the concentration of wealth – to encourage the sub-division of the large masses instead of striving to heap them together; the principle of individual property would have been found to have no necessary communion worth the physical and social evils which almost all Socialist writers assume to be inseparable from it."

J.S. Mill: *Principles of Political Economy.*
Book II, Ch. I

Preface

Innovation is the turning of ideas into concrete realities. To the extent that this process is an economic one, it must also be subject to political decisions, and these determine which ideas are to have resources made available for their innovation. This book attempts to trace the relationship between ideas, resources and politics.

Chapter I deals with the way economic innovation depends both upon markets and upon interference with markets. Schumpeter taught us how market power is essential for innovation. This chapter stresses that the inverse is also true: Innovation can take place wherever there is market power. A most important corollary of this, is that failure to develop any particular type of market power, need not prevent innovation from happening. It will then take place under the protection of whatever market power there is, and it will be geographically located wherever that market power is effective.

Chapter II identifies and seeks to fill a major gap in the literature on innovation, by showing how important modern marketing has become for providing the conditions under which money may be rationally invested at high risk to get new things done. Marketing monopoly, or Persuasive market power, is now at least as important as the market power of Capability, or as the several types of Specific market power, in interference with market forces. It is therefore equally important for innovation. Once marketing is given its proper weight, it becomes possible to deal with innovation according to a definition that is wide enough to do justice to reality; in particular, the distortion of limiting the discussion to *technological* innovation is removed.

In Chapter III, attention is turned to tracing the various sources of the market power which underwrites economic innovation, and it is shown that in every case, the root can be found in some aspect of positive law. The innovation which results from Capability market power therefore depends directly upon the great burst of legislation for deployment of capital in the mid-nineteenth-century; marketing-protected innovations go back to Trade Marks Acts: some technology depends upon the Specific market power of Patent law; and market power becomes global as a result of various International Conventions.

Chapter IV shows that because all this legislation was not based upon a consistent and humane vision of property rights, the resulting pattern of economic innovation has become increasingly incapable of dealing with challenges from without, as well as of inspiring enthusiasm and approval from within. The external challenges from OPEC and from Japanese capability are being poorly met, and many people in Western countries have become disillusioned with a pattern of innovation which is thought to be all that a private property system can produce. Consequently, in greater or lesser degree, they have turned towards collectivism. This is incompatible, not alone with innovation, but also with Democracy. This is why the contemporary crisis in the West is political as well as economic.

In Chapter V, practical proposals are made for social innovations to deal with this crisis. These begin with extensions of the principle of Patenting which could rejuvenate Specific market power. The resulting innovations would cope with the immediate external challenges, and the associated investment would make a large contribution towards reducing unemployment. However, dealing with the problem of internal rejection of the patterns of market power and innovation will require much more thoroughgoing reform of the laws of property. It is only possible to outline the shape such reform might take, but its underlying principle is clear: Market power should be permitted only to the extent that it contributes explicitly to innovation, because there is no other justification for it.

In writing, any attempt to break new ground is an exact parallel with building a prototype in technology. And just as no prototype can possess the elegance which only incremental innovation over a long period of time can bring to the embodiment of any concept, neither can any genuinely new formulation of ideas. I am only too well aware of the shortcomings in the present case, and can only hope that others will be sufficiently interested in my general thesis (that is, that they will agree that the prototype *works*) to take up the work of filling the gaps. In particular, the bulk of my examples and references are drawn from the English-speaking world. The thesis, however, is equally valid for Continental European countries. Some of these, indeed, were the originators of the ideas of Intellectual Property which I am convinced have still such potential for development. Consequently, nothing would please me more than if one of the results of publication of this book from The Hague, were to be quick redress of this imbalance.

I owe particular debts to the Staff of the Library of Trinity College, Dublin, for their response to unceasing demands, and, as always, to Miss Wyn Sheerin for typing.

William Kingston

Contents

CHAPTER I

Innovation and market power

To invent is to find a new thing; to innovate is to get the new thing done. In all but the exact form of words, the definition is Joseph Schumpeter's, and it was he who also first called attention to the way in which the difference between the two functions is even reflected in the sociological and psychological types: Some people are good at producing ideas but less good at turning them into concrete realities, whereas others are noted for their ability to carry into practical effect, ideas which they have not originated themselves. Both activities, as discussed in *Innovation*, are most intelligible as related aspects of human creative activity, but this leads to a further important distinction: Creativity on its own can give us Invention and Art almost irrespective of material circumstances. One has only to think of the poverty out of which Clarence Goodyear produced vulcanized rubber, or that of Schubert in Vienna, making music worth more than all the gold of all the Hapsburgs, to realize this.[1]

But *economic* innovation (getting new things done when the innovator needs to mobilize resources other than his own) involves dependence upon the environment. If that environment is altogether hostile, there can be no innovation at all. What kind of innovation, and how much of it there will be, depends upon how supportive of innovators, and in what ways, the environment is. Since the economic environment is shaped by political activity, we can properly speak of the political economy of the particular kind of creativity that goes into economic innovation. Politics and political institutions cannot fail to affect any kind of 'getting new things done', or turning ideas into concrete realities, which has an economic dimension. Like all political economy, of course, the special political economy of innovation relates only to countries where there is a substantial degree of economic freedom, where economic activity is responsive to demand, and where the economy is not centrally directed. These are the countries (and it is no coincidence) which in any event have accounted for the vast bulk of economic innovation.

Paradoxically, economic innovation requires *simultaneously, both markets* and interference with markets. It therefore requires economic freedom, which is the precondition for markets to exist, yet if there are no limitations to that freedom, there will be very definite limitations to innovation. Economic freedom, in turn, is rooted in the institution of private property, so that much of the political economy of innovation is concerned with the nature of property rights. Human creativeness can only express itself in business activity to the extent that positive law makes this possible. Only laws that represent a considerable social achievement can arrange for that energy to flow in the direction of economic activity. It has to be channelled towards business, and the channel is provided by private property. The energy, for example, which in a more barbaric situation might have gone into preparing to fight for the acquisition or defence of goods, can now be directed into their exchange. More importantly, it can be directed into the discovery, obtaining or production of goods which were not available before; nor does it any longer have to produce an immediate result, because private property extends the time-scale with reference to which men are prepared to act. The energy to plant a stand of oaks, for example, is called forth by a positive law of property which convinces a man that his descendants will own and enjoy the mature trees.

Any positive law of property directs creative energy into economic channels, but different kinds of positive law define the precise economic channels into which that energy will flow. It is the positive law of copyright, for example, which creates property in works of art and writings. Where there is such a law, other things being equal, more authors can gain from producing such things than if there is not. Conversely, in the absence of such a law, the energy of pirate publishers will frustrate the energy of writers by undermining the capacity of legitimate publishers to pay them. It is because its laws of private property have been developed, refined and extended to an unprecedented extent, that Western civilization has been responsible for an unprecedented amount of innovation. Therefore, its power to make innovation possible, constitutes a most important justification of private property. Since creativeness is business is what causes economic innovation, the link between innovation and private property is fundamental. History confirms the existence and importance of this link: The societies organised on a basis of private ownership have emphatically been those in which most innovation has taken place.

The *kinds* of innovation there will be, therefore, can only reflect the positive law which creates private ownership in the first instance, and the same law will also determine the *amount* of innovation. For example, there has never been an effective law in any country making scientific discovery of the more abstract kind, into private property. It is no doubt possible, it has been proposed in the past, and it is being discussed again, but it has never been done. No great exercise of the imagination is needed to conclude that if positive law had developed in this way, the amount of innovation there has been would have been different, and the ideas which would have emerged as new concrete realities would also have been different, from what has actually taken place. The innovation there has been is simply the innovation which one particular pattern of positive law has made possible. Another pattern of positive law would have produced another pattern of innovation in the past. It could do so in the future. There is not just one law which creates private property. There is a complex of specific enactments, each of which creates private property in specific areas of human life, and which therefore make it certain that there will be innovation in those areas. It is the United States Patent Act of 1952 which at present creates private property in certain kinds of ideas coming from the minds of American citizens and others, by ensuring to them a monopoly of the use of the embodiments of those ideas for seventeen years. This law makes it possible for business to pay some attention to turning those ideas into reality. Without that Act, business might have to ignore those ideas altogether, however brilliant or worthy they might be in themselves by any other criterion, because there would be no property in them. The U.S. Patent Act provides for monopolies to be granted only in respect of certain types of ideas, and it grants those monopolies in a certain way, thus providing for only one pattern of innovation. It would be equally possible, constitutionally, for Congress to make the Patent term seventeen months or one hundred and seventeen years. Each of these, being a different kind of property in ideas, created by positive law, would result in a different pattern of innovation.

All markets depend upon the existence of private property, and the minimal requirement for any market to exist, is that there is some effective guarantee of private ownership, most frequently, from the State. Confirmation of this is forthcoming from the Eastern bloc countries, where the tentative re-emergence of markets in certain fields reflects a relaxation of strict collectivist thinking in favour of limited private property. However, a State can opt to protect ownership of one kind of thing and not another, and from time to time it can change the laws which make ownership possible, thus creating or removing the basis for the existence of markets. Slave markets disappeared once private property in human beings was eliminated from the range of things which the State would protect in many countries, during the nineteenth century. During the same century, there was a remarkable trend throughout much the same list of countries in the opposite direction, towards extending the range of things in which the State would recognise and protect private property ownership. The legislation providing for Limited Liability Companies, for example, created a new type of ownership which enabled men to act together in business matters in a way which was not possible before, taking risks in common which they could never afford to take separately, each taking only part of the success or failure upon himself, instead of the whole responsibility, as he would have had to do under earlier laws of property. At least an equally important aspect of this trend was the way in which legal arrangements were extended to a whole new dimension of life, so as to make ideas and information relating to business effectively into property for the first time. Hardly any legislation of the nineteenth century can have been more important for the twentieth than that relating to Intellectual and Industrial Property.

However important by absolute standards the things of the mind may be, they do not become property unless the law makes them so. They are also very difficult, if not impossible, to protect by any means other than law. A man's effective ownership and enjoyment of the apples in his orchard may owe far more in practice to his reputation for ferocity or to the broken glass embedded in the top of his wall, than to the protection given to him by law. He cannot protect his ideas in the same way. Once free, these can spread with the greatest ease, to be used with impunity by anyone who comes in contact with them. In business terms, information is expensive to produce, but cheap to re-produce. It is also hard to make money from it. No matter how 'good' an idea may be in the abstract, it can never be an investment opportunity on its own. It only becomes so when the law makes provision for private ownership to exist in it. What is true of ideas in the sense of 'bolts from the blue' is even more true of those ideas or packages of information which require investment *before* they emerge in any sort of shape which can be acted upon. Investing money in the development of ideas or information is simply out of the question unless some adequate form of private ownership attaches to the outcome, and it is this form of ownership which is brought into being by the positive law of intellectual and industrial property. This generates entirely new markets, precisely because it *interferes* with markets.

The essence of a market is that *anyone* can come to it either with something to sell or with money to buy. To 'make a market', as brokers do with stocks or commodities, is to set up arrangements so that this can happen with complete freedom. Market forces are the pressures that are generated by this freedom of entry. They always work to push prices downwards. To have power over a market, then, can mean nothing else than to be able to control its essential characteristic, which is freedom of entry. The effect of that control can only be to weaken downwards pressure on price. Paradoxically, therefore, market power is not power to make a market. It is power to "unmake" it. It is the power to escape from the constraints, especially in terms of price, which the market always seeks to impose. It is always about erecting barriers to entry to a market. It acts by keeping others out.

Market power is indispensable for innovation, because others simply *have* to be kept out if innovation is to be possible. Investment in innovation must always be at above-average risk. Consequently, it can only be undertaken rationally if there is prospect of an above-average reward. In a market where complete freedom of entry pushes price down as far as it can go, innovation is simply impossible. If there is to be innovation, there must be means of interfering with the market, of erecting barriers to entry, of keeping would-be entrants out, so that price can be kept up. Market power does not enable a firm, in the technical sense, to do anything different from what it could do if it had no market power. But having market power enables it to do it more or less alone. It enables it to devote some of its resources to innovation. By definition, this demands that the firm goes into a situation as a lone investor. Market power holds out the prospect of emerging from that situation as a correspondingly lone seller, the technical term for which is a monopolist. This will give above-average returns, and this is how market power makes investment in innovation possible.

If necessity is the mother of invention, therefore, market power is the mother of innovation, and market power in this context is strictly a man-made thing. The fact that there is so much innovation to-day is due to the fact that there is so much market power to-day; this in turn is due to a series of extensions of the law of property a century ago; and the form that this innovation takes reflects the nature of those extensions of the law and the market power they confer.

Few things are more striking than the ignorance of those who benefit from them, of the very existence of these laws. In practice, all business men feel that they are subject to constraints that are unnecessary, sometimes imposed by law, more frequently these days by what seems to them like Government harassment. Either way, business men feel that with more freedom – from the Federal Trade Commission, from Trades Union strength sanctioned by Law, from D.G. 4 (Competition Policy) in Brussels – and were left to get on with the job, they would be able to benefit society and themselves much more than they can do now. *Laissez-faire* is supposed to have been originally Laissez *nous* faire, and in this form it represents a deeply ingrained attitude of business men.

Yet, if it were possible to take them at their word, and give them their freedom, no one would be more shocked at the consequences than they. The business of the man who feels restricted by the results of positive law, is itself the result of positive law. His stake in it exists at all only because of laws which give protection to individual property; he is saved from having his entire fortune and family at risk in it because of enactments for Limited Liability; he can raise money from outside through Joint Stock Companies' legislation; and if it involves Patents, Designs or Trade Marks (and many businesses could not run without one or more of these) it rests upon a foundation of specific legislation providing for the existence of Industrial Property. Destroy all these, and the business man as the human type with which we are familiar to-day immediately becomes extinct.

It is not even as if all these kinds of positive law were ways of distorting the free market, this free market being regarded as some sort of irreducible substratum on which different economic constructions could be built. The free market – any market – itself depends upon a positive law by which the State gives protection to private property. It is not the transfer of goods which makes a market, but the uncoerced exchange of titles to those goods, guaranteed by a political authority. There is undoubtedly transfer of goods where jungle law prevails, but it does not constitute a market; equally, goods are transferred in a collectivist economy, but to the extent that the controlling element is command, not demand, there is no market. A market only exists when the State can and does guarantee to individual men, freedom to use or not to use goods which are associated with them personally by some defined set of criteria, to offer them to others or to withhold them, as they please. There is nothing 'natural' about even the freest of free markets; every market is an artifact, a creation of positive law.

Without a positive law of private property, many different types of human activity remain possible, but one does not: The activity of manipulating and exchanging titles to property, which is the characteristic activity of a business man. Typically, however, such a man will think and act as if his work and objectives represented 'natural', 'free' economic activity, always in danger from those who want to distort the free market by imposing constraints of one kind or another. It comes as a considerable shock to most business men to learn that their economic world is a man-made thing, the result of positive legislation which arose out of specific historical circumstances, which could have developed in a different way, which could now be changed or even abolished, still within a private property system. Business men have no difficulty in seeing the positive law which restricts them, but they are almost totally blind to the positive law which puts them into business in the first place, and keeps them there.

It is wrong, therefore, to think that private property can only develop in one direction, or that 'the market' can have only one meaning. Private property exists because the law protects it, and in the form in which the law protects it, not otherwise. A 'market' exists because of these legal titles to property, and consists in nothing else except the free exchange of these titles. No matter how 'free' a market may be, it can never escape being the exchange of State-granted or State-guaranteed monopolies. There are only two alternatives to the law of the jungle – 'la raison du plus fort'. One of these is collectivism, where some authority distributes resources according to its own criteria of value; the second is a market economy, which depends upon authority guaranteeing ownership to individuals, but limiting its function to this, so that resources are distributed according to the utility individuals find in the property of others as compared with their own. To speak of a market, then, without specifying the nature of the titles to property which are exchanged in it, is almost meaningless. Exchange where farmers sell their cattle to dealers for money is a market. The State protects the farmers in their ownership of cattle and the dealers in their ownership of money, and the titles to both are freely exchanged, according to the utility a farmer finds in the dealer's money and the utility the dealer finds in the farmer's cattle. Such a market is quite close to the traditional description given by economists, where there are many sellers of products that are identical for all practical purposes, there are also many buyers, and price is the variable which reflects the relative balance of utilities between them. But a quite different type of exchange, where the property guaranteed to the seller by the State includes information (possibly in the form of Patents) and reputation (which may be attached to registered Trade Marks); where consequently products are so highly differentiated that there is only one seller of each for all practical purposes; where price remains fixed and no longer measures relative utility. This, too, is a market.

Members of a Bourse or Stock Exchange, by their activity of buying or selling, enable supply and demand for stocks to be kept in equilibrium by means of variations in their prices. Exactly the opposite takes place in the market for a modern advertised product. Here, all the effort goes into *preventing* price from being the variable which brings about equilibrium. When price is the determining variable, it always means that the goods in question are being traded as commodities, each being undifferentiated from the others, as individual stocks and shares of the same issue are. A market where price is the variable factor is the only market possible as long as the State limits its protection to real or personal property. When the State also brings industrial property into being through positive legislation, new types of markets become possible, and in these the constraint of price no longer operates at all, or has its force attenuated.

The characteristic activity in this new type of market is thus to maximise the advantage due to one type of property, and to weaken market forces, which always work to push price downwards. Advertising's most important function, for example, is to create uniqueness of advantage in psychological terms, for goods which are otherwise identical, or very nearly so. That is, its job is precisely to enable these goods to escape from the constraints, especially in terms of price, which the market would impose upon them if they were traded as commodities. What is true of advertising is also true of other forms of sales management and promotion, so that the techniques of modern marketing are most intelligible if they are seen as means of *evading* the discipline of the market. This is not to say that the markets where these techniques are practised are not competitive; indeed they are, but their rules are not the rules of the free market. Moreover, by escaping the constraints which the free market would impose, even the least successful players under the new rules are at an advantage compared with those who will not, or cannot play at all. Ironically, therefore, 'marketing know-how' is not knowledge of how to make a market, but how to make *monopoly*.

All monopoly can be described in terms of 'uniqueness of advantage'. Cournot's mineral spring which is on one man's land and no-one else's, and Adam Smith's 'the product of certain vineyards in France' can mislead as examples, because they look on monopoly from the producer's point of view. From this aspect the entire product *is* unique: There is only one spring producing mineral water; there is only one Clos Vougeot. Looked at from the other point of view, however, that of the consumer, and considering the satisfactions a particular product, rather than any other, is capable of giving, this uniqueness is found to be very much circumscribed. Even if there are no other mineral springs, there are other ways of quenching thirst; however great a wine Clos Vougeot may be, there are other great wines, and some people in any case prefer Bordeaux to Burgundy. But when all such allowances have been made, there remains some residual element which is a particular product's own, not shared with other products, and if it is something that can give a satisfaction of some kind, then this residual element amounts to a product's uniqueness of advantage as compared with other products. Such a uniqueness of advantage can be in almost anything, and it can always be equated with monopoly. It can be in knowledge – the origins of the Rothschild fortunes are believed to owe much to the superiority of their information over that of other bankers. It can be in timing – the Haloid Corporation were actively searching for an investment opportunity related to their business just at the time when Xerography was ready for large-scale backing. It can be in 'resonance' – the way in which some people have a special sense of how particular groups will react to certain circumstances. Survival in the highly competitive world of *haute couture*, for example, depends upon having 'resonance' of this kind with one or more of the groups of women who set trends in dress. The 'uniqueness of advantage' or monopoly is this case is the instinctive awareness of what this group will like.

We do not have to think of uniqueness of advantage simply in terms of the man who owns a piece of land at a crossroads, and who can therefore build a filling station to serve two lots of traffic instead of one. All that is needed for monopoly is any form of advantage that is not shared with others, whether this advantage is physical or psychological. It does not matter, either, how much of a product is shared with others, how close we come to complete similarity, as long as there is *one part* that is not shared; the uniqueness of advantage, or monopoly, then consists in this unshared part. Pure competition excludes any such element of monopoly, by definition, since it assumes products which are exactly alike in every way. The economists' concept of perfect competition adds a further dimension to this: That information is complete, on the part of both buyers and sellers.

Any kind of private property will cause creative energy to be directed into economic activity, but it needs a special kind of private property to cause it to flow into innovation. Only private property which confers some unusual form of uniqueness of advantage, something which is an individual's particular right, not shared with others, can do that. Historically, it has been the marriage of individual energy with monopoly in the institution of private property which has been the most fruitful source of innovation. This must be insisted upon, especially as Russian power to innovate in weapons and Space is frequently pointed out as an example of what collectivism can achieve in this field. Four points are relevant. Firstly, Russian technology had a much broader and sounder base under the last Czars than is often admitted, and Soviet technology has built upon this. Next, their innovation has taken place in relatively narrow areas by Western standards, leaving other areas virtually untouched. However distorted the pattern of innovation in the West may be, it is manifestly a great deal more homogeneous – less 'patchy' – than the Russian one. Thirdly, the Russians have built to a large extent upon Western advances, and have relied heavily upon Western fundamental research.[2] Like

Japan, it has got far more out of the publication provisions of the international Patent system than it has put in. Finally, in order to achieve their innovation, the Russians have had to introduce a system of incentive payments and privileges to direct their best minds into applied science, and these, in the Soviet context, approximate very much to the *results* of private ownership in Western countries. As a class, considered against the backgrounds of their respective societies, the holders of Russian Inventor's Certificates may be better off than individual Western holders of Patents for invention. It is indeed open to Communists to denigrate the pattern and shape of innovation in the West, and to decry the way this is frequently meretricious, mindless, irrational and philistine; but they cannot deny that it is all of these things out of plentitude, not scarcity: Individual creative energy released into economic activity by market power in the institution of private property, has proved itself to be extraordinarily productive of innovation.

The political decisions which affect economic innovation, therefore, are primarily those which establish or modify market power. As long as rate of return on investment is what measures success or failure in economic activity, innovation carries with it the need to escape from the constraints which the market seeks to impose. As pointed out earlier, rationality demands that anyone who enters any situation as a lone investor, only does so in the prospect of emerging from it as a lone seller, and the technical term for a lone seller is a monopolist. For a firm to receive an above-average return on its investment in a particular product, its costs must be lower, or its selling price higher, or both, compared with its competitors. For this to happen the firm must possess some advantage, or combination of advantages, which are uniquely its own, and not shared with its rivals. It is the ability to keep rivals away from any sharing in the feast, that constitutes market power.

Market power is therefore not so much a capacity to do something, as the ability to *prevent* others from doing it also. In this sense, it is a negative force. It is perhaps best illustrated by the power which Trades Unions have over the market for labour. It is not their ability to withdraw their labour, nor even their ability to withdraw it in concert with others, that gives power to unskilled workers organized in a Union; it is the fact that by custom, by picketing, by violence or in some other way, they are able to prevent their employer from recruiting other workers to fill their places. Market power of whatever type, is always "the power of the picket". If there is no such power, if any one factor of production is no better and no worse than whatever can be substituted for it, if entry is free, so that substitution is altogether unhindered, then the effect of the economic forces at work is inevitably to drive the price down to just the level that will cause all the goods on offer to be bought to "clear the market". Any one of the many sellers, if he looks for more than this price, will sell nothing at all; if he offers to take less than it, he will be overwhelmed by orders for more goods than he can supply. Any one of the many buyers is similarly constrained by this unique price, which he has no power to influence. Thus, the constraint which the market seeks to impose always consists of pressure in the direction of more buyers and sellers, of substitutability as between products, of *unrestricted entry* (capacity on the part of a new supplier to offer the same product for sale if he wishes) and of a price which is out of range of influence by any of those involved.

This price is critical to the question of economic innovation. It is clear that when a market is operating, economic forces drive price down to a level which is equal to the unit cost of the typical producer, the cost of the capital required being a component of this, charged at whatever rate capital is generally available to all producers. Since this price excludes any rate of return above the average, it cannot justify investment with any risk above the average. As a consequence, assuming that investors are rational, *economic innovation is rendered altogether impossible.* Only in so far as there are opportunities to escape from the constraints which the market seeks to impose, can investment in the face of the risks of innovation be undertaken rationally. Since it is the capacity for such evasion, market power is therefore a necessary condition for economic innovation. It is indispensable if investment in the generation of new information (necessary for innovation, but which may well turn out to be worthless) is to be more than gambling. Economists have shown with elaborate theory that a private enterprise system must always invest less than the optimum in basic (fundamental) research as compared with applied research. The truth is that such a private enterprise system in their sense (which would be a system operating under perfect competition) could not rationally invest *anything at all* in *either* type of research. Since, by definition, all participants are to have complete information, any investment in the development of new information would be to the immediate advantage of all those who had *not* made it. Investment in R & D by private enterprise, therefore, is only rational to the extent that steps have been taken to generate imperfections in the market which will prevent "free-riding". In any actual system, the balance between basic and applied research will reflect the type and extent of such market imperfections, as means for earning the above-average return that investment at above-average risk demands.

In any attempts to understand the economic aspects of innovation, therefore, it is first necessary to understand market power and to develop a vocabulary for handling it. Once this is done, since all market power is rooted in positive law, and since law is so largely shaped by politics, it will be possible to move towards a valid political economy of innovation. The contributions of professional economists that will be found useful in relation to market power, mainly arise out of such concern as they have had with monopoly and oligopoly. Economists are no more free than anyone else from being influenced by their time and their environment, and this applies even to the greatest of them. Both Marx and Schumpeter saw innovation as of great importance, but Keynes was largely uninterested in it. Something called 'technical change' does come up in his writings from time to time, but it is