

# The Origins of Law and Economics

Essays by the Founding Fathers

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## 7. The relevance of transaction costs in the economic analysis of law

Ronald H. Coase

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### 1. THE PRESENT PROBLEM

At the present time the dominant view of the nature of economics is that expressed in Robbins' (1935: 16) definition: 'Economics is the science which studies human behavior as a relationship between ends and scarce means which have alternative uses.' This makes economics the science of human choice. In practice, most economists, including Robbins, restrict their work to a much narrower set of choices than this definition would suggest. Becker (1976) has argued that Robbins' way of looking at economics need not be so constrained and that the economic approach, as he termed it, can and should be applied more generally throughout the social sciences. That the economic approach can be applied successfully in the other social sciences is demonstrated by Becker's own work. Its very success, however, poses the question: Why have the economists' tools of trade proved to be so versatile?

My particular interest has been that part of the economic theory that deals with firms, industries, and markets, which used to be called Value and Distribution, and is now usually termed price theory or micro-economics. It is an intricate structure of high intellectual quality and has produced valuable insights. Economists show how the choice of consumers, in deciding which goods and services to purchase, is determined by their incomes and the prices at which goods and services can be bought. They also study how producers decide what factors of production to use and what products/services to make and sell and in what quantities, given the price of the factors, the demand for the final product, and the relation between output and the amounts of factors employed. The analysis is held together by the assumption that consumers maximize utility (a non-existent entity which plays a part similar, I suspect, to that of ether in the old physics) and by the assumption that producers have as their aim to maximize profit or net income (for which there is a great deal more evidence). The decisions of consumers and producers are brought into harmony by the theory of exchange.

The elaboration of the analysis should not hide from us its essential character: it is an analysis of choice. It is this which gives the theory its versatility. Becker (1976: 5) points out that 'what most distinguishes economics as a discipline from other disciplines in the social sciences is not its subject matter but its approach.' If the theories which have been developed in economics (or at any rate in micro-economics) constitute for the most part a way of analysing the determinants of choice (and I think this is true), it is easy to see that they should be applicable to other human choices such as those that are made in law or politics. In this sense economists have no subject matter. What has been developed is an approach divorced (or which can be divorced) from subject matter. Indeed, since man is not the only animal that chooses, it is to be expected that the same approach can be applied to the rat, cat, and octopus, all of whom are no doubt engaged in maximizing their utilities in much the same way as does man. It is therefore no accident that price theory has been shown to be applicable to animal behavior (see e.g. Kagel, Battalio, Rachlin and Green, 1981).

This preoccupation of economists with the logic of choice, while it may ultimately rejuvenate the study of law, political science and sociology, has nevertheless had, in my view, serious adverse effects on economics itself. One result of this divorce of the theory from the subject matter has been that the entities whose decisions economists are engaged in analysing have not been made the subject of study and in consequence lack any substance. The consumer is not a human being but a consistent set of preferences. The firm to an economist, as Slater has said, 'is effectively defined as a cost curve and a demand curve, and the theory is simply the logic of optimal pricing and input combination' (Slater, 1980). Exchange takes place without any specification of its institutional setting. We have consumers without humanity, firms without organization, and even exchange without markets.

The rational utility maximizer of economic theory bears no resemblance to the man on the Clapham bus or, indeed, to any man (or woman) on any bus. There is no reason to suppose that most human beings are engaged in maximizing anything unless it be unhappiness, and even this with incomplete success. Knight (1936) has expressed the thought very well: '[the] argument of economists ... that men work and think to get themselves out of trouble is at least half an inversion of the facts. The things we work for are "annoyers" as often as "satisfiers", we spend as much ingenuity in getting into trouble as in getting out and in any case enough to keep in effectively. A man who has nothing to worry about immediately busies himself in creating something, gets into an absorbing game, falls in love, prepares to conquer some enemy, or hunts lions or the North Pole or what not.'

I believe that human preferences came to be what they are in those millions of years in which our ancestors (whether or not they can be classified as

human) lived in hunting bands and were those preferences which, in such conditions, were conducive to survival. It may be, therefore, that ultimately the work of socio-biologists (and their critics) will enable us to construct a picture of human nature in such detail that we can derive the set of preferences with which economists start. And if this result is achieved, it will enable us to refine our analysis of consumer demand and of other kinds of behavior in the economic sphere. In the meantime, however, whatever makes men choose as they do, we must be content with the knowledge that for groups of human beings, in almost all circumstances, a higher (relative) price for anything will lead to a reduction in the amount demanded. This does not only refer to a money price but to price in its widest sense. Whether men are rational or not in deciding to walk across a dangerous thoroughfare to reach a certain restaurant, we can be sure that fewer will do so the more dangerous it becomes. And we need not doubt that the availability of a less dangerous alternative, to say, a pedestrian bridge, will normally reduce the number of those crossing the thoroughfare, nor that, as what is gained by crossing becomes more attractive, the number of people crossing will increase. The generalization of such knowledge constitutes price theory. It does not seem to me to require us to assume that men are rational utility maximizers. On the other hand, it does not tell us why people choose as they do. Why a man will take a risk of being killed in order to obtain a sandwich is hidden from us even though we know that, if the risk is increased sufficiently, he will forgo that pleasure.

The acceptance by economists of a view of human nature so lacking in content is of a piece with their treatment of institutions which are central to their work. These institutions are the firm and the market which together make up the institutional structure of the economic system. In mainstream economic theory, the firm and the market are, for the most part, assumed to exist and are not themselves the subject of investigation. One result has been that the crucial role of the law in determining the activities carried out by the firm and in the market has been largely ignored. I am not advocating that we reject existing economic theory, which, as I have said, embodies the logic of choice and is of wide applicability, but that we employ this economic theory to examine the role which the firm, the market, and the law play in the working of the economic system.

## 2. THE FIRM

The firm in modern economic theory is an organization that transforms inputs into outputs. Why firms exist, what determines the number of firms, what determines what firms do (the input a firm buys and the output it sells)

are not questions of interest to most economists. The firm in economic theory, as Hahn (1981) said, is a 'shadowy figure'. This lack of interest is quite extraordinary, given that most people in the United States, the United Kingdom, and other Western countries are employed by firms, that most production takes place within firms, and that the efficiency of the whole economic system depends to a very considerable extent on what happens within these economic molecules. It was the purpose of my article on 'The nature of the firm' to provide a rationale for the firm and to indicate what determines the range of activities it undertakes (Coase, 1937). Although the article has been much cited, it is obvious from such remarks as those of Hahn that the ideas in this article (published about 50 years ago) have not become part and parcel of the equipment of an economist. And it is easy to see why. In order to explain why firms exist and what activities they undertake, I found it necessary to introduce a concept which I termed in that article 'the cost of using the price mechanism', 'the cost of carrying out a transaction by means of an exchange on the open market' or simply 'marketing costs'. To express the same idea in my article on 'The problem of social cost', I used the phrase 'the costs of market transactions'. These have come to be known in the economic literature as 'transaction costs'. I have described what I had in mind in the following terms: 'In order to carry out a market transaction it is necessary to discover who it is that one wishes to deal with, to inform people that one wishes to deal and on what terms, to conduct negotiations leading up to a bargain, to draw up a contract, to undertake the inspection needed to make sure that the terms of the contract are being observed, and so on' (Coase, 1960). Dahlman (1979) crystallized the concept of transaction costs by describing them as 'search and information costs, bargaining and decision costs, policing and enforcement costs'. Without the concept of transaction costs, which is largely absent from current economic theory, it is my contention that it is impossible to understand the working of the economic system, to analyse many of its problems in a useful way, or to have a basis for determining policy. The existence of transaction costs will lead those who wish to trade, to engage in practices which bring about a reduction of transaction costs whenever the loss suffered in other ways from the adoption of these practices is less than the transaction costs saved. The people one deals with, the type of contract entered into, the kind of product or service supplied, will all be affected. But perhaps the most important adaptation to the existence of transaction costs is the emergence of the firm. In my article on 'The nature of the firm' I argued that, although production could be carried out in a completely decentralized way by means of contracts between individuals, the fact that it costs something to enter into these transactions means that firms will emerge to organize what would otherwise be market transactions

whenever their costs were less than the costs of carrying out the transactions through the market. The limit to the size of the firm is set where its costs of organizing a transaction become equal to the cost of carrying it out through the market. This determines what the firm buys, produces, and sells. As the concept of transaction costs is not usually used by economists, it is not surprising that an approach which incorporates it will find some difficulty in getting itself accepted. We can understand this attitude if we consider not the firm but the market.

### 3. THE MARKET

Although economists claim to study the working of the market, in modern economic theory the market itself has an even more shadowy role than the firm. Alfred Marshall had a chapter 'On Markets' in his *Principles of Economics*, but it was general in character and did not probe, perhaps because this was a topic reserved for what ultimately became *Industry and Trade*. In the modern textbook, the analysis deals with the determination of market prices. But discussion of the market itself has entirely disappeared. This is less strange than it seems. Markets are institutions that exist to facilitate exchange, that is, they exist in order to reduce the cost of carrying out exchange transactions. In an economic theory which assumes that transaction costs are non-existent, markets have no function to perform, and it seems perfectly reasonable to develop the theory of exchange by an elaborate analysis of individuals exchanging nuts for apples on the edge of the forest or some similar fanciful example. This analysis certainly shows why there is a gain from trade, but it fails to deal with the factors which determine how much trade there is or what goods are traded. And when economists do speak of market structure, it has nothing to do with the market as an institution but refers to such things as the number of firms, product differentiation, and the like, the influence of the social institutions which facilitate exchange being completely ignored.

The provision of markets is an entrepreneurial activity and has a long history. In the medieval period in England, fairs and markets were organized by individuals under a franchise from the king. They not only provided the physical facilities for the fair or market but were also responsible for security (important in such unsettled times with a relatively weak government) and administered a court for settling disputes (the court of piepowder). Fairs and markets have continued to be provided in modern times, including exhibition halls and the like, and have often (again in England) been a municipal function. Of course their relative importance has tended to diminish with the growth in the number of shops and similar facilities operated by private

retailers and wholesalers. With the government providing security and with a more developed legal system, proprietors of the old markets no longer had to assume a responsibility for providing security or to undertake legal functions, although some courts of piepowder survived late into the nineteenth century.<sup>1</sup>

If the traditional markets of the past have diminished in importance, new markets have emerged in recent times of comparable importance in our modern economy. I refer to commodity exchanges and stock exchanges. These are normally organized by a group of traders (the members of the exchange) which owns (or rents) the physical facility within which transactions take place. All exchanges regulate in great detail the activities of those who trade in these markets (the times at which transactions can be made, what can be traded, the responsibilities of the parties, the terms of settlement, etc.), and they all provide machinery for the settlement of disputes and impose sanctions against those who infringe the rules of the exchange. It is not without significance that these exchanges, often used by economists as examples of a perfect market and perfect competition, are markets in which transactions are highly regulated (and this quite apart from any government regulation that there may be). It suggests, I think correctly, that for anything approaching perfect competition to exist, an intricate system of rules and regulations would normally be needed. Economists observing the regulations of the exchanges often assume that they represent an attempt to exercise monopoly power and aim to restrain competition. They ignore or at any rate fail to emphasize an alternative explanation for these regulations: that they exist in order to reduce transaction costs and therefore to increase the volume of trade. Adam Smith (1976: 267) said this: 'The interest of the dealers ... in any particular branch of trade of manufactures, is always in some respects different from, and even opposite to, that of the publick. To widen the market and to narrow the competition; is always the interest of the dealers. To widen the market may frequently be agreeable enough to the interest of the publick; but to narrow the competition is always the interest of the dealers. To widen the market may frequently be agreeable enough to the interest of the publick; but to narrow the competition must always be against it ....' The eloquence and force of Adam Smith's denunciations of regulations designed to narrow the competition seem to have blinded us to the fact that dealers also have an interest in making regulations which widen the market, perhaps because this was a subject to which Adam Smith gave little attention. But there is, I believe, another reason for this neglect of the role which regulation may play in widening the market. Monopoly and impediments to trade such as tariffs are easily handled by normal price theory, whereas the absence

of transaction costs in the theory makes the effect of a reduction in them difficult to incorporate in the analysis.

It is evident that, for their operation, markets such as those that exist today require more than the provision of physical facilities in which buying and selling can take place. They also require the establishment of legal rules governing the rights and duties of those carrying out these transactions in these facilities. Such legal rules may be made by those who organize the markets, as is the case with most commodity exchanges. The main problems faced by the exchanges in this lawmaking are the securing of the agreement of the members of the exchange and the enforcement of its rules. Agreement is facilitated in the case of commodity exchanges because the members meet in the same premises and deal in a restricted range of commodities. Enforcement of the rules is possible because the opportunity to trade on the exchange is itself of great value and the withholding of permission to trade is a sanction sufficiently severe to induce most traders to observe the rules of the exchange. When the physical facilities are scattered and owned by a vast number of people with very different interests, as is the case with retailing and wholesaling, the establishment and administration of a private legal system would be very difficult. Those operating in these markets have to depend, therefore, on the legal system of the state.<sup>2</sup>

#### 4. THE PROBLEM OF SOCIAL COST

The influence of the law on the working of the economic system is examined in 'The problem of social cost'. The genesis of this paper throws some light on the present state of economic theory. In a previously published paper entitled 'The Federal Communications Commission', I had argued that it would be better if, in the United States, use of the various segments of the radio frequency spectrum was awarded to the highest bidders rather than coming about as a result of an administrative decree (Coase, 1959). But I did not leave the matter there. I went on to discuss what rights would be required by the successful bidder, a question which economists, thinking as they do of factors of production as physical units (tons of fertilizer, acres of land, etc.), usually take for granted. Lawyers, however, habitually think of what is bought and sold as consisting of a bundle of rights. It is easy to see why I was led to adopt the same approach in dealing with the radio frequency spectrum, since it is difficult to treat the use of the right to emit electrical radiations solely in physical terms, particularly since what can be achieved by emitting electrical radiations on a given frequency depends crucially on what use of this and adjacent frequencies is being made by others. It is impossible to think concretely about what would be paid for the



use of a particular frequency unless there has been some specification of the rights possessed by all the people who use this and adjacent frequencies or who might use them. It was in this context that I developed the analysis first published in 'The Federal Communications Commission' which I was subsequently to treat at much greater length in 'The problem of social cost'. I was led to restate my argument in this more elaborate form because a number of economists, particularly at the University of Chicago, who had read the earlier article thought the analysis fallacious, and I hoped that I could overcome their doubts and objections by a fuller treatment (see Kitch, 1983, Chapter 3 in this volume).

There is no difficulty in employing the same approach which I found useful in discussing the allocation of the radio frequency spectrum for the analysis of problems which economists are accustomed to handle. Someone having the right to build a factory on a piece of land (and wishing to exercise that right) would normally also secure the right to prevent someone else from, say, planting wheat on it; and if operation of the factory created noise or led to the emission of smoke, the factory owner would wish to have the right to do this. The factory owner would choose to use a particular site and create noise and emit smoke because this would produce a higher net income than alternative sites or modes of operation. Exercise of these rights would, of course, deny use of the land to agriculturalists and quiet and clean air to others.

If rights to perform certain actions can be bought and sold, they will tend to be acquired by those for whom they are most valuable either for production or enjoyment. In this process, rights will be acquired, subdivided and combined, so as to allow those actions to be carried out which bring about that outcome which has the greatest value on the market. Exercise of the right acquired by one person inevitably denies opportunities for production or enjoyment for others, for whom the price of acquiring the rights would be too high. Of course, in the process of acquisition, subdivision, and combination, the increase in the value of the outcome which a new constellation of rights allows has to be matched against the costs of carrying out the transactions needed to achieve that new constellation, and such a rearrangement of rights will only be undertaken if the cost of the transactions needed to achieve it is less than the increase in value which such a rearrangement makes possible.

What this approach makes clear is that there is no difference, analytically, between rights such as those to determine how a piece of land should be used and those, for example, which enable someone in a given location to emit smoke. Just as the possession of the right to build a factory on a piece of land normally gives the owner the right not to build on that site, so the right to emit smoke at a given site can be used to stop smoke being emitted

from that site (by not exercising the right and not transferring it to someone else who will). How the rights will be used depends on who owns the rights and the contractual arrangements into which the owner has entered. If these arrangements are the result of market transactions, they will tend to lead to the rights being used in the way which is most valued, but only after deducting the costs involved in making these transactions. Transaction costs therefore play a crucial role in determining how rights will be used.

'The problem of social cost', in which these views were presented in a systematic way, has been widely cited and discussed in the economics literature. But its influence on economic analysis has been less beneficial than I had hoped. The discussion has largely been devoted to sections III and IV of the article and even here has concentrated on the so-called 'Coase Theorem' neglecting other aspects of the analysis. In sections III and IV, I examined what would happen in a world in which transaction costs were assumed to be zero. My aim in doing this was not to describe what life would be like in such a world but to provide a simple setting in which to develop the analysis and, what was even more important, to make clear the fundamental role which transaction costs do, and should, play in the fashioning of institutions which make up the economic system. I examined two situations, one in which firms were liable to pay compensation for the harm which their actions imposed on others and one in which the firms were not liable.

The example I used for illustrative purposes, one which had been used by my critics, was that of ranchers whose cattle had strayed and destroyed the crops of neighboring farmers. I showed, as I thought, that if transaction costs were assumed to be zero and the rights of the various parties well-defined, the allocation of resources would be the same in both these situations. In my example, if the cattle-raiser had to pay to the crop-farmer the value of the damage caused by his cattle, he would obviously include this in his costs. But if the cattle-raiser were not liable for damage, the crop-farmer would be willing to pay (up to) the value of the damage to induce the cattle-raiser to stop it, so that for the cattle-raiser to continue his operations and bring about this crop damage would mean forgoing this sum, which would therefore become a cost of continuing to raise cattle. The damage imposes the same cost on the cattle-raiser in both situations. However, I also pointed out a factor which plays an important part in the subsequent argument but which does not always seem to have been noticed by my critics: that if the cattle-raiser were liable, it would always be possible to negotiate abandonment of crop production or a change in the crop planted whenever this reduced the damage by an amount greater than the fall in the value of the crop (excluding damage). In addition, other measures may be taken to reduce damage, for example, fencing, when they cost less than the damage

that they prevent. As a consequence, 'the fall in the value of production elsewhere that would be taken into account in the costs of the cattle-raiser may well be less than the damage which the cattle would [otherwise] cause' (Coase, 1960: 5). My conclusion was: 'the ultimate result (which maximizes the value of production) is independent of the legal system if the pricing system is assumed to work without cost' (Coase, 1960: 8). This conclusion was formalized by Stigler (1966: 113) as the 'Coase Theorem', which he expressed as follows: 'under perfect competition private and social costs will be equal'.

A world without transaction costs has very peculiar properties. As Stigler (1972: 12) has said of the 'Coase Theorem': 'The world of zero transaction costs turns out to be as strange as the physical world would be without friction. Monopolies would be compensated to act like competitors, and insurance companies would not exist.' I showed in 'The nature of the firm' that in the absence of transaction costs, there is no economic basis for the existence of the firm. What I showed in 'The problem of social cost' was that, in the absence of transactions costs, it does not matter what the law is, since people can always negotiate without cost to acquire, subdivide, and combine rights whenever this would increase the value of production. In such a world the institutions which make up the economic system have neither substance nor purpose. Cheung (1986: 37) has even argued that, if transaction costs are zero, 'the assumption of private property rights can be dropped without in the least negating the Coase Theorem' and he is no doubt right. Another consequence of the assumption of zero transaction costs, not usually noticed, is that, when there are no costs of making transactions, it costs nothing to speed them up, so that eternity can be experienced in a split second.

It would not seem worthwhile to spend much time investigating the properties of such a world. What my argument does suggest is the need to introduce positive transaction costs explicitly into economic analysis so that we can study the world that exists. This has not been the effect of my article. The extensive discussion in the journals has concentrated almost entirely on the 'Coase Theorem', a proposition about the world of zero transaction costs. This response, although disappointing, is understandable. The world of zero transaction costs, to which the Coase Theorem applies, is the world of modern economic analysis, and economists therefore feel quite comfortable handling the intellectual problems it poses, remote from the real world though they may be. That much of the discussion has been critical of my argument is also quite understandable since, if I am right, current economic analysis is incapable of handling many of the problems to which it purports to give answers. A conclusion so depressing is hardly likely to be welcomed, and the resistance that my analysis has encountered

is therefore quite natural. It is my view that the objections raised to the Coase Theorem and to my discussion of taxation schemes (the parts of my analysis in 'The problem of social cost' to which economists have given most attention) are, in my view, invalid, unimportant, or irrelevant. However that may be, the Coase Theorem is concerned with a situation in which transaction costs, explicitly or implicitly, are assumed to be zero. It is in any case but a preliminary to the development of an analytical system capable of tackling the problems posed by the real world of positive transaction costs. However, it is my opinion that we will not be able to do this unless we first discard the approach at present used by most economists.

## 5. MARGINAL COST PRICING

The support given to the proposal for marginal cost pricing, which I discussed in 'The marginal cost controversy', provides an excellent illustration of the approach of modern economists (Coase, 1946). This support did not come from an obscure and little-regarded group of economists but from some of the most distinguished members of the economics profession. The originating article in the United States, which appeared in 1938, was written by Hotelling (1938). In England the most influential advocate of marginal cost pricing was Lerner, who published his analysis in 1944 but whose work dated from the 1930s (Lerner, 1944). During the war, Meade and Fleming (1944), who were then in the economics section of the British Cabinet Office, wrote advocating marginal cost pricing in a symposium concerned with the problems of operating state enterprises. Keynes saw their paper and was so enthusiastic about it that he published it in the *Economic Journal* of which he was editor. Other economists have also advocated marginal cost pricing, but Hotelling, Lerner, Fleming, and Keynes make a formidable list.<sup>3</sup>

That the case for marginal cost pricing is persuasive goes without saying, since otherwise it could not have commended itself to so many able economists. Its logical basis is easily explained. The cost of the factors used in making a product is the value of what they would otherwise produce. Unless price equals cost, consumers will not necessarily demand a product, even though its value to them is greater than that which the factors needed to make it would yield elsewhere. Since consumers have to decide not only what to consume, but also how much, price should be equal to the cost of additional units of output, that is to say, marginal cost. As Samuelson (1964: 462) has put it: 'Only when prices of goods are equal to Marginal Costs is the economy squeezing from its scarce resources and limited technical knowledge the maximum of output ... Because Marginal Cost has this optimality property, it can with some care be used to detect inefficiency

in any institutional setup.' This has suggested to many economists that all prices should be made equal to marginal cost.

A price equal to marginal cost would yield revenues sufficient to cover total costs if the average costs of the producer were rising with increases in output. Indeed, in these circumstances competition will normally ensure that marginal cost is equal to price without any need for government action. But if average costs are decreasing with increases in output and consequently marginal cost is less than average cost, a price equal to marginal cost will not raise enough revenue from customers to cover total costs. To overcome this difficulty, it was proposed that the government should give a subsidy to the enterprise concerned equal to the amount by which receipts from consumers would fall short of total costs, the government raising the money required for the subsidy through taxation. It was the purpose of 'The marginal cost controversy' to point out the weaknesses of this policy.

Since there are innumerable products and services for which average costs would be decreasing with increases in output, and not all of them should be subsidized, the government would have to decide which of them should be supplied. The procedure which advocates of marginal cost pricing put forward to solve this problem was that the government (or those running the enterprises) should estimate how much consumers would be willing to pay to obtain the quantity they would demand if price were equal to marginal cost, and if this showed that consumers would be willing to pay a sum which would cover total costs, the government would give the enterprise concerned the difference between total costs and receipts from consumers.

This seemed to me both an odd procedure and one which would lead to great inefficiency. It was odd in that, it having been decided that consumers would be willing to pay an amount which would cover total costs, they were not asked to do so. It would lead to inefficiency because, as consumers did not have to pay the amount, there would be very little information available upon which to base estimates of whether they would be willing to pay it. Furthermore, without a subsequent market test of whether estimates were correct, those making them would do a less careful job (quite apart from the political factors that would come into play and would influence the government in deciding whether to subsidize a particular service). The proposal is a recipe for waste on a grand scale. The policy would also mean a redistribution of income in favor of consumers of goods in conditions of decreasing cost. Furthermore, the policy involves additional taxation, and this will tend to raise prices above marginal cost for those products or services which are the subject of taxation. The result would be that, in order to prevent prices being above the marginal cost for some products, price is raised above marginal cost for others. The net gain from such a policy is not evident to me.

These were the points I emphasized in 'The marginal cost controversy'. However, I have since come to realize the importance of a point which Tom Wilson (1945) made early on in the debate in the *Economic Journal*. He drew attention to the close relationship between financial autonomy and the administrative structure. If there is a subsidy, the government will be concerned to keep down its amount and will therefore want to be involved, at least to some degree, in the administration of the subsidized service. Marginal cost pricing would therefore tend to lead to the substitution of state for private enterprise and of centralized for decentralized operations. The inefficiencies brought about by what will often be a very inappropriate administrative structure may well constitute the most serious disadvantage of marginal cost pricing. If efficiency is promoted by private enterprise and decentralized operations, financial autonomy is required. And financial autonomy is incompatible with marginal cost pricing.

Marginal cost pricing as a policy is largely without merit. How then can one explain the widespread support that it has enjoyed in the economics profession? I believe it is the result of economists using an approach which I have termed 'blackboard economics'. The policy under consideration is one which is implemented on the blackboard. All the information needed is assumed to be available and the teacher plays all the parts. He fixes prices, imposes taxes, and distributes subsidies (on the blackboard) to promote the general welfare. But there is no counterpart to the teacher within the real economic system. There is no one who is entrusted with the task that is performed on the blackboard. In the back of the teacher's mind (and sometimes in the front of it) there is, no doubt, the thought that in the real world the government would fill the role he plays. But there is no single entity within the government which regulates economic activity in detail, carefully adjusting what is to be done in one place with what is done elsewhere. In real life we have many different firms and government agencies, each with its own interests, policies, and powers. The government implements its economic policy by setting up (or abolishing) a government agency, by changing the law in relation to liability or in some other way, by introducing a licensing arrangement, by giving authority over certain matters to the courts, by nationalizing (or denationalizing) an industry, and so on. What the government does is to choose among the social institutions which perform the functions of the economic system. Blackboard economics is undoubtedly an exercise requiring great intellectual ability, and it may have a role in developing the skills of an economist, but it misdirects our attention when thinking about economic policy. For this we need to consider the way in which the economic system would work with different institutional structures. And this requires a different approach from that used by most modern economists.

## 6. THE PIGOVIAN TRADITION AND MODERN ECONOMIC ANALYSIS

Welfare economics – that part of economics which deals with, among other things, the role of government in regulating the working of the economic system – is to a very large extent based on the analysis in Pigou's *The Economics of Welfare*, first published in 1920, though it largely repeats what appeared in his *Wealth and Welfare*, published in 1912.

In 'The problem of social cost', I said that Pigou's basic position was that, when defects were found in the working of the economic system, the way to put things right was through some form of government action. This view is expressed with numerous qualifications, but it represents the central tendency in his thought. Some have suggested that I was too harsh in my criticism of Pigou, but I believe what I said was essentially correct. I will demonstrate the character of Pigou's approach by examining a part of his work which I did not discuss in 'The problem of social cost', Chapter 20 in Part Two of *The Economics of Welfare*, entitled 'Intervention by Public Authorities' (Pigou, 1952: 329–425).

Pigou is concerned with the question of whether the national dividend might be increased by some kind of public intervention. He says: 'In any industry, where there is reason to believe that the free play of self-interest will cause an amount of resources to be invested different from the amount that is required in the best interest of the national dividend, there is a *prima facie* case for public intervention' (Pigou, 1952: 331). He adds that this is, of course, only a *prima facie* case: 'It is not sufficient to contrast the imperfect adjustments of unfettered private enterprise with the best adjustment that economists in their studies can imagine. For we cannot expect that any public authority will attain, or will even wholeheartedly seek, that ideal. Such authorities are liable to ignorance, to sectional pressure and to personal corruption by private interest' (Pigou, 1952: 332).

However, Pigou argues that these defects of public intervention do not have the same force at all times and in all places. In England, and here he quotes Marshall, there is more honesty and unselfishness than there was, and the electorate is now able to check abuses of power and privilege. 'This important fact implies that there is now a greater likelihood that any given piece of interference, by any given public authority, will prove beneficial than there was in former times' (Pigou, 1952: 333). He also notes that, as well as the 'improvement in the working of existing forms of public authority, we have also to reckon with the invention of improved forms' (Pigou, 1952: 333). Municipal and similar representative bodies have four disadvantages so far as controlling or operating business is concerned: (1) they are primarily chosen for purposes other than that of intervention in

industry; (2) their membership is constantly fluctuating; (3) their areas of operation are commonly determined by non-commercial considerations; (4) they are subject to undesirable electoral pressure. However, according to Pigou, these 'four disadvantages can be overcome ... by the recently developed device of such Commissions or *ad hoc* Boards ... The members of such Commissions can be specially chosen for their fitness for their task, their appointment can be for long periods, the area allotted to them can be suitably adjusted, and the terms of appointment can be such as to free them, in the main, from electoral pressure' (Pigou, 1952: 334). One example which he gives of such a Commission is the Interstate Commerce Commission. Pigou feels able to conclude: 'The broad result is that modern developments in the structure and methods of government agencies have fitted these agencies for beneficial intervention in industry under conditions which would not have justified intervention in earlier times' (Pigou, 1952: 335). In this way, while making the point earlier in the chapter that we should not 'contrast the imperfect adjustments of private enterprise with the best adjustment that economists in their studies can imagine', Pigou is able, by assuming the existence of (almost) perfectly functioning public bodies, in effect to do just that.

Pigou seems to have had no doubt that these Commissions would work in the way he describes. So, starting with a statement about the imperfections of government, Pigou discovers the perfect form of governmental organization and is therefore able to avoid enquiring into the circumstances in which the defects of public intervention would mean that such interventions would tend to make matters worse. Pigou's belief in the virtues of the independent regulatory commissions, which seem to us laughable today, was first expressed in *Wealth and Welfare* in 1912 and repeated in all editions of *The Economics of Welfare* without change. Pigou never seems to have thought it necessary to enquire whether his optimistic opinion about these commissions was justified by events in the subsequent 40 years (the 1952 reprint is the last edition to contain new material). In all editions the Interstate Commerce Commission is referred to as the Interstate Railway Commission, and this body, created in 1887, is always described as 'recently developed', which does not suggest any real interest in the subject.

All this shows very clearly the bent of Pigou's mind. Notwithstanding that Pigou was, as Austin Robinson (1968) observes, 'primarily concerned ... with "fruit" rather than "light"; with writing a theory of welfare that was applicable in practice', he did not make any detailed studies of the working of economic institutions. His discussion of any particular question seems to have been based on the reading of a few books or articles and often does not rise above the level of the secondary literature on which he relied. The examples to be found in his works are really illustrative of his



position rather than the basis for it. Austin Robinson (1968) tells us that in his reading Pigou was 'seeking always realistic illustrations for quotation in his own work', and this indicates his manner of working.<sup>4</sup> It is hardly surprising that, acquiring his illustrations in this way, Pigou often fails to realize their significance. For example, as I pointed out in 'The problem of social cost', the situation in which sparks from a railway locomotive could start fires which burnt woods on land adjoining the railway without the railway having to pay compensation to the owners of the woods (the legal position in England at the time Pigou was writing and one of which he had perhaps heard) had come about not because of a lack of governmental action but in consequence of it.

Modern economists use, in the main, the same approach as Pigou, although with some change in terminology and with an even greater detachment from the real world. Samuelson (1947: 208), in his *Foundations of Economic Analysis*, summarizes, without dissent, Pigou's position as follows: 'his doctrine holds that the equilibrium of the closed economy under competition is correct except where there are technological external economies or diseconomies. Under these conditions, since each individual's actions have effects on others which he does not take into account in making his decisions, there is a *prima facie* case for intervention. But this holds only for technological factors (smoke nuisance etc.) ...'. The only difference in the more recent discussion is that the phrase 'external economies or diseconomies' has been replaced by the word 'externality', a term which appears to have been coined by Samuelson in the 1950s.<sup>5</sup> Thus, Hahn (reprinted 1984), writing in 1981, says that 'we call an externality ... an effect of one agent's actions on the welfare of another.' He adds that 'ever since Marshall and Pigou it has been agreed that externalities constitute a *prima facie* case for government intervention in a market economy.' An externality is more usually defined as the effect of one person's decision on someone who is not a party to that decision. Thus, if A buys something from B, A's decision to buy affects B, but this effect is not considered to be an 'externality'. However, if A's transaction with B affects C, D, and E, who are not parties to the transaction, because, for example, it results in noise or smoke which impinge on C, D, and E, the effects on C, D, and E are termed 'externalities'. With this amendment, Hahn's statement embracing the Pigovian approach is representative of mainstream economic analysis. It should also be noted that when modern economists speak of governmental intervention, they usually seem to have in mind the imposition of taxes or, less frequently, direct regulation of the activities of the firms concerned.

This approach has serious weaknesses. It fails to disclose the factors which determine whether governmental intervention is desirable, and of what kind, and it ignores other possible courses of action. It has consequently

misled economists in formulating their recommendations for economic policy. In particular, the existence of 'externalities' does not imply that there is a *prima facie* case for governmental intervention, if by this statement is meant that, when we find 'externalities', there is a presumption that governmental intervention (taxation or regulation) is called for rather than the other courses of action which could be taken (including inaction, the abandonment of earlier governmental action, or the facilitating of market transactions).

Assume that A, in manufacturing a product, emits smoke (which A has a right to do), harming C, with whom A has no contractual relations and of whose existence he may even be unaware. There is an 'externality'. Assume that the government is as able and well motivated as the Interstate Commerce Commission of Pigou's imagination. What should it do? Consider the case in which the amount which C would pay to avoid the harm is less than the additional cost that would have to be borne by A to eliminate it. In these circumstances, the perfect government, anxious to maximize the national dividend, would do nothing, either through taxation of A or by direct regulation to prevent smoke emission. The 'externality' would continue to exist and would not call for governmental intervention.

Now consider the case in which C would pay more to avoid the harm than the additional cost that would have to be incurred by A to eliminate it. We must first enquire why C has not made a bargain with A to end the emission of smoke, since a bargain would appear to be possible on terms which would be profitable to both A and C. The answer must be that the costs of making the transaction were such as to offset the gain that the transaction would bring. If this is the situation, what would this perfect government do? Just as A and C would take into account the costs of carrying out their transaction, so a perfect government would take into account its costs of discovering what C would pay to avoid the harm and the costs that A would have to incur in order to eliminate it, as well as the government's costs in administering it. If the costs of investigation and administration are sufficiently high and/or the results obtained are sufficiently uncertain, with the consequence that the expected gains from governmental intervention are less than the costs involved, such a government would neither place a tax on A nor impose regulations which would eliminate the smoke. Another possibility would be to change the law to make A liable for the damage caused, which would make a transaction between A and C unnecessary. Still another would be to amend the legal requirements governing a contract between A and C so as to make this transaction less costly. But presumably this ideal government would already have taken into account the repercussions of such changes in the law on other transactions in other cases, and not having made them must have decided that the losses elsewhere would offset

whatever benefit they might bring in the particular case. In the hypothetical example discussed in this paragraph, the costs of transacting and the costs involved in governmental action make it desirable that the 'externality' should continue to exist and that no governmental intervention should be undertaken to eliminate it.

As we have seen it is easy to show that the mere existence of 'externalities' does not, of itself, provide any reason for governmental intervention. Indeed, the fact that there are transaction costs and that they are large implies that many effects of people's actions will not be covered by market transactions (see North and Wallis, 1987). Consequently, 'externalities' will be ubiquitous. The fact that government intervention also has its costs makes it very likely that most 'externalities' should be allowed to continue if the value of production is to be maximized. This conclusion is strengthened if we assume that the government is not like Pigou's ideal but is more like his normal public authority – ignorant, subject to pressure, and corrupt. Whether there is a presumption, when we observe an 'externality', that government intervention is desirable, depends on the cost conditions in the economy concerned. We can imagine cost conditions in which this presumption would be correct and also those in which it would not. It is wrong to claim that economic theory establishes such a presumption. What we are dealing with is a factual question. The ubiquitous nature of 'externalities' suggests to me that there is a *prima facie* case against intervention and the studies on the effects of regulation which have been made in recent years in the United States, ranging from agriculture to zoning, which indicate that regulation has commonly made matters worse, lend support to this view.

The concept of 'externality' has come to play a central role in welfare economics, with results which have been wholly unfortunate. There are without question, effects of their actions on others (and even on themselves) which people making decisions do not take into account. But, as employed today, the term carries with it the connotation that when 'externalities' are found, steps should be taken by the government to eliminate them. As already indicated, the only reason individual and private organizations do not eliminate them is that the gain from doing so would be offset by what would be lost (including the costs of making the arrangements necessary to bring about this result). If with governmental intervention the losses also exceed the gains from eliminating the 'externality', it is obviously desirable that it should remain. To prevent it being thought that I shared the common view, I never used the word 'externality' in 'The problem of social cost' but spoke of 'harmful effects' without specifying whether decision-makers took them into account or not. Indeed, one of my aims in that article was to show that such 'harmful effects' could be treated like any other factor of production, that it was sometimes desirable to eliminate

them and sometimes not, and that it was unnecessary to use a concept such as 'externality' in the analysis in order to obtain the correct result. However, I was clearly unsuccessful in cutting my argument loose from the dominant approach, since 'The problem of social cost' is often described, even by those sympathetic to my point of view, as a study of the problem of 'externality'.

It needs to be realized that, when economists study the working of the economic system, they are dealing with the effects of individuals' or of organizations' actions on others operating within the system. That is our subject. If there were not such effects there would be no economic system to study. Individuals and organizations will, in furthering their own interests, take actions which facilitate or hinder what others want to do. They may supply labor services or withdraw them, provide capital equipment or decline to do so, emit smoke or prevent it, and so on. The aim of economic policy is to ensure that people, when deciding which course of action to take, choose that which brings about the best outcome for the system as a whole. As a first step, I have assumed that this is equivalent to maximizing the value of total production (and in this I am Pigovian).

Since, by and large, people choose to perform those actions which they think will promote their own interests, the way to alter their behavior in the economic sphere is to make it in their interest to do so. The only means available to the government for doing this (apart from extortion, which is commonly ineffective) is a change in the law or its administration. The forms such changes may take are many. They may amend the rights and duties which people are allowed to acquire or are deemed to possess, or they may make transactions more or less costly by altering the requirements for making a legally binding contract. Or they may change the penalties imposed by the courts when, outside contract, harm is inflicted on others. And, of course, the economists' favorite means, the attaching of taxes and subsidies to the performance of particular actions or governmental regulations prohibiting or requiring the performance of certain actions, may also be employed. Other changes in the way the legal system operates, such as changes of procedure in the courts, a redistribution of functions among government agencies, and (in the United States) a shift in the allocation of duties between the Federal Government and the States, will all affect the working of the economic system. Lawyers will no doubt find it easy to add to this list. Economic policy consists of choosing those legal rules, procedures, and administrative structures which will maximize the value of production. However, discovering the effects of varying the legal position on the working of the economic system is not easy, although progress is being made as a result of the researches of economists engaged in the new subject of 'law and economics'. I am hopeful that, as economists come to

realize the unsatisfactory character of the current approach, the number of economists who will give their talents to this work will increase.

Economic policy involves a choice among alternative social institutions, and these are created by the law or are dependent on it. The majority of economists do not see the problem in this way. They paint a picture of an ideal economic system, and then, comparing it with what they observe (or what they think they observe), they prescribe what is necessary to reach this ideal state without much consideration for how this could be done. The analysis is carried out with great ingenuity but it floats in the air. It is, as I have phrased it, 'blackboard economics'. There is little investigation of how the economy actually operates, and in consequence it is hardly surprising that we find, as with Pigou, that the factual examples given are often quite misleading. Another case is that of Meade, who, in a much-cited article, uses the example of bees pollinating orchards as an interrelationship with which the market could not deal, obviously unaware of the contracts which are made between bee-keepers and orchard-owners, at least in the United States (Meade, 1952).<sup>6</sup>

A comprehensive illustration of the inadequacies of the usual approach of economists to questions of economic policy, at any rate in micro-economics, is provided by the example of the lighthouse, discussed in my article 'The lighthouse in economics' (Coase, 1974). The lighthouse has been used by some of our greatest economists from John Stuart Mill to Samuelson, as an example of a service which has to be provided by the government, and it has played a similar role in innumerable textbooks by lesser men. Yet none of these great economists who use the lighthouse example, so far as I am aware, has ever made a study of lighthouse finance and administration. In the circumstances it is hardly surprising that the statements they make on the subject are wrong, unclear, or misleading. Samuelson goes further than the older economists and, using an approach common among modern economists, argues not simply that no charge could be made for the services of a lighthouse (which is, as it happens, untrue) but that, even if it were possible to make a charge, this would be undesirable, since marginal cost is zero (the cost of an additional ship using the services of the lighthouse) and price should be equal to marginal cost. Samuelson does not proceed by comparing the results that would be achieved by a system in which there is a charge for lighthouse services with one in which the lighthouse service is financed out of general taxation. He starts with postulating the ideal situation (which he thinks is a zero price) and implies that this should be brought about, but without any consideration of what the effects of his policy would be on lighthouse operations. I argued that, in the case of England, in which there was a charge for lighthouse services, the lighthouse service was better adapted to the needs of ship-owners with

the existing system than it would be if it were financed out of general taxation. Whether or not my conclusion is sound is another matter. But it can only be disproved by making a comparison similar to the one I made and showing that I had not taken into account some relevant factors or had incorrectly evaluated the effects of some which had been considered. My conclusion cannot be refuted by demonstrating that what is achieved by my policy recommendation does not correspond to some ideal which is unattainable.

## 7. THE WAY AHEAD

I have suggested that economists need to adopt a new approach when considering economic policy. But a change in approach is not enough. Without some knowledge of what would be achieved with alternative institutional arrangements, it is impossible to choose sensibly among them. We therefore need a theoretical system capable of analysing the effects of changes in these arrangements. To do this it is not necessary to abandon standard economic theory, but it does mean incorporating transaction costs into the analysis, since so much that happens in the economic system is designed either to reduce transaction costs or to make possible what their existence prevents. Not to include transaction costs impoverishes the theory. No doubt other factors should also be added. But it is not easy to improve the analysis without more knowledge than we now possess about how economic activities are actually carried out. The lighthouse example shows how far economists can go wrong if they are unaware of the facts. In my paper 'Industrial organization: a proposal for research', I indicated how little we knew and how much there is to be discovered about the activities of firms and their contractual arrangements (Coase, 1972). Similarly, in 'The problem of social cost' I gave, as examples of the kind of research required, the need to study 'the work of the broker in bringing parties together, the effectiveness of restrictive covenants, the problems of the large-scale real estate development company, the operation of governmental zoning, and other regulating activities'. Excellent work has been done since these papers were published but much remains to be done. The most daunting tasks that remain are those found in the new subject of 'law and economics'. The interrelationships between the economic system and the legal system are extremely complex, and many of the effects of changes in the law on the working of the economic system (the very stuff of economic policy) are still hidden from us. A long and arduous, but rewarding journey lies ahead.

## NOTES

1. For an account of the history of fairs and markets and the courts of piepowder, see Pease and Chitty (1958: 1–9); and S.V. (1894–1901a and 1894–1901b).
2. For an analysis of organized futures markets which closely parallels mine and is certainly consistent with it, see Tesler and Higinbotham (1977: 969).
3. See Coase (1970) for an account of the discussion of marginal cost pricing by these and other economists.
4. I possess Pigou's copy of Edward W. Bemis (1904), *Municipal Monopolies*, cited on six occasions in Chapters 20 ('Intervention by Public Authorities'), 21 ('Public Control of Monopoly'), and 22 ('Public Operation of Industry') in *The Economics of Welfare*. I will deposit this book in Special Collections, Regenstein Library, University of Chicago. A study of his markings and comments will indicate Pigou's manner of working.
5. The earliest uses of the term 'externality' that I have come across are contained in Samuelson's (1958a) review of de Graaf's *Theoretical Welfare* and in his article, 'Aspects of Public Expenditure Theories' (1958b). This article was a slight revision of a paper delivered in December, 1955.
6. An interesting account of the institutional setting in which bee-keepers operate in the United States, including the contractual arrangements between bee-keepers and growers of crops, is to be found in Johnson (1973). A more detailed analysis of these contractual arrangements in which the effectiveness of the market is convincingly demonstrated is contained in Cheung (1973). Meade furnishes another instance of the practice of economists of giving illustrations of their theoretical findings without feeling the need to investigate whether what they say corresponds to what is found in the real world.

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