



CHANGE RULES, O.K.?

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Several people have urged me to talk about football this afternoon. That would hardly be a suitable topic for an inaugural lecture. However, it is true that football has always played a significant part in the intellectual life of this Faculty. I attribute this to the influence of Alfred Marshall, who recommended football as an integral part of a university training for the responsibility of business.¹ We know that Professor Sir William Ashley, the distinguished founder of this Faculty and first holder of the Chair of Commerce, was a great admirer of Marshall, and that his successor Professor Sargent Florence, in turn, was a great admirer of Ashley. It is a tribute to the power of the football tradition that it managed to survive two decades of Professor Walker, who believed the ball was the wrong shape and instead advocated bicycling. The bicycling tradition never really caught on here. This is just as well: if the members of my Department set out for work on Monday morning, they would arrive by Wednesday afternoon, just in time to bicycle home again.

My sole concession to the football fans is the title of this lecture. For those few among you who do not possess a season ticket, and are therefore not familiar with the language of discourse of this Faculty, let me recommend a visit to the local headquarters of the fan club on the 11th floor of the Muirhead Tower. There you will find a variety of slogans, presumably chalked up by the Business Policy Boot Boys, such as "Accountants Rule, O.K.". Unfortunately, the actual meaning of the title of this lecture is far too complicated to explain until you have actually heard the lecture.

Football is not the only tradition in this Faculty. There is the tradition of this distinguished Inaugural Gown, which I have the honour to wear this afternoon. Also, in recent years, the Faculty has been best-known abroad for its tradition of mathematical economics and econometrics. This began in 1948 when Professor Walker appointed two likely looking youngsters named Gorman and Hahn who both went on to become presidents of the Econometric Society.

II

There is, however, an older but less well-known tradition which dates back three quarters of a century to the founding of this Faculty. Birmingham's Chair of Commerce is the oldest in Britain, and its Bachelor of Commerce degree was the first of its kind. It is natural to ask whether there is any intellectual tradition which has been passed down through the successive holders of the Chair.

Glyn Picton has drawn our attention to the farsighted nature of Sir William Ashley's thinking on university training for commerce.² Sargent Florence shared Ashley's views. Both were concerned to explain the *rationale* or *logic* of industry, and both insisted on exact observations of the facts. They kept close links with

industrialists, and they saw the need to integrate with economics a wide variety of other disciplines.³

Ashley had expressed a desire that commerce students should acquire a general knowledge of manufacturing processes, but there were practical difficulties at the time.⁴ Ashley's dream was brought to fulfillment by Professor Walker who, with Professor Tobias, introduced joint and double honours in economics and engineering which have provided in recent years so many of our best students. Only last week, the University Grants Committee identified Birmingham as one of four universities to receive special encouragement to provide courses of this kind for potential "high-fliers".

It is probably fair to say, then, that the Commerce tradition at Birmingham has been characterised by, first, an interest in how business actually works, what problems are actually faced and what solutions are actually adopted; second, a belief that the study of business life is a challenging and appropriate subject for academic study and teaching; third, an appreciation of the multi-faceted nature of business, and the consequent need to invoke and synthesise the disciplines of economics, accounting, statistics, economic history, mathematics, politics, sociology, law and so on. I hope that my own work, and in particular this Inaugural Lecture, will fit into this tradition.

Certainly, the Bachelor of Commerce degree has always reflected these principles and I doubt if the students themselves have changed. In a published syllabus for a series of lectures in Current Industrial Problems given in 1921, Sargent Florence annotates his reading list as follows: one asterisk denotes "short"; two asterisks denotes "very short".

After the retirement of Sargent Florence in 1955, the final year course on industrial economics was taught, in turn, by Michael Beesley, John Samuels, myself and John Couch, each of whom attended as a student the lectures given by the previous one. When Professor Beesley moved from the London School of Economics to the London Business School, he again took up the teaching of industrial economics after a decade of specialisation in transport economics. Wishing to acquaint himself with developments in the literature over that decade, he asked for a copy of the current Birmingham reading list. Beesley was agreeably surprised to find that there was not much new to read—not realising that his own reading list had been passed down to Samuels to Littlechild to Couch and back to Beesley again. Conclusive evidence, I think, for a distinctive Commerce tradition in Birmingham.

III

Let me now give you some idea of what this lecture is about.

Anyone responsible for teaching in the area of industrial economics and business studies, and needing therefore to explain the rationale or logic of industry and government, cannot but be conscious of some severe limitations in mainstream economic theory. Economics has specialised in the problems of optimisation in a given situation. It has had relatively little to say about ignorance and information; about devices for procuring or suppressing information; about organisation and control; about the economic and social processes of interaction and adjustment which are set in motion by the constant flow of new information. In short, economics seems to lack the ability to handle the concept of change.

In recent years a number of writers have begun to tackle these problems, for the most part working independently and often in ignorance of the work of others. There is, however, a long-standing and well-developed tradition of thought in which the nature and problems of change have always been quite central. I refer here to the so-called Austrian School of Economics. The Austrian tradition seems to me to provide a more natural framework for the work of the other writers than does mainstream economic theory. Taken as a whole, these various contributions have an impressive coherence and scope, and they put a very different interpretation on a number of industrial practices and government policies. The aim of my lecture will be to give some idea of the nature and implications for industrial economics of these important new developments.

I shall begin by contrasting the "mainstream" view and the Austrian view. It will be necessary to establish that the two theories are, in fact, different, and I shall give a few examples of industrial phenomena which appear differently when viewed in the Austrian light. Finally, these ideas will be applied to the problem of designing a framework for controlling the nationalised industries.

IV

There are, of course, many standard problems which economics already solves quite well. According to the *Evening Mail*, a Birmingham councillor was complaining about the cost of hiring Janet Baker, the opera singer, and her accompanist for next year's music festival. "We are having to pay £1,700 for two people for one night—and yet we get the whole Grimethorpe Colliery Band for £600. It doesn't make sense." Economics today can easily explain why it does make sense, though Adam Smith would have had some difficulty.

Other phenomena are more difficult to understand in terms of conventional economics. How is one to explain and assess the present government's industrial strategy, involving the purchase for the nation of select British clockmakers and French tanneries, and the desperate urge to sign planning agreements with almost anybody? Is it perhaps some form of economic chivalry: a search for puddles to throw cloaks over, in case lame ducks fall into them?

The approach of welfare economics to the problems of industry runs somewhat as follows. Perfect competition leads to an allocation of resources which is efficient and Pareto optimal. Unfortunately, in the real world the conditions of perfect competition are seldom met. Instead, one finds monopolies, externalities, public goods and a lack of forward markets. The government is therefore required to control monopolies, to vet mergers, to regulate or nationalise 'natural' monopolies, to subsidise or tax externalities and public goods, and to institute central or indicative planning. A traditional course in the economics of government and industry will, therefore, attempt systematically to evaluate the success of various institutional arrangements in securing the efficient allocation of resources. These institutional arrangements currently include the Monopolies and Mergers Commission and the Restrictive Practices Court, the White Papers on the control of the nationalised industries, the cost benefit analysis of roads, railways and airports, the Industrial Reorganisation Corporation and the National Enterprise Board, the National Plan and the planning agreements.

Although this kind of approach is still to be found in textbooks, does anyone seriously believe it? Can the actions of the government and its various agencies be interpreted simply as an attempt to increase the efficient allocation of resources? Are we confident that a theory based on the notion of equilibrium in an economy where information is perfect provides an adequate framework for analysing the actions of either market participants or government?

Surely not, and in recent years a number of economists have suggested extensive modifications. On the one hand, there are the theories which attempt to provide a better explanation of government behaviour by focusing upon the motivations and opportunities of government, its agencies and employees, and its electors and clients. I have in mind here the theories of democracy and public choice developed by Downs and by Buchanan and Tullock;⁵ the theory of property rights, associated with the work of Coase, Alchian and Demsetz;⁶ and the theory of economic regulation developed by Stigler, Posner and Peltzman.⁷ On the other hand, we are reminded by Stigler, Alchian and Demsetz in the United States⁸ and by Thirlby, Wiseman, Shackle, Richardson and Loasby in Britain⁹ of the uncertain and unknown environment in which both government officials and private businessmen necessarily operate. Both sets of agents are hampered by lack of information, so both need to search. If cases of market failure exist, what reason is there to believe that government failure will not exist there also?

These newer models do not immediately appear to have a common theme or approach. I suggest, however, that they do have much in common, and that, taken together, they amount to what we might call an 'alternative paradigm' for analysing problems of industrial organisation. Not surprisingly, this new paradigm has radically different implications for government policy towards industry. I shall give some examples later in this lecture. But first, I should like to suggest that this

new paradigm, so much at variance with its predecessor, fits quite naturally into the framework provided by the Austrian School of Economics. To this we must now turn.¹⁰

V

The Austrian School is generally held to have been founded about a century ago by Carl Menger and his disciples Bohm-Bawerk and Wieser. The term Austrian School itself was first used in a derogatory sense—much as one might describe a learned paper on daffodil prices as belonging to the Wisbech School of Agricultural Economics. Amongst the second generation Austrians, Ludwig von Mises and Schumpeter were the most notable, and of the third generation Hayek, Haberler, Machlup and Morgenstern are the best known today. All these were born and educated in Austria, though they subsequently left for the United States. There is, in addition, a small number of economists, not Austrians by birth, who consciously work in the traditions established by members of the Austrian School, notably Lachmann, Kirzner and Rothbard.¹¹

The basic Austrian theme is quite simple. In order to explain social and economic phenomena, it is necessary to relate them to the actions of the individual members of society. These actions, in turn, can be explained only in terms of preferences, perceptions and expectations of the individuals in question. These two principles are generally referred to as *methodological individualism* and *subjectivism*.¹²

One may immediately ask: what is so revolutionary about these principles? Surely, the basic analyses of the household and firm, which are taught in every first-year economics course, embody these very same ideas? Certainly these analyses are based on individual decisionmakers, and embody the preferences or objectives of those individuals. But perceptions and expectations do not enter the picture because prices and investment or consumption opportunities are assumed to be “given”. Do we ever see these individuals making mistakes? Do we ever see them revising their plans as mistakes are discovered, as expectations change, or as new opportunities are perceived? We do not, for we pass straightaway to the equilibrium supply and demand of the industry, perhaps with an embarrassed remark about allowing time for adjustments. The Austrian approach, by contrast, places great emphasis on the market process over time which is set in motion by the revision of plans in the light of new information and changed expectations.¹³

VI

The difficulties that have been glossed over may be seen more clearly if we consider those twin pillars of microeconomic theory during the 1960s, namely, general equilibrium and the social welfare function. It would be difficult to decide

which has had the more pernicious effect on economics.

The models of general equilibrium show us a picture of mutual consistency between the plans of all economic agents. They invite us to consider what kinds of preference and production functions permit this harmony and what properties the resulting equilibrium possesses. These models do not tell us how this harmony comes about. They do not describe by what processes over time the initially divergent plans and expectations of the various agents are brought into mutual consistency.

The social welfare function purports to embody society's ranking of different allocations of resources and income. We are invited to consider what properties such a function should have and what implications follow for pricing, investment, taxation, etc. We are not told how society does, or should, resolve any initial conflict between its members, who may hold very different opinions about opportunities available and about the appropriate distribution of rewards.

The pernicious effect of these two constructs is thus that they substitute artificial problems for real ones, and thereby deflect attention from the real problems. The real problems have to do with the differing views of individual agents, and the process of their resolution over time; the artificial problems gloss over these essential aspects by assuming, *ab initio*, a common view shared by all agents in society.

It is now apparent how what we have called the "new paradigm" of government and industry slots neatly into the Austrian framework. This new paradigm focuses on the preferences and actions of individual politicians, civil servants, business men and voters in a way that the old theory did not. It also acknowledges that the perceptions of these agents will not necessarily correspond perfectly to the "actual" environment in which they operate. I do not suggest that those who have contributed to the new paradigm worked in the Austrian tradition, nor indeed that they would approve of all its aspects. I do suggest, however, that the strength of this new paradigm derives from its adherence to those fundamental economic principles which the Austrians have always emphasised but which mainstream theory has often neglected. I would also conjecture that those Austrian principles which have not yet been fully exploited in this field, such as the notion of process following from changing expectations, will provide further valuable insights.¹⁴

VII

We have emphasised that the Austrian School of Economics is distinguished, *inter alia*, by its emphasis on imperfect information, the formation of expectations and changes over time in information and expectations. It may be argued, however, that the last decade has seen an immense volume of work, mostly math-

emational, on the problems of uncertainty. To criticise mainstream economics for assuming certainty is thus to set up a straw man (or at least a dead one!). It is necessary, therefore, to relate the Austrian model to these various mathematical models of uncertainty.

During the 1950s and 1960s, rapid developments in mathematical economics, econometrics and operational research enabled economists to analyse the planning problem of an individual under conditions of uncertainty. He could make a once-and-for-all decision or a set of contingent plans; he could even spend time and money searching for better information, and Bayesian methods enabled him to revise his expectations in the light of the information thereby acquired.

During this last decade, various attempts have been made to develop both partial and general equilibrium models involving many interacting agents operating in this way. There are perhaps three major areas of work:

- (1) the search theory literature initiated by Stigler and Alchian, which focuses on wage and price distributions for a single type of worker or product;¹⁵
- (2) the temporary general equilibrium literature developed by Grandmont and Stigum along lines suggested long ago by Hicks;¹⁶
- (3) what Reiter calls the "new new" or (new)² welfare economics, based on information theory.¹⁷

In all these models, the agents are characterised not only by their preferences but also by their expectations. At any given date, the agents' plans for the future are not co-ordinated, and hence may be incompatible. Moreover, these preferences and expectations may change over time in response to the actions of other agents and changes in the environment. One is thereby able to study a variety of individual and market adjustment processes. This is apparently a significant step forward in meeting the subjectivist principles of the Austrian school.

Yet there seems to be something missing: eventually all these models more or less run down as the agents discover all there is to know. As the agents discover what prices every firm is charging, a uniform price will prevail. The economy as a whole settles down into an even rotation in which everyone does the same old thing, day after day, and expects, quite correctly, that everyone else will do the same. Eventually, in such an economy, we should never read yesterday's headline in *The Times*: "British drink more beer but eat fewer breakfasts".

To see why this should be so, let us look more closely at the assumptions in the models. The agents are equipped with forecasting functions and decision functions to enable them to cope with uncertainty. Indeed, the agents *are* these functions. But though their specific forecasts and decisions may change over time in response to changes in economic conditions, *the functions themselves remain the same*. The agents never learn to predict any better as a result of their experiences. Nothing will ever occur for which they are not prepared, nor can they ever initiate anything which is not preordained.¹⁸ They are clockwork Bayesians, wound up with

prior distributions and sent on their way, to attain eventually, if circumstances permit, that everlasting peace in which they never need to move their posteriors.

These models (or at least their equilibrium phases) are examples of what Mises called an evenly rotating economy.¹⁹ Since not all Austrians are enthusiastic about the use of mathematics, it is worth pointing out that Mises believed such imaginary constructions, albeit unrealistic, were both appropriate and indispensable for treating certain problems. In particular,

"In order to grasp the function of entrepreneurship and the meaning of profit and loss, we construct a system from which they are absent. . . . In eliminating the entrepreneur one eliminates the driving force of the whole system."²⁰

Since the role of entrepreneurship is quite fundamental to the Austrian theory of the market process, and particularly to the work of Israel Kirzner,²¹ it is important to establish what is meant by it.

VIII

Entrepreneurship is the alertness to new opportunities (for profit) which were previously unperceived. Two homely examples will illustrate.

- (1) In November, 1975, a dispute at Ansells Brewery closed 400 pubs. Mr Johnny Johnson of Sparkbrook then realised he could buy supplies from Samuel Smith's brewery in Tadcaster and hire a fleet of lorries to ship it into Birmingham. His turnover rose to £45,000 a week, which he apparently kept in a cardboard box guarded by two Alsations.²²
- (2) A schoolfriend of mine realised that many customers taking their cars to be repaired would be willing to hire a cheap car for the day. He therefore bought a mini for £500; the profit from hiring it out, and from seizing many subsequent opportunities, enabled Roger Williams to build up the Willhire business, currently with a fleet of over 1100 vehicles.

These are not merely examples of investments which proved successful. Their significance is that *they describe the making of profits where no one else had, at the time, perceived an opportunity even to make an investment.* Entrepreneurship is thus not mere risk-taking; it is rather, as Professor Shackle has so often stressed, an act of creative imagination. It is the continual discovery and exploitation of new opportunities. It is the recognition that a new project might be produced, or that a new need might be served, or that a new process of production might be feasible. This is not merely an aspect of profit-maximising. Entrepreneurship is the key which repeatedly winds and rewinds the clockwork to set the maximising wheels in motion.

It is precisely because entrepreneurship is missing from the current mathematical models of uncertainty, that they are able to settle down into permanent equilibrium, but are unable to generate that never-ending market process which

characterises the world we know. ²³

Let me put all this another way. There is a well-known remark attributed to Mark Twain which runs somewhat as follows: "It ain't what a man don't know as makes him a fool; it's what he knows as ain't so". Suppose one wished to analyse attendance at last week's Cup Final. The newer mathematical models we have been discussing are able to accommodate the man who goes to Wembley and don't know whether he'll be able to get in. They can also handle the fool who knows he'll get in and finds it ain't so. What they can't handle is the poor fellow who don't know even there's a football match on. Even if he lived next door to the ground, he'd never realise it. But in the Austrian model, by contrast, he gets a bit suspicious when he sees a hundred thousand red and white scarves walk by his window, and he thinks "here's a chance to sell my front garden for carparking". It ain't the analysis of what a man don't know as makes an economist an Austrian; it's the analysis of what a man don't know he don't know, but nonetheless might discover.

IX

At this point I should like to consider a view expressed by Professor Hahn in his own inaugural lecture. ²⁴ He has been taken to task by my colleague Professor Hutchinson, as well as by others, for his defence of general equilibrium theory. ²⁵ My concern here, however, is with his suggestion as to how one ought to proceed when building models incorporating imperfect information. Unfortunately, there is not time here to summarise his extremely helpful intuitive account. Essentially, Professor Hahn suggests that, because an adequate theory of learning is not yet available, we shall have to be content for the present with describing routine behaviour during which learning does not take place.

It appears that learning in Hahn's model corresponds to entrepreneurship or alertness in the Austrian scheme of things. It is therefore suggested that, because entrepreneurship is not yet well understood, we must eschew the study of market processes (insofar as they depend on entrepreneurship) and limit ourselves to the study of equilibrium.

Three remarks are called for here. First, although it is true that we know all too little about the psychological nature of entrepreneurship, nonetheless we must accept the fact of its existence and its importance in explaining behaviour. To ignore it would seem a dangerous and shortsighted policy. Second, many of the issues discussed by Hahn and his co-workers were analysed in Hayek's penetrating 1937 paper on "Economics and Knowledge". ²⁶ For instance, the same definition of equilibrium was used. Since then, Hayek's work has been considerably extended by Lachman and Kirzner. ²⁷ The writings of the Austrian school already incorporates a systematic though non-mathematical treatment of the role of learning

(i.e. entrepreneurship) in the market process.

Third, it would seem extremely valuable to establish to what extent it is even possible to represent mathematically the notions of learning or entrepreneurship. It seems that the problem is not, as might be thought, to characterise each agent's subjective view of the world at any time. Rather, it is to characterise 'objective reality' in such a way as not to limit or predetermine the kinds of subjective views which the agents come to hold. For example, it would seem possible to model an agent discovering a commodity known to other agents, or even a previously unknown commodity embodying known attributes. Is it possible to model the discovery of commodities or attributes not previously recognised at all?²⁸

It is of related interest to examine whether our criticisms of the constant expectations functions in the models of Grandmont and Stigum apply equally to the original analysis by Hicks upon which they are based. This will reveal, at the same time, how Hicks treats the problems posed by learning. In Hicks' model, future prices are estimated via "elasticities of price expectations" with respect to current prices. In the relevant chapters throughout his book, with the exception of the last chapter, these elasticities are assumed to be constant, and Hicks works through the analysis of temporary equilibrium under different assumptions about their magnitudes. Only in the concluding chapter does the concept of (endogenously) changing elasticity of expectations arise, and then it plays a major role in Hicks' explanation of the Trade Cycle. However, Hicks does not give any indication that he has now introduced a concept different from that analysed step-by-step in the previous chapters. It would seem, then, that Hicks does not have in mind the idea of agents being alert to new circumstances (i.e. learning), and that this is important for his results, but that he fails to expound this idea in the formal development of his model.^{28A}

To avoid the possibility of being misunderstood, let me restate my argument. In these recent models, I am not condemning the use of mathematics: indeed, it is one of the virtues of the mathematical method that the restrictive nature of the assumptions used stands out relatively clearly. Nor do I wish to belittle the aims and achievements of the writers cited, for they are surely making progress in incorporating inconsistent expectations and the revision of plans in the light of new information of a kind previously anticipated. What I do wish to stress is that all these models have implicitly excluded the possibility of treating learning/alertness/entrepreneurship, i.e. the problems of unanticipated change. Only Hahn has explicitly noted and defended this omission. I have disagreed with this view on the grounds that unanticipated change is an integral part of the market process (indeed, of any decision process within the firm or society). Learning must be, can be and has been incorporated into economic models. The question for the mathematicians is: can they do it too?

Does this Austrian notion of entrepreneurship really add anything to our understanding of industrial behaviour? I believe it does. Let me give a few examples of phenomena which take on a different significance as a result.

You may have seen the Charles Atlas advertisements "You too can have a body like mine". (Like Charles Atlas, that is.) These advertisements, you may recall, are directed at seven-stone weaklings who get sand kicked in their faces. These men do not realise that by doing enough press-ups every day they will grow strong enough to punch bullies on the nose. Advertising thus helps to make these consumers aware of the opportunities available to them. It helps them to become their own entrepreneur.²⁹ We can now better appreciate that one of the reasons for the self-imposed prohibition on advertising by solicitors and accountants is precisely to prevent consumers from becoming aware of the opportunities which might be offered by newly established partnerships, thereby discouraging competition.

Competition itself takes on a different significance. In recent years economists have defined perfect competition as a state in which all firms charge the same for the same product. The man in the street would not recognise this as competition, and nor did Adam Smith. For them, competition is a process whereby firms strive to outdo each other, to offer better terms and different products. Competition can then be thought of as a process of search for those techniques of production and those types of products which consumers most desire, but which are, as yet, unknown.³⁰

In this view, profit takes on a different significance. It is customary to condemn large firms for earning excessive profits, on the argument that these profits derive from monopoly power or collusion. A reverse explanation is now possible: those firms grow large which notice and exploit profitable opportunities not yet perceived by other firms.³¹ In the 1950s the American Xerox Corporation wished to find a European partner. Over 40 companies turned down its approaches. IBM is even rumoured to have carried out a survey of potential customers, who replied that they could see no conceivable use for a copying machine. Rank Corporation saw an opportunity, however. Last year, Rank Xerox earned revenues of some £500m.

All this has implications for government policy. For example, it may be well true, as the Monopolies and Mergers Commission suggests,³² that a control on Rank Xerox's terms of sale might encourage competition and bring down the price of photocopying—but might it not also discourage Rank from noticing such opportunities in the future?³³

XI

For my final illustrations, I have taken two major aspects of government policy towards industry—cost-benefit analysis and marginal cost pricing. Britain can justifiably claim to have pioneered in both, and to have pursued both policies with greater thoroughness and determination than any other nation. The work of Professor Beesley on the M-1 motorway and the Victoria Underground Line, and Professor Walters' contribution to the Roskill report on the Third London Airport, have become classics of cost-benefit analysis. Ralph Turvey's work at the Electricity Council and at the National Board for Prices and Incomes has become a model across the world for the practical implementation of marginal cost pricing.

And yet, sad to say, I believe that neither of these policies has been successful in attaining its aim, which I take to be furthering the efficient allocation of resources. When the economic history of our time comes to be written, it will be found, I conjecture, that the Roskill Report was the last great cost-benefit study, and the 1967 White Paper the last general commitment to marginal cost pricing.³⁴

Why should this be so, and what alternatives can we suggest? My arguments in detail must be presented elsewhere.³⁵ The root of the problem, I suggest, lies not with the mechanics of computation, upon which most economists have concentrated, but in the areas of information, incentives and control.

One of the main areas where it is claimed that cost-benefit analysis is employed on a regular basis is in the evaluation of road improvements. Yet I see from a report in today's Times that

"Roads and pavements are crumbling so fast that local authorities may seek a change in the law to protect themselves from accident claims by drivers, cyclists and pedestrians."

Is this despite, or because of, the use of cost-benefit analysis, I wonder? Do I hear a call to bring back toll roads?

XII

In the remaining time available, I shall concentrate on the problems of the nationalised industries. The 1960s were an exciting decade for those of us interested in marginal cost pricing. Professor Samuels in his lectures introduced us to the path-breaking marginal cost pricing policy just introduced by the Electricité de France known as the Green Tariff. He also explained the implications for the distribution of Lurgi gas throughout the West Midlands.

A few years later, as a graduate student looking for a research topic, I was recommended by Professor Gorman to study the problems of pricing telephone calls. This turned out to be a useful tip and a profitable one. In fact, I suppose

Terence is morally entitled to my outside earnings for the last ten years. Fortunately, he is a man who sets greater store by intellectual than financial wealth.

It so happened that the techniques of mathematical programming, which I was then studying, could be employed to provide both qualitative characterisations and quantitative computations of optimal pricing policy. This was especially valuable when dealing with a complex system such as a telephone network. I was able to calculate that in Chicago the Bell Telephone system did not set prices of telephone calls equal to marginal cost. Of course, there was no reason why it should do so. Back in England, I told myself, things would be different. The Post Office there was not interested in profit, but in social welfare. In the 1967 White Paper it had received instructions to set prices equal to marginal costs, as far as possible. Naturally, it would welcome advice on how to do so.

Things did not turn out quite this way. The Treasury invited me to act as a part-time consultant on matters concerning nationalised industries. But faced with a proposed new tariff, I found it extremely difficult to say whether or not it reflected marginal cost, because information on marginal costs was not provided. The industry would regret that it was prohibitively expensive to dig out the necessary cost data. The industry would also suggest that perhaps next year would be a more appropriate time than this year to move towards marginal cost pricing. In any case, marginal cost pricing was more suited to the products of other nationalised industries than this particular one. Somewhat to my surprise, I found that the various government departments involved considered this all quite natural and acceptable.

XIII

How can one explain this seeming reluctance on all sides to implement marginal cost pricing? Suddenly, like Saul on the road to Damascus, I saw the light—except, if I recall correctly, that I was driving along the Pershore Road at the time.

The answer, I think, is two-fold. The first part is that there are conceptual difficulties with the notion of marginal cost pricing which have been glossed over by its advocates. These technical problems need not concern us here. They have been dealt with in several articles by Thirlby and Wiseman, which have been either misunderstood or neglected by the rest of the profession.³⁶ It always seemed to me unlikely that a man with Wiseman's fine taste in claret should be wrong about the equally important matter of marginal cost pricing. After a glass or two of the aforesaid claret, I was persuaded that he was probably on the right track. A couple of bottles later, no possible doubt remained. But by that stage, marginal cost pricing seemed less important anyway.

The second part of the explanation for the lack of enthusiasm for marginal cost

pricing is that this philosophy is at best irrelevant to, and at worst an annoying constraint on, the pursuit of the real objectives of the parties concerned. The managers of the industries are precluded from taking out profits for themselves. They may derive satisfaction from an aggressive policy of expansion or modernisation, or they may prefer to take the line of least resistance, by attempting to minimise complaints from customers, suppliers, employees, newspapers and ministers. Successive governments, for their part, have ordered at one time that prices be kept down to fight inflation and at another time that prices be raised to break even; now investment must be cut to lower the public sector borrowing requirement, now it must be expanded to fight unemployment. It is evident that these macro-economic considerations have consistently taken precedence over improving the efficient allocation of resources via marginal cost pricing. Neither nationalised industries nor governments perceive the latter policy as helpful.³⁷

Apart from the conceptual difficulties and political inconveniences of marginal cost pricing, there is one further deficiency which is particularly related to the theme of this lecture. We have observed that competition is a process of discovering new and better ways of doing things, spurred on by the lure of profit. What incentives are provided for nationalised industries to innovate in this way? The manager of one national enterprise described his dilemma as follows.

"I feel a manager must have foresight, and that means having a different opinion to most other people, and if they cannot see what you are trying to do then you get criticised."

The speaker is Danny Blanchflower, manager of the Northern Ireland national football team.³⁸ Essentially, the same point was made last night by Sir Douglas Allen, head of the Home Civil Service, when he remarked that "the need to justify decisions . . . leads to excessive caution on the grounds that the civil servant who innovates is exposing himself to more risk of being criticised than the civil servant who sticks to tried paths."³⁹ Where, then, is the incentive to be alert to improvements?

XIV

Suppose one seriously wished to encourage efficiency in the allocation of resources—which is, after all, the intended purpose of marginal cost pricing. What kind of framework would be effective? It is conceivable that the pleasure which a nationalised industry would derive from reinvesting as it wished all the money it could earn is the greatest incentive available to reduce costs and discover new and profitable products. Of course, one would need to build in various safeguards to limit excessive prices or malinvestment, most effectively by abolishing the industry's statutory monopoly in order to allow competition.

Now I do not suppose for one moment that such a framework would be politically acceptable today. The present pattern of operating the nationalised industries

all too clearly benefits certain powerful interest groups, notably employees but also some consumers and some suppliers. We must conclude that, in an important sense, nationalisation is not intended to secure the efficient allocation of resources, but to *prevent* it. This, of course, makes it particularly difficult to design a framework for *conscious* control of an industry which will encourage efficiency.

On the matter of political acceptability, however, one further remark is in order. Government policy depends essentially upon the support of the electors, and their views in turn reflect their beliefs about the consequences of different policies. If a government pursues an active industrial policy—whether this be the rescuing of lame ducks or the granting of investment and employment incentives or the imposition of price controls—then the benefits and beneficiaries of this policy are usually readily identifiable. By contrast, the (opportunity) costs of the policy are by no means apparent, since they comprise the benefits that would have been secured had the policy *not* been followed, and these latter benefits of course never materialise.

To appreciate the nature of these costs requires imagination and understanding. An important role of the academic economist is to trace out the implications for policy which others may not wish to do, or may not be able to do. Just as advertising stimulates entrepreneurship on the part of consumers, so too analysis by academics can stimulate entrepreneurship on the part of voters. It can make them aware of hitherto unappreciated merits or demerits of familiar policies and it can introduce them to new policies. Accepting that the beliefs of electors may change in this way, who knows what policies may be politically acceptable tomorrow?

XV

I must now attempt to summarise my argument during this lecture. For this purpose, let me return to my mysterious title: Change Rules, O.K.? I have suggested that received economic theory is deficient in several respects, but mainly in that it is a static equilibrium theory which fails to accommodate change. Even the new mathematical models ultimately fail to explain the perpetual market process, that process by which divergent plans and views are generated and reconciled. This process of change is one of the most important features of any economy. Change is dominant: change rules.

I have suggested also that the Austrian approach can make a significant contribution here. It can highlight a number of deficiencies, not only in economic theory but also in current institutions and practice. It can also provide a number of directions for future research and reform. In the light of these new ideas, government policy towards industry and, in particular, the guidelines for nationalised industries will need to be revised: the rules will have to be changed.

Now what about O.K.? According to a student questionnaire, the two main

defects of my teaching were (1) occasionally strokes beard and (2) says O.K. too much. I may have sneaked in a surreptitious beard stroke, but you will recall that I have not yet used O.K. this afternoon. I must confess that I have never fully understood the intended interpretation of O.K. as used in the football fan's slogan. Does it indicate the satisfactory nature of the rule in question, or the writer's approval? Is it inviting agreement or defying disagreement? It certainly bears some resemblance to the Latin adverb *nonne*, denoting "a question expecting the answer 'yes' "—though I doubt whether its use at the Birmingham City Ground in fact derives from this source. For my own purposes, any or all of the above interpretations will suffice.

If, in this lecture, I have been able to convey some of the exciting new possibilities for research and teaching in economics, and for the conduct of industrial policy, then my purpose will have been well served. O.K.?

Postscript

Shortly after the delivery of my lecture, there appeared the published version of Professor Milton Friedman's brilliant Nobel Prize lecture.⁴⁰ I cannot resist the opportunity to comment.

Professor Friedman is elsewhere reported to have remarked that "there is no Austrian economics—only good economics and bad economics".⁴¹ If there were universal agreement as to what constitutes good economics, then of course such labels would be redundant, but in fact there is not. It seems inevitable that such labels will continue to be used to identify those holding a particular set of views, until such time as those views come to be more or less universally accepted, as indeed happened with the 'first generation' Austrian school.

There have always been certain differences of opinion between the "Austrian" and "Chicago" schools. Within the space of two years, the acknowledged heads of these schools, Professors Hayek and Friedman, have both been awarded Nobel Prizes. Their memorial lectures have both dealt with inflation, and to some extent may be seen as 'position statements'. This provides a rare opportunity for comparison.

To analyse the technical issue of inflation would take us far beyond the scope of the present postscript, but three brief comments on methodology are in order. Both authors reaffirm their familiar differences of opinion about the relative roles of introspection and empirical testing, and about the differences or otherwise between the social and natural sciences. Perhaps, however, one may detect a softening in their positions—a matter of emphasis rather than a fundamental incompatibility. It is also interesting to note Friedman's repeated reference to inflation, not as something deliberately aimed at, but caused by "erroneous judgments about the consequences of government measures" (p.9). The notion that the purpose of economics is to explain the unintended consequences of human action is central to the writings of Hayek and Menger, and is reflected in Adam Smith's famous concept of the "invisible hand", but does not seem to have played any great part in the writings of other economists.

What is most striking about Friedman's lecture, however, is the extent to which it incorporates the principles of methodological individualism and subjectivism stressed by the modern Austrian school. In contrast to the aggregative analysis of the original Phillips curve, Friedman builds upon the actions of individual employers and workers. For these agents, what matters is perceived price changes, which may differ from actual changes. These agents make mistakes, they experience "a continuing stream of unanticipated changes" (p.15)—indeed, "only surprises matter" (p.12). Yet these agents are entrepreneurs who learn from experience, for their "perceptions will adjust to reality" (p.14). Eventually, their institutional and political arrangements will adjust also, which takes us into the sphere of the economic analysis of political behaviour discussed earlier.

How similar are these ideas of Friedman, and of the co-workers whom he references, to the ideas of the modern Austrian school and of Shackle and Wiseman. And what a significant advance on the (hitherto) mainstream view.

As with the recent advances in microeconomics discussed in the body of this lecture, I do not assert that these new advances in macroeconomics are due to the Austrian school. The credit belongs to Friedman and his co-workers. It has even been suggested that the Austrians should have made more progress with the insights which they inherited. But what I do suggest, again, is that it is precisely because these new advances embody those principles which the modern Austrian school have always held important, that Friedman's analysis attains its power and will command the respect which is its due.

The extension of all areas of economic analysis to handle the concepts of ignorance, information and change is surely the major technical problem confronting the profession today. The current volume of work on the topic reflects this concern. In the body of this lecture I have drawn a distinction between two different approaches which have been taken. The currently more fashionable approach, based on a Bayesian treatment of anticipated changes, at present appears more tractable analytically. It is of undoubted value, but ultimately cannot tell the whole story. The less familiar approach, incorporating unanticipated changes or surprises, is ultimately more satisfying but difficult to formalise mathematically.

It will be interesting to see how the 'Chicago school' reacts to Professor Friedman's Nobel lecture.⁴³ If his 'position statement' is accepted, then to all intents and purposes the Austrian and Chicago schools will share a common view of what constitutes "good economics", and the distinction between them will cease to be relevant. But if not, then on present form Professor Friedman must be regarded as a leading contender for the headship of the Austrian school!

FOOTNOTES

- 1 *Industry and Trade*, 1919, Appendix K, p.806.
- 2 J. G. Picton, "A Letter from one of the Pioneers in Education for Management: Sir William Ashley's Work in the University of Birmingham". *Journal of Industrial Economics*, Vol.VII, March 1959, No.2, pp.145-153. cf. Sir W. J. Ashley "British Universities and Training for Commerce", a paper read at the Second Conference of Universities of the Empire, Oxford, 1921, and reprinted as Chapter IV of his *Commercial Education*.
- 3 Sargant Florence writes as follows (private communication dated July 21, 1976):
"Throughout these lecture courses I concentrated on manufacturing industry which the Labour Government, or some of its members, is now discovering to be Britain's economic core. In fact I moved from Cambridge to Birmingham to be near that core.
This brings me to the peculiar advantages of Birmingham as a centre for the higher learning and teaching of industrial economics. Not only is that city Britain's industrial centre par excellence, but it happened that Sir William Ashley, the founder of the Faculty of Commerce at Birmingham University, had adopted what I thought the right approach. This he explained in a letter to a Commonwealth University audience [see footnote 2 above]. Note that his favourite word rationale is closely akin to my logic. The Oxford Pocket Dictionary defines rationale as the fundamental reason or logical basis (of facts or events) and he insisted on the exact observation of the facts. Ashley also kept close links with local industrialists through advisory committees and saw the need for integrating with economics and economic history some industrial law, accounting and engineering. I [Florence] stressed in my lectures both integration, including political science and sociology, and exact observation and I led parties of students organized by their society on works visits."
- 4 Ashley, op.cit. p.10.
- 5 A. Downs, *An Economic Theory of Democracy*, New York:Harper,1957. J. M. Buchanan and G. Tullock, *The Calculus of Consent*, Ann Arbor: University of Michigan Press, 1962.
- 6 R. H. Coase, "The Problem of Social Cost", *Journal of Law and Economics*, Vol.III, October, 1960, pp.1-44.
A. A. Alchian & R. A. Kessel, "Competition, Monopoly and the Pursuit of Money" in *Aspects of Labour Economics*, Conference of the Universities and NBER Committee, 1962.
H. Demsetz, "The Exchange and Enforcement of Property Rights", *Journal of Law and Economics*, Vol.7, October, 1964, pp.11-26.
- 7 G. J. Stigler, "The Theory of Economic Regulation", *Bell Journal of Economics and Management Science*, Vol.2, No.1, Spring 1971, pp.3-21.
R. A. Posner, "Taxation by Regulation", *Bell Journal of Economics and Management Science*, Vol.2, Spring, 1971, pp.22-50.
S. Peltzman, "Pricing in Public & Private Enterprises: Electric Utilities in the United States", *Journal of Law and Economics*, Vol.14, April, 1971, pp.109-47.
- 8 G. J. Stigler, "The Economics of Information", *Journal of Political Economy*, Vol.LXIX,

No.3, June, 1961.

A. A. Alchian and W. R. Allen, *University Economics*, Prentice-Hall, 3rd Ed. 1974.

H. Demsetz "Information and Efficiency: Another Viewpoint", *Journal of Law and Economics*, Vol.12, No.1, April, 1969.

- 9 G. F. Thirlby, "Economists' Cost Rules and Equilibrium Theory", *Economica*, May, 1960.
J. Wiseman "Uncertainty, Costs and Collectivist Economic Planning", *Economica*, May, 1953.
G. L. S. Shackle, *The Nature of Economic Thought*, Cambridge University Press, 1966;
Decision, Order and Time in Human Affairs, Cambridge University Press, 2nd ed., 1969.
G. B. Richardson, *Information and Investment*, Oxford: Oxford University Press, 1960.
B. J. Loasby, *Choice, Complexity and Ignorance*, Cambridge University Press, 1976.
See also J. M. Buchanan, *Cost and Choice*, Markham Publishing Co., Chicago, 1969.
These papers of Thirlby and Wiseman, and those referenced in footnote 29 below, are reprinted with others in J. M. Buchanan and G. F. Thirlby (eds.), *L.S.E. Essays on Cost*, Weidenfeld and Nicolson, 1973.
- 10 Unfortunately there is not time to extend the net more widely to appraise the literature on the theory of the firm and on macroeconomics, but I believe that in these areas, too, there are new contributions which are in sympathy with the Austrian approach. On the first topic I have in mind here papers by Simon and March, O. E. Williamson, Alchian and Demsetz and by some writers on industrial relations (for example, my colleague N. S. Ross); on the second topic the work of Clower, Leijonhufvud, Barro and Grossman, R. F. Lucas, R. J. Gordon, (and, of course, Keynes himself in many respects). See Postscript.
- 11 One might also instance Wicksteed, Fetter, Robbins and Hicks as economists of earlier generations who accepted and popularised many of the Austrian ideas. See for example the recent reflections of Sir John R. Hicks "Some Questions of Time in Economics" in A. M. Tang et al (eds.) *Evolution, Welfare and Time in Economics: Essays in Honour of Georgescu-Roegen*, Lexington Books, 1976.
- 12 For an introduction to Austrian ideas, see E. G. Dolan, ed. *The Foundations of Modern Austrian Economics*, Sheed and Ward, Kansas City, 1976. Several of the ideas in this lecture will be expounded at greater length in my forthcoming Hobart Paper for the Institute of Economic Affairs, provisionally entitled "Government and Industry: An Austrian Approach"
- 13 It is arguable that most of the contributions of the early Austrians had already been incorporated into "mainstream economics" by the 1920s. The themes which characterise modern Austrian economics, which have not been so incorporated, stem largely from the work of Mises, Hayek, Lachmann and Kirzner, but their roots can nonetheless be traced to Menger. cf. L. M. Lachmann "Methodological Individualism and the Market Economy", in Erich Streissler et al. (eds.), *Roads to Freedom: Essays in Honour of Friedrich A. von Hayek*, Routledge and Kegan Paul, London, 1969 and F. A. Hayek "The Place of Menger's *Grundsätze* in the History of Economic Thought", ch.I in J. R. Hicks and W. Weber, eds. *Carl Menger and the Austrian School of Economics*, Oxford University Press, 1973.
- 14 See, for example, J. Wiseman "A Model of Inflation and the Government Deficit" in

- The Dilemma of Government Expenditure*, Institute of Economic Affairs, Readings No.15, 1976, pp.39-49.
- 15 Stigler, "The Economics of Information", op.cit.
A. A. Alchian, "Information Costs, Pricing and Resource Unemployment", *Western Economic Journal*, Vol.7, 1969, pp.109-128.
M. Rothschild, "Models of market organisation with imperfect information: a survey", *Journal of Political Economy*, Vol.81, No.6, Nov./Dec. 1973, pp.1283-1308.
S. A. Lippman and J. J. McCall "The Economics of Job Search: A Survey", Parts I and II, *Economic Inquiry*, Vol.XII, Nos. 2 and 3, June and Sept. 1976, pp.155-189 and 347-368.
 - 16 B. Stigum "Competitive Equilibrium under Uncertainty" *Quarterly Journal of Economics*, Vol.83, No.83, Nov. 1969, pp.533-561.
F. H. Hahn, *On the Notion of Equilibrium in Economics*, Cambridge University Press, Cambridge, 1973.
R. Radner, "Market Equilibrium and Uncertainty: Concepts and Problems", 1972 lecture reprinted as Ch.2 of *Frontiers of Quantitative Economics*, Vol.II, ed.M. D. Intriligator and D. A. Kendrick, North Holland Publishing Co., 1974.
J. M. Grandmont, "Temporary General Equilibrium Theory", *Econometrica*, Vol.45, No.3, April, 1977, pp.535-572.
J. R. Hicks, *Value and Capital*, Clarendon Press, Oxford, 1939, (2nd ed. 1946).
 - 17 S. Reiter, "Information and Performance in the (New)² Welfare Economics", *American Economic Review*, Vol.67, No.1, Feb. 1977, pp.226-234.
 - 18 c.f. Stigum (op.cit. p.549), "If we were to ask the consumer how he would behave if he were faced with a set of prices that did not lie in the range of [his expectations], then he would not be able to give us an answer . . . The preceding anomaly would cause unsurmountable troubles for our proof that a competitive equilibrium exists in our economy. Thus, to avoid it, we will make a third assumption: the range of values of [price expectations] . . . always contains the set of all non-negative price vectors."
 - 19 L. von Mises, *Human Action*, 1949, third rev. ed. 1966, Henry Regnery Co., Chicago, pp.246-7.
 - 20 Ibid pp.248-9.
 - 21 I. M. Kirzner, *Competition and Entrepreneurship*, University of Chicago Press, Chicago and London, 1973.
See also the "process of creative destruction" discussed in J. Schumpeter, *Capitalism, Socialism and Democracy*, third edition, 1950, Harper and Row, New York, chs.VII and VIII.
 - 22 Birmingham Evening Mail, Nov. 19, 1975.
 - 23 There are some mathematical models in which long run equilibrium is characterised by a stationary stochastic process, but such processes are generated by exogenous random shocks rather than by the actors themselves. c.f. Grandmont, op.cit., p.568.
 - 24 Hahn, *On the Notion of Equilibrium in Economics*, op.cit.
 - 25 T. W. Hutchison, *Knowledge and Ignorance in Economics*, Basil Blackwell, 1977, ch.4.

- B. J. Loasby, *Choice, Complexity and Ignorance*, op.cit. pp.24–25 and 46–8.
- A. Coddington "The Rationale of General Equilibrium Theory" *Economic Inquiry*, Vol.XIII, No.4, Dec. 1975, pp.539–558.
- 26 *Economica*, vol.IV, pp.33–54.
- 27 L. M. Lachmann, "The Economics of Information and the Human Mind", paper presented to a Symposium on Austrian Economics, Claremont, May, 1977.
- I. M. Kirzner, *Competition and Entrepreneurship*, op.cit.; "Economics and Error", forthcoming in *Proceedings of 1976 Symposium on Austrian Economics*, ed. L. Spadaro.
- 28 The problem is related to that of perception and pattern recognition, cf. Hayek "The Subjectivist Character of the Social Sciences", Ch.III in *The Counter Revolution of Science*, Free Press of Glencoe, 1955.
- 28A For an early Austrian critique of Hicks' model, c.f. L.M. Lachmann, "A Note on the Elasticity of Expectations", *Economica*, N.S., Vol.XII, Nov. 1945, pp.248–253.
- 29 cf. Kirzner, *Competition and Entrepreneurship*, op.cit. Ch.4.
- 30 cf. Hayek, "The Meaning of Competition", 1946 lecture reprinted in *Individualism and Economic Order*, ch.V, Henry Regnery Co., Chicago, 1948.
See also Alchian & Allen, *University Economics*, op.cit. and Kirzner, *Competition and Entrepreneurship*, op.cit. Ch.6.
- 31 cf. H. Demsetz, "Two Systems of Belief about Monopoly" in H. J. Goldschmid et al (eds.), *Industrial Concentration: The New Learning*, Little, Brown & Co., 1974, pp.164–184.
- 32 *Indirect Electrostatic Reprographic Equipment*, HMSO, Dec. 1976.
- 33 cf. I. M. Kirzner, *Competition & Entrepreneurship*, op.cit. pp.236–242.
- 34 Commission on the Third London Airport (chairman Hon. Mr. Justice Roskill) *Report* London: HMSO 1971.
Nationalised Industries: A Review of Economic and Financial Objectives, Cmnd. 3437, HMSO Nov. 1967.
- 35 "The Use of Cost-Benefit Analysis—A Reappraisal", Paper presented at the Swansea meeting of the Association of University Teachers of Economics, April, 1977, and forthcoming in *Proceedings* thereof. "The Rise and Fall of Marginal Cost Pricing", manuscript in process.
- 36 G. F. Thirlby, "The Ruler", *South African Journal of Economics*, Vol.14, No.4, Dec. 1946.
J. Wiseman, "The Theory of Public Utility Price—An Empty Box", *Oxford Economic Papers*, Vol.9, 1957, pp.56–74.
- 37 Of course, there are conflicting views within industries and government, but nowhere (internally) does there seem to be substantial pressure for marginal cost pricing.
cf. Alan Peacock "Giving Economic Advice in Difficult Times", *The Three Banks Review*, March, 1977, No.113, pp.3–23.
- 38 Quoted in *The Times*, 26 Nov. 1976.
- 39 Quoted in *The Times*, 28 May, 1976.

- 40 *Inflation and Unemployment: The New Dimensions of Politics*, (The 1956 Alfred Nobel Memorial Lecture), IEA Occasional Paper 51, May, 1977. Also *Journal of Political Economy*, Vol.85, No.3, June, 1977, pp.451-472.
- 41 Dolan (ed.) op.cit. p.4.
- 42 Friedman, op.cit.
F. A. Hayek, *The Pretence of Knowledge*, (The 1974 Alfred Nobel Memorial Lecture) reprinted in *Full Employment at Any Price?* IEA Occasional Paper 45, July, 1975.
- 43 For example, contrast with Friedman's emphasis on differing perceptions, surprise and learning the argument by G. J. Stigler and G. S. Becker that "one may usefully treat tastes as stable over time and similar among people" in "De Gustibus Non Est Disputandum" *American Economic Review*, Vol.67, No.2, pp.76-90.