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ECONOMICS :
WAITING FOR GODOT

*Inaugural Lecture of the
Professor of Economics
delivered at the College
on February 25, 1969*

by

EDWARD NEVIN

M.A. (Wales), PH.D. (Cantab.)



UNIVERSITY COLLEGE OF SWANSEA



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Vladimir: It's too much for one man. (*Pause. Cheerfully.*) On the other hand what's the good of losing heart now, that's what I say. We should have thought of it when the world was young, in the nineties.

Estragon: Ah, stop blathering and help me off with this bloody thing.

Vladimir: Hand in hand from the top of the Eiffel Tower, among the first. We were respectable in those days. Now it's too late. They wouldn't even let us up....

Samuel Beckett, *Waiting for Godot*,
Act 1, Faber and Faber, London
1959, p. 10.

It is a tradition hallowed by the usage of untold generations that an inaugural lecture should address itself to an elder-statesman type of survey of the state of play in the discipline concerned, stress being conventionally laid on the multitude of respects in which the subject and, in particular, its practitioners have degenerated since the newly-appointed incumbent was himself a student, albeit – it is discreetly implied – one of unusual brilliance. At best, the convention at least presented a possible solution to what would otherwise be the insoluble problem posed by the existence of an audience which is customarily non-specialised to a high degree. This has the inevitable consequence, of course, that an address on a topic of which the speaker might have some grain of special knowledge would rapidly become incomprehensible to the majority, who would then brand the lecturer as an inarticulate dolt. On the other hand, a lecture suitable for popular consumption would tend to confirm in the minds of the few professionals present the quite natural suspicion that appointments to professorships are reserved for morons on the verge of senility with influential family or political connections.

Even so, the disadvantages of the convention are obvious enough. Reflection on the manners and inclinations of the younger generation in an academic discipline are every bit as prone to the astigmatism or sublimated envy of the old pronouncing on the young in any other context; it is, I believe, a fact that one of the earliest surviving examples of human writing – inscriptions on stones of unspeakable antiquity – is in summary a lament to the effect that the young people of the day weren't what they were in the writer's time. Certainly there is in such essays in professional introspection a tendency towards a faintly neurotic gloom, bordering upon hypochondria. Goethe remarks somewhere that whenever a man stops to ponder on his

mental or physical condition he generally finds that he is ill; it sounds as if Goethe must have endured a great many inaugurations.

The truth of the matter may well be that the inaugural lecture itself – certainly one of this traditional nature – is a relic of an earlier epoch in our universities when appointments to Chairs were rare events, occurring only once every generation or so. In such circumstances there might have been significant merit in a survey of developments over what was, by definition, a considerable period of time, during which substantial changes would normally have occurred; similarly, the resident teachers of the subject in the university were given due warning of the doom to which a remorseless destiny had condemned their department for probably a quarter of a century, so that those among them who were in a position to do so hastened, after the manner of second-class passengers on a sinking ship, to make proper and prudent arrangements for the disposition of their future affairs.

Times have changed, a fact of which I need scarcely remind an audience which has so recently been exposed to the dazzling profundity of the analysis of the nature and functions of a university provided by that authorised confidant of the Holy Spirit, the National Board for Prices and Incomes¹. In economics, more than in most subjects, professorial appointments – to say nothing of mere translations – are becoming two a penny – and an old penny at that: one now receives enquiries as to when it is proposed to publish a volume of one's collected inaugural lectures. The inaugural is no longer the trumpet of a semi-permanent doom, but quite possibly of no more than a brief shadow. Equally, it is no longer self-evidently suited to a semi-philosophical disquisition on the past, present and future of the academic discipline in question.

(1) National Board for Prices and Incomes, Report No. 98, *Standing reference on the pay of university teachers in Great Britain*, First Report, Cmd. 3866, HMSO, London, 1968.

Yet you will have gathered that this long – some would no doubt say garrulous – initial disclaimer is an infallible sign that it is precisely something of this sort which I propose to attempt this evening. This, I fear, is a marked characteristic of economists: we conventionally open our books or articles with categorical statements of why it is impossible or undesirable to measure this, or estimate that, or reach conclusions concerning the other; then, having genuflected before the altar of scholarship in these few perfunctory sentences, we promptly proceed to do at length all the things we have said could or should not be done. But there are special reasons why at this point of time those of us who teach economics should stand back a little and take the hardest look of which we are capable at where we are and where we should be going. What is the use of hurrying, Goethe asks on another occasion, if we are on the wrong road? And particularly if we have come, as I think economics has come, to a major cross-roads. There are two reasons why I think that such a cross-roads has been reached; let me try to explain what they are.

II

The first reason is that it is only quite recently, in the past few years indeed, that economics has come of age in this country, in the sense that the training of future economists is in the hands of people who were themselves trained as professional economists. When I was an undergraduate, in a department labelled "Economics and Political Science", my professor had graduated in commerce; when I was a postgraduate student in Cambridge the occupant of the Chair of Political Economy – these titles are significant in themselves – great and good man that he was, had turned to what was then the new Economics tripos only after taking Part I in the classics tripos; Maynard Keynes, the brilliant spirit brooding over the whole subject for a third of a century, had come to economics via the mathematics tripos. Only quite recently, as I have said, has it become true to say that the occupants of all our university chairs in economics were themselves graduates in economics.

I hasten to add that mention of these mixed origins, so to speak, in the masters of the subject during the first half of this century is in no sense an attempt to denigrate their contribution or ability. Such an attempt would not merely be presumption raised to the *n*-th degree: it would be wildly inaccurate in the mere factual sense. As the subject, under their inspiration, has come of age the era of increasing internal specialisation – some would say fragmentation – has been ushered in; the books and journals are nowadays choked with increasingly esoteric discussions of increasingly specialised areas; the great Titans, with their vast, panoramic treatises covering the whole canvas of the subject in a bold, sweeping brush – the Marshalls and Pigous and Keynes' and Robertsons, to name only the now-vanished British names of the last half-century or so – these become increasingly rare. Names like Hicks or Meade still come to mind, it is true, but it is not easy to add to the list and even these names are, if I may say so without disrespect, those of survivors of an earlier generation.

If this sounds either querulous or nostalgic I must hasten to apologise for the impression, but it is in fact one of my main convictions that it is in seeking to maintain, and worse still to practice, this majestic, almost stratospheric concept of our subject that we have come closest to bringing disaster upon ourselves. I shall return to this point a little later.

But to reflect further on this broad, wide-ranging nature of our origins in the late nineteenth and early twentieth centuries. The change in title from "Political Economy" to "Economics" was achieved a great deal more quickly and easily than the escape from the attitudes and ambitions implied by that earlier title. The older term, remarked Sir Dennis Robertson – one of those early giants to whom I have referred and who it was my great privilege to have as one of my teachers in Cambridge – could best be defined

...by literal translation as State Housekeeping; the old Political Economy could be thought of as being primarily a body of maxims for statesmen.²

And one can still discover, scattered through the books and indeed in the public mind, the belief that economics is necessarily concerned with designing or changing the policies of governments or creating international institutions resplendent with ministerial conferences and simultaneous translation.

I suspect that many of the weaknesses and inadequacies of contemporary economics spring from the oppressive legacy of this tradition and I can best explain this belief by moving on to my second reason for looking around and identifying a cross-roads. But before I do that let me again try to correct any impression I may have left that this older tradition – from which, I have argued, we have only recently departed, at least in human terms – was wholly disastrous and a ground for rebuke to the memories of our predecessors. It was perhaps inevitable that at that stage of evolution the dimensions of thought should have been on the heroic scale, rather in the manner of men erecting a scaffolding to encompass the entire structure of some great cathedral which later craftsmen, necessarily working to more closely-defined tolerances, could set about completing. Their task, like that of the explorers and pioneers of by-gone centuries, was to sketch out the roughest of maps and to establish the first primitive staging-posts precisely in order to enable later generations to qualify and correct their initial speculations. And, perhaps, to enclose the land wherein the crops could grow and pave the streets of towns wherein later, less heroic generations could dwell.

This, after all – or so it can be plausibly argued – is the manner in which science normally evolves and advances. The initial phase is the construction of a theo-

(2) Sir Dennis Robertson, *Lectures on Economic Principles*, Vol. I, Staples Press, London 1957, p. 16.

retical, analytical structure with the aid of which the critical faculties of later workers are disciplined and channelled so as to subsequently amend and ultimately replace it: it is an unceasing process of exploration and enquiry in which the mastery of, and submission to, an established intellectual framework is as essential an element as the periodic overthrow of that framework itself. The great modern advances in the theory of optics, I am told, took place with the aid of the Newtonian principles laid down in the late eighteenth century under which light was first believed to exhibit properties of particles of matter; subsequently more emphasis was laid on the concept of light as wave motions, attention was given to different types of problem, and the boundaries of knowledge were pushed out a little further; subsequently again it was realised that neither view was wholly valid, and the research work of the present century has been inspired by the proposition that light exhibits some of the properties of a wave and some of a particle, so that a contemporary can observe that 'our view derives historically from Newton's views by way of two revolutions in optical thought, each of which replaced one tradition of convergent research with another.'³

The whole point of the process is that knowledge and understanding are not in general advanced through the total rejection of inherited foundations and a fretful, directionless floating around in an intellectual vacuum awaiting the descent, as on Paul on the road to Damascus, of blinding flashes of insight by which the errors of the past and the path of certainty into the future are suddenly revealed. The long, slow, uphill climb of scientific advancement consists, on the contrary, of the scaling of theoretical structures and the absorption of analytical techniques refined and perfected by the usage of the past and then their de-

(3) Thomas S. Kuhn, "The essential tension: tradition and innovation in scientific research", *Scientific creativity*, Eds. C.W. Taylor and F. Barron, Wiley, New York 1963, Chap. 28, pp. 345-6.

ployment in a way which ultimately conquers and supersedes them. The threatening tragedy of our generation is not that dissatisfaction and critical curiosity wander wilfully amongst the minds of the young; that is neither surprising, nor dangerous, nor new. The danger is, surely, that the urge to change and destroy has not been tempered and sharpened by the acquisition of an analytical framework which is the only means by which such change can be identified and understood. The military commander cannot hope to launch an attack, as opposed to a riot, until his forces are disciplined and organised in some integrated and coherent manner: the explorer into the unknown must first know his charts and his stars before he can even know where the known ends and the unknown begins. The error of those who reject the rigour of established systems and theorems is not that they demand advance and change too drastic and rapid for our comfort but, on the contrary, that they have turned aside from the only means by which effective and fundamental change is ever secured. To submit oneself to the constraints of the elevator of analytical systems refined in the furnaces of earlier generations before commencing the lonely, laborious scaling of the heights beyond is not merely to conserve one's energies; those who repudiate the elevator, hating and fearing the constriction of its walls, are themselves the parents of joyless stagnation, if not indeed of confusion. They remind one of Chesterton's parable of the children playing on the flat grassy top of a tall island in the sea:

So long as there was a wall round the cliff's edge they could fling themselves into every frantic game and make the place the noisiest of nurseries. But the walls were knocked down, leaving the naked peril of the precipice. They did not fall over; but when their friends returned to them they were all huddled in terror in the centre of the island; and their song had ceased.⁴

(4) G.K. Chesterton, *Orthodoxy*, Bodley Head, London 1939, Chap. IX, p. 267.

III

In reflecting on the passing of what I might call the era of the pioneers in our subject, and in seeking to avoid any suggestion of senseless and graceless iconoclasm in relation to that era, I fear I have wandered badly. Let me return to my cross-roads and my second point of identification. It is in fact closely related to the panoramic tradition which, perhaps harshly, I have associated with that pioneer generation. What I have to say here refers to the position of economics in our own country particularly, although I suspect that it would be substantially applicable in the United States and, perhaps, elsewhere.

We are, at this moment, moving towards the end of the period of office of the first government in our history to be headed by a professional economist; certainly it is an administration which has brought academic economists into its ranks, at all levels and in all capacities, and which has adopted formal procedures of economic planning, to an extent hitherto unknown. In a real sense, then, we have witnessed for the first time a process comparable in some ways to the experiment of the physical scientist. After decades of confinement within the pages of books or learned journals, pamphlets or inaugural lectures, our pudding was at last put to the supreme, mandibular test; our hand, as the poker-players would say, was called.

It will be unnecessary for me to over-indulge in professional masochism at this point: the outcome is too well-known. Over the past four years our gross national product has achieved an average rate of growth of about $2\frac{1}{4}$ per cent per annum, an unimpressive performance even in comparison with the modest record of the British economy over the postwar period as a whole; our balance of payments on current account has accumulated the formidable deficit of some £990 million⁵; our unemployment register has steadily risen and our

(5) The GNP and balance of payments estimates are taken from the National Institute of Economic and Social Research *Economic Review*, No. 46, November 1968, estimates for 1968 being taken from Tables 1 and 4, pp. 5 and 13; they refer to the four-year period 1965-68.

currency has with equal inevitability fallen. *Si momentum requiris, circumspice*: in the public esteem economists, especially those of central European origin, have joined mothers-in-law, kippers and seaside landladies as standard ingredients for the vaudeville stage, a mere mention being sufficient to evoke irresistible gusts of laughter. Professional economists, driven into a neurotic frenzy of self-accusation, have turned upon themselves in a torrent of recrimination reminiscent of the climactic moment of a meeting of some fundamentalist religious sect, one distinguished academic recently spreading himself over no less than 300 pages in order to ridicule and lampoon the inaccuracy and inconsistency of the more prominent academic economists of the country.⁶

It should be said immediately, I think, that a good deal of this catastrophic decline in the public reputation of our subject is less than just. The layman's argument runs: "We have had more economists in government than ever before, and we have also had – it seems to me – more disastrous economic management than ever before. Ergo, the incompetence of economics and economists is established." Leaving aside the factual accuracy of the second proposition of the syllogism, the conclusion is manifestly a *non sequitur*. Our system of government rests – in theory if not always in practice – on the principle that decisions are taken by Ministers, not their advisers. A certain course of action can therefore never be taken to imply the presentation of expert advice of a similar nature; advice may not in fact have been sought on the issue in question nor, if sought, have been adopted in whole or even in part. Anyone who believes, as a matter of faith, that British politicians or their most senior officials are invariably guided by the best technical advice available to them must have been miraculously preserved from actual contact with those gentlemen in the flesh.

(6) T.W. Hutchinson, *Economics and economic policy in Britain, 1946-1966*, Allen and Unwin, London 1968; see also M.M. Postan, "A plague of economists?", *Encounter*, January 1968, and H.G. Johnson, "A catarrh of economists?", *Encounter*, May 1968.

There is an obvious and important moral here for the academic economist contemplating involvement in the machinery of policy formation, as opposed to someone trained in economics who subsequently becomes an official in the public service and who is therefore regarded thenceforth as an official rather than as a professional economist. He who sups with the devil must needs equip himself with a very long spoon. If an economist renders advice based on objective and scientific analysis – and he has no business to be doing anything else – and then witnesses its absorption into, and amendment by, non-scientific considerations, the final connection between his advice and the emerging policy decision may well be a tenuous one, to put it mildly. If the whole process has taken place, as it usually does, within the secrecy and confidentiality which British government is customarily held to require, the risk to his reputation and integrity may be considerable. Far better that his analysis should be conducted through the normal channels of the printed word so as to be capable of scrutiny by his professional peers. If that analysis proves to be faulty, the process of scrutiny is likely to be a somewhat uncomfortable one as far as he is concerned, but at least the advancement of knowledge will be served by the identification and exposure of the causes of error. If, on the other hand, faulty policies are seen to have disregarded sound analysis in whole or in part then at least the responsibility for failure can be laid at the right political door. Whether or not delivery will be accepted by the householder in question is, of course, another matter altogether.

Having said that by way of a small plea in mitigation, it remains an inescapable fact that the record is only too full of pronouncements by professional economists on matters of public policy which have been shown to be hopelessly at variance with the subsequent events they purported to predict. Even after making all possible allowance for the perversity, inadequacy or downright cunning of the politicians and their senior mandarins, the correlation between the employment of professional

economists and the success of ensuing decisions is only too manifestly an insignificant one; some, indeed, would go so far as to suggest that the correlation is less than zero. And the subject's loss of credibility in the public mind, however limited the degree to which it may be justified, is a fact of crucial importance. A proposition in the sphere of the physical sciences does not require popular acceptance in order to be, or remain, valid. But economics in the last resort is concerned with the analysis of choice underlying human decisions and without recognition from those responsible for making those decisions it is doomed to sterility.

So I come to the gloomy yet resolute thought underlying the choice of what must seem the weirdest of titles for this lecture. In Beckett's sad little drama the two central characters – 'heroes' would be patently wrong – concede that the world has proved too much for them. But, reflects one of them, there's no point in losing heart now: they should have thought of that in the nineties, when the world was young, and the two of them could at least have jumped, hand in hand, from the top of the Eiffel Tower: now, with the marks of failure only too clear upon them, it's too late – they wouldn't even be allowed into the Eiffel Tower in the first place. Economics in this country finds itself in somewhat the same position. If we had opted out in the nineties, when our world was young, declaring ourselves to be dispensers of general philosophical principles only, having no aspirations to the direct influencing of events in the real world, we might, as they say today, have got away with it. Now it's too late: our forefathers have left us with an established corpus, an analytical system, which justifies itself, if at all, only in terms of its potential contribution to the empirical world of decisions governing the wealth and welfare of our fellow-men. If we have accumulated a record of failure – although let us remember in this post-Keynesian world that there are some successes too – that is no justification for an attempt to simply drop out: for us too, there's no point in losing heart now.

IV

What, then, do we do? The process of putting our house in order must start with those of us whose task it is to train the future generations who are to follow us. How do we old men seek to encourage in the young better habits than we ourselves have managed to exhibit? Characteristically, in this traumatic moment of truth, two diametrically opposed answers are being given; we have thus to determine which star we shall follow, to which banner we should pledge allegiance.

On the one hand there are those who argue that our failures in economic planning, in its broadest sense, have been due not to the high, panoramic level on which we have sought to operate but rather to a failure to inform ourselves adequately of the political, sociological or ethical issues inextricably involved in these matters of high strategy; our fault has lain in the delusion that by modestly disclaiming competence in these essentially non-scientific aspects of human affairs we were thereby freeing ourselves from involvement in them when in fact they were of the very essence, and at the root, of the problems involved. To quote one leading analyst of our current sickness:

...more comprehensive and ambitious economic policies inevitably have much wider and more pervasive effects on political institutions, values and processes, and 'professional' economists have tended to become less inclined and much less qualified seriously to examine these.... Today, instead of the contributions of a J.S. Mill, Bagehot or Sidgwick, we have from professional economists either a complete, and possibly disastrous, disregard of political values and processes, or we are offered – especially from Oxford and Cambridge – eulogies of the methods of Stalin and Mao Tse-Tung....⁷

In other words, we have failed because we have wandered away from the Political Economy tradition, because we have laid undue stress on the scientific and not enough on the political or social, because we have involved ourselves too little, rather than too much, in the institutional and ethical framework of our society.

(7) Hutchinson, *op. cit.*, pp. 273-4.

And an essentially similar argument has recently been advanced in relation to the social sciences as a whole by as distinguished a scholar as Professor Lord Simey⁸.

I must confess that not many years ago I would have felt a great deal of sympathy with this view; nowadays, however, I am filled with profound misgivings at these appeals for a reversion to something rather like the Great Man traditions of the nineteenth century, precisely because they seek to elevate into virtue what now seem to me to have in fact been the fundamental weakness of much of our recent practice, to substitute authority for empirical validity and wisdom for scientific enquiry. Wisdom, obviously, is always a scarce and immensely desirable quality in our public affairs. It suffers, however, from the crippling disadvantage of being incapable of identification except, occasionally, in the light of subsequent events – by which time the ability to discern it has usually ceased to possess operational usefulness. I now distrust and indeed fear this solution to our dilemma, in other words, because to elevate the cult of the Wise Man seems to me an invitation to disaster so long as we have no *a priori* means of distinguishing between the voice of the Wise Man and the voice of the lunatic. I distrust it because we can have no assurance that the divine providence will so order our affairs as to ensure that an appropriate dose of wisdom will be automatically dispensed to every recipient of the B.Sc. Econ. And I distrust it most of all because it implies a belief in a capacity to impart and inculcate wisdom on the part of those of us called on to teach economics, a belief for which I know of neither authority nor the slightest grain of evidence.

Nor am I impressed by the argument that we should openly embrace value judgements and adopt ethical attitudes because they are in some sense inherent in our subject. It is true, as Myrdal, for example, argues that value judgements necessarily enter into any enquiry in

(8) T.S. Simey, *Social Science and Social Purpose*, Constable, London 1968.

the sense that there is an implicit judgement that the particular field of enquiry, or that particular set of assumptions, is more worth-while in some sense than the others which could be adopted.⁹ But what has this to do with our *method* of work or the nature of the end product we are concerned to deliver? To play chess rather than fish for trout, it has been very properly pointed out, is certainly to express a value judgement but it has no bearing at all on my method of opening the chess game or my style of play thereafter.¹⁰

Clearly, then, it is only the second opposite answer to our problem which appears to have even the beginnings of an approach to credibility. This is to cut our humble coat more carefully within the confines of our even more humble cloth, rather than to seek yet grander raiment, to recognise the fundamental causes of failure in our contributions and to restrict the range of our proclaimed competence to that area within which the influence of those causes is constrained within tolerable limits, or, ideally, eliminated altogether, rather than — as in the opposite prescription to which I have just referred — to seek to acquire for ourselves skills, insights and authority of the kind required for continued operation on that grand, heroic scale bequeathed to us from an earlier tradition. Or, for that matter — as so distinguished an authority as Professor Harry Johnson appears to suggest — to apply our techniques, however scientifically, in pastures as unfamiliar as the causes of student unrest or the forces underlying political decision-making, areas in which the rational is unlikely, to put it mildly, to exert a predominant influence.¹¹

(9) G. Myrdal, "Value-loaded concepts", *Money, growth and methodology*, (Essays in honour of Johan Akerman), Ed. H. Hegeland, CWK Gleerup Lund, Sweden 1961, p. 274.

(10) A. Gerschenkron, "Reflections on ideology as a methodological and historical problem", *ibid.*, p. 184.

(11) Harry G. Johnson, *The economic approach to social questions*, Inaugural lecture at the London School of Economics, Weidenfeld and Nicolson, London 1968.

I have already referred to one work of modern drama: there is another which contains an incident well suited to illustrate my point. A man is discovered on a stage in total darkness except for a single, lighted lamp-post and he is groping about in search of something of whose probable whereabouts, he admits, he has no real knowledge. Asked why, in that case, he is confining himself to the area immediately under the lamp, he answers: "Because the light is better there." The reply is by no means as ludicrous as at first sight may appear: if one's competence is sadly limited over a large area there is real merit in confining oneself within a much restricted area where the light of one's limited knowledge or analytical grasp at least offers some hope of success. It is more honourable to be a platoon sergeant competently discharging limited tactical missions than to be a supreme commander conceiving grand strategies whereby immense army groups are directed into shattering and continuous defeat.

What, then, are these fundamental causes of failure to which I have referred? Curiously enough, there seems to be general agreement on this. First, it is clear that the obsession amongst British economists with broad, macro-economic issues has led us to attempt judgements on problems involving a complexity of forces far beyond our present competence to handle; having mastered a few strokes of the dog-paddle calibre, we have foolishly thrown ourselves in at the deepest of deep ends: having survived the 220 yards we have embarked grandiloquently on all that the Olympics could offer. This is partly due to the temptations of the memory and example of our Titian ancestors, to which I have already referred; it is partly due also to the impact of the dazzling flash of intuition associated with the name of Maynard Keynes and which, in the callowness of our youth, we have been ingenuous enough to label the "Keynesian revolution". The brilliant intellectual insight of Keynes, set against the broadest and most general backcloth of principle was one thing; its detailed practical application to particular contexts and in solu-

tion of particular problems is, alas, quite another. The effort, experiment and failures of more than four centuries separated Leonardo da Vinci's model of a flying-machine of the fifteenth century from the 59 seconds of powered flight by Wilbur and Orville Wright in 1903, and in our macro-economics we are still closer to the sketch-pads of Florence than the prototype of Kittyhawk.

The second cause of our apparently disappointing record is not unrelated to the first. The conflicting judgements for which the profession has become famous may indeed be due to incompetence and ignorance; when physicians prescribe many remedies, remarked Chekov — who was himself a doctor and should therefore know — it usually means that there is none. But the confusion may be due also — and in retrospect has in fact often been due — to explicit or, more commonly, implicit value judgements made by the economists concerned which have led to conflicting prescriptions. Whether a specified policy is recommended or condemned frequently proves to depend not on the accuracy of analysis but rather on the relative desirability or undesirability arbitrarily associated by different practitioners with unemployment, or price instability, or inequality of income, or limitations on the freedom of private industrial decisions, or any one of an infinity of essentially political matters. And, by definition, the higher the policy level concerned the more numerous, interacting and significant such political considerations become; the propensity to concentrate on broad, macro-economic issues has therefore compounded and reinforced the inclination to insert unseen emotive attitudes into scientific analysis with disastrous consequences all round.

The origins of the third element of weakness, like those of the other two, can be traced to certain aspects of the non-professional, non-scientific parts of our inheritance. This is, to put it bluntly, an inadequate rigour in our methods of diagnosis and, more fundamentally, in our teaching. The elements of classical or historical tradition in our make-up, valuable and civilising as in

many respects they have been, have created in us a tendency to indulge in vague, imprecise, qualitative pronouncements; our literature still abounds in words like "very" or "somewhat" or "probably", and phraseology such as "it may therefore be the case" or "it could thus be argued" or "a consequence might prove to be"; conclusions lacking specification are immediately followed by qualifications equally lacking in precision, so that the seeker after guidance eventually grows weary and relapses into jokes about one-armed economists. There is nothing inherently wrong or improper about generalised judgements couched in cautious language and embedded in an ocean of qualifications, but a subject which habitually resorts to such forms of expression has no business to call itself scientific nor to purport to reach predictive conclusions concerning the real world. By doing precisely this we have come all too close to justifying the popular taunt concerning six economists who, faced with any given question, provide at least seven conflicting answers. Lack of rigour has not merely caused confusion through inevitable semantic snarl-up as words are used in different senses by different people, or by the same person in different senses at different times; it has also allowed us to fall individually into sloppy modes of thought in which we have lost sight of the over-riding need in any scientific discipline to remember that if our analysis has no prospect of generating propositions cast in a verifiable form and testable against empirical evidence from the real world to which they purport to apply, then there is at least a presumption that we have no business to be meddling in the subject matter in question.

V

The moral is, I imagine, all too clear. The future health of our subject depends first on our willingness to redefine its scope not in terms of the grand vistas over which we would *like* to imagine ourselves presiding in some ideal world, but of the area within which we are likely to be *competent* to reach something approaching scientific

conclusions, either now or in the reasonably foreseeable future. In other words, we must try to shed our still-lingering illusions - for such they are - of dealing in, to use Robertson's phrase, "a body of maxims for statesmen". Neither can we accept - although the definition is very much closer to a scientific one - Robbins' famous definition of economics as studying "human behaviour as a relationship between ends and scarce means which have alternative uses"¹²; the scope so defined is still too wide and over-ambitious. We must rather regard our subject as being the scientific study of choices between the competing uses of scarce resources having measurable and predominant effects on economic welfare, economic welfare being defined, in something like Marshall's old phrase, as the well-being arising from the consumption of the material requisites of human existence. The definition has no pretensions to methodological purity: the only important point is the stress which it lays on measurability and predominance - in principle if not in immediate practice - as not merely desirable qualities in our subject but necessary conditions for its existence. We must not define our desired target-area and then make pious noises about measuring as much as possible of it; on the contrary, if we encounter non-measurable considerations of significant influence the *prima facie* presumption - although perhaps on occasion a rebuttable one - is, as I remarked a little earlier, that we have by definition wandered outside our sphere of competence. This does not of course exclude macro-economics: that would be manifestly absurd. But it certainly does not define our subject *in terms of* macro-economics and will in practice give greater emphasis to micro-economic problems much less grand in scope but more clearly within our proper competence.

Secondly, the striving for greater objectivity and rigour implies more stress in our teaching on analytical technique and less on institutional or descriptive conclusion. Many would regard this as merely a statement of commitment to the long-established trend towards

(12) L. Robbins, *An essay on the nature and significance of economic science*, Macmillan, London 1932.

the increased use of mathematical method in our theory and of statistical testing in our application - a matter on which, as Robbins remarked many years ago, there is such conclusive agreement that it has ceased to be intellectually interesting.¹³ To some extent it is, but it would be a serious error to treat rigour as synonymous in this context with mathematical symbolism or scientific method as synonymous with statistics. The point is at the root of so much confusion and, indeed, ill-feeling within our ranks that I hope I shall be forgiven for taking up a few more minutes to look briefly at it before bringing your ordeal to a merciful end.

In the context of an academic discipline the word "rigour" is usually taken to mean logical accuracy and exactitude of argument and it is in this sense that I have employed the term: Now it would be nonsense to assert that the use of symbolism and mathematical technique is the only way in which this quality can be imported into economic analysis. Mathematical argument, after all, is totally reliant on ordinary language for the initial definition of terms. We are indebted to Professor Paul Samuelson, one of today's most brilliant practitioners of our subject, for informing us that it was in the course of his only known speech to the Faculty of Yale University, totalling four words in all, that Willard Gibbs enunciated the famous proposition: "Mathematics is a language".¹⁴ And a quality which can be exhibited in one language can certainly be exhibited in another. Yet it is surely beyond question that the sophistication of mathematics often opens up the possibility of an agility and virtuosity in rigorous argument which is given to few people to acquire or comprehend through the medium of literary expression; can there be any of us, having had the opportunity to compare, who have not

(13) L. Robbins, "The teaching of economics in schools and universities", *Economic Journal*, Vol. LXV, No. 260, December 1955, p. 590.

(14) Paul Samuelson, "Economic theory and mathematics: an appraisal", *American Economic Review*, Vol. XLII, No. 2, May 1952, p. 56.

marvelled at the contrast between, on the one hand, the slow, complex, laborious explanation of the elementary propositions of competitive equilibrium to non-mathematical students and, on the other hand, the swift, conclusive demonstration of precisely the same theorems by means of setting four simple differentials equal to zero? And while value judgements may indeed lie implicitly underneath mathematical argument it is certainly more difficult for them to be hidden than in literary discussion - and likewise more difficult for the competent reader to be unaware of them.

Most of all, the great disadvantage of literary exposition - and one to which I have already referred - is the disconcerting habit which words of any "literary" living language have of being, if not all things to all men, then certainly several different things to many men. The biographer of the late Montagu Norman recounts how the shattering decision to abandon the gold standard in 1931 was taken at a time when Norman, then Governor of the Bank of England, was on a transatlantic liner returning from Canada. His deputies, wishing to warn him in advance, gave considerable thought to the problem of how a cable could be sent without letting the whole world know, and finally decided on a six-word message which ran: "Old Lady goes off on Monday". The Governor, after equally careful thought at the other end, came to the conclusion that the message referred to arrangements which were thoughtfully being made for his mother's holiday.¹⁵ History may record few instances where words were misinterpreted to so bizarre a degree, but our recent literature abounds with examples of disputes which have waxed long and furious only to establish that words in the mouths or pens of the disputants were being used in different senses.¹⁶ The mathematician may define his terms foolishly or in an odd manner, but at least he is forced by the nature of his craft to define them.

(15) Andrew Boyle, *Montagu Norman*, Cassell, London 1967, Ch. 10, p. 268.

(16) Need I mention savings and investment?

This stress on mathematical technique and empirical verification is the cause of much anxiety in the minds of people whose judgement one is bound to respect, and their reactions tend to fall into one of two categories. I am again indebted to Professor Samuelson for learning of the incident in which Euler, one of the very greatest mathematicians of his time, was anxious to get Diderot to leave the court of Catherine the Great and to this end roared at him: "Sir, $(a + b^n) / n = x$; hence God exists. Reply!" The feelings within the mind of Diderot, slinking away in shame, may well have corresponded to the reactions amongst both teachers and students of economics at the present time to the increased stress on mathematical and quantitative methods in the subject.¹⁷

Some, the older hands especially, often finding, as Diderot no doubt did before long, that mathematics can be used - as any language can - after the manner of charlatans, react violently and gravitate towards a pathological antipathy to or suspicion of the merest hint of symbolic argument and a fierce resistance to any truth it may appear to have established. Others, particularly the prospective student, may be so shattered by the formidable and esoteric appearance of mathematics as to immediately conclude that they should direct their interests to less craggy and mountainous pastures. I am told that the style and standard of teaching in most of our schools have much to answer for in relation to this almost instinctive fear of mathematics in our sixth forms. Certainly the dimensions of mathematical competence required in our students, while admittedly expanding steadily, are really very modest: the professional mathematicians would indeed regard them as almost childishly restricted. The specialist researcher in pure theory or econometrics will admittedly require mathematics of a high order, but these people will never form more than a small proportion of our total. For the rest, the techniques in-

(17) Samuelson, *loc cit.*, p. 65.

volved are certainly within the grasp of the student of ordinary intelligence, given a minimum of application. No-one pretends that it is easy; but we here are not in business to make life easy, either for our students or for ourselves. And I am always consoled by that ancient Simian proverb inscribed at the beginning of a sixty-year-old book which is still one of the finest introductions to the mysteries of the calculus yet written: what one fool can do, another can.¹⁸

Of course there are very real dangers in the stress on mathematical theorems and insistence on empirical content and verification. The very elegance and sophistication of symbolic argument inherently encourages a tendency to ignore or discount factors - psychological factors especially - which do not lend themselves readily to the processes of symbolic manipulation, so that elegance becomes the enemy of realism. Economists are not alone in the tendency to occasionally allow the convenience of analysis to tyrannise over the reality of assumptions. It was the great Eddington, was it not, who once commenced an argument by postulating the existence of "a perfectly smooth elephant whose weight may be neglected", while that other remarkable figure of Cambridge mathematics, Charles Babbage, once wrote to Alfred Lord Tennyson pointing out that the lines of his poem

Every moment dies a man,
Every moment one is born.

postulated a static world population - which was incorrect - and suggesting a re-write for the next edition which would run

Every moment dies a man,
Every moment one and one-sixteenth is born.¹⁹

(18) F.R.S., *Calculus made easy*, Macmillan, London 1910.

(19) B.V. Bowden (Ed.), *Faster than thought*, Pitman, London 1953.

Equally, the attachment to quantitative formulation can lead occasionally to the lunatic doctrine that any figure is better than none, from which the most calamitous consequences can easily follow. Less extreme is the view that the consistency of a proposition with the empirical evidence is not merely a necessary condition for our theorems but is sufficient also, however implausible may be the theoretical arguments underlying them or, indeed, even if there is no such underlying theory at all. One grave danger of so highly pragmatic an approach is that even propositions apparently having a high degree of empirical validity may conflict with a more encompassing theory currently beyond our knowledge but involving variables liable to falsify in the future a theorem which has held in the past. The amazingly accurate predictive quality of Ptolemy's universe of epicycles, or Bohr's assumption of duality of electron orbits, did not preserve them from subsequent and successful charges of error. And we are advised - I speak, as St. Paul remarks, as one less wise - that although the free electron theory gives a marvellously accurate picture of many of the properties of metals - and in particular explains the fact, never previously understood, that insulators show a specific resistance to electricity which may be 10^{26} times greater than that of metals - it is nevertheless a crude approximation which needs to be replaced.²⁰

An equal danger of the ultra-positivist approach, especially from the teaching point of view, is that by denigrating the importance of the theoretical infrastructure to our propositions we are in danger of eroding the strength and acuity of the intellectual equipment on which depends the future output of modified or supplementary propositions of empirical validity. Even if we were in a position to present to our students a comprehensive set of positive policy prescriptions of complete accuracy - and we are manifestly not in such a position -

(20) Eugene P. Wigner, "The unreasonable effectiveness of mathematics in the natural sciences," *Communications on pure and applied mathematics*, Vol. XIII, February 1960, pp. 12-13.

the world we live in has an awkward tendency towards perpetual change which would soon render our pre-production package obsolete and ultimately void. If we produce economists unaware of, and untrained in, the manner of arrival at the propositions themselves we would have left them as helpless as children who have learnt reams of encyclopaedias off by heart but never been taught to read.

Beyond all this again is the need for specialists versed in the knowledge and understanding of particular arenas of the economic system, from labour relations to financial mechanisms, whether in the contemporaneous scene or in the pages of economic history. The economic theorist has no special competence at determining the assumptions on which his models should be built or the hypotheses from which his theorems proceed; indeed, as I have observed, he has an innate weakness for those he happens to find convenient for the type of formulation he is currently favouring. Since the results of his work can never be better than the assumptions from which he proceeds or more accurate than the values he is enabled to put on his coefficients and parameters, his dependence on the investigators of special, detailed fields of the reality of human experience is inescapable and complete. In the carpentry of our discipline the craftsman is dependent on the art of the makers of the tools he is using, but he is equally dependent on those who have discovered or mined or harvested the materials on which he is using them and, for that matter, from which the tools themselves were made.

Yet when all this has been said, the over-riding message remains. The emphasis in our work, and more especially in our teaching, must shift a great distance away from the spurious, pretentious indulging in policy recommendations over vast, political areas for which our present competence simply does not equip us and towards much more rigorous and empirically better-informed investigation of narrowly-defined topics and problems in which there is at least some prospect of modest success. The student drawn to the subject, as

many are, by a belief that it can provide him with the ability to go forth and tackle the great human problems of want and insecurity and social injustice will perhaps find this an arid, repellent attitude. Asking for bread, he may lament, you are offering us a stone. We seek to confront and understand the problems of people - malnutrition, unemployment and under-development - and instead you fling at us differentials and matrices and Lagrangean multipliers or even, in your madder moments, orthogonal polynomials and convex polyhedrals, Riemann integrals and Von Neumann turnpikes; whatever happened to people?; have you not defrauded us? Perhaps; and perhaps we must reconcile ourselves to seeing in our lectures rather fewer of these good students angered and animated by that passionate discontent with the imperfections of our society which is the most powerful and admirable quality of youth. If so, it would be a cause of regret, for the philosophy is in effect no more than a badly-worded reminder that science is nourished by realism and born in humility.

It is those of us who teach and practice the subject, however, who need the medicine most urgently. Nothing is more difficult than a constant, internal reminder of our own almost overpowering limitations; it is difficult, too, to listen in stony silence to the plaintive appeals of the man in the street for simple answers to what seem to him ominous conundrums poured out by evil choirs of gnomes and homburg-hatted demons; being human - usually more so than most - it is difficult to resist the invitations to pronounce grandly before the cameras or on the air or in the columns of the posh Sundays and so allow our modest shoulders to receive the purple mantle reserved for the soothsayers and medicine-men of our tribe. To expect total renunciation in this respect would of course be manifestly unreasonable. But at least we should seek more often to remind the world of our limited competence; more important, we should seek more often to remind ourselves. To quote Samuelson yet again,

I must not forget that I am an economics professor. A

teacher of graduate students and beginners. A thing of roots and vectors. In short, an incurable theorist who would rather be sprayed with chalk dust than with star dust.²¹

None of this, you may be saying to yourselves, is new, nor is it in any great degree peculiar to economics; you would of course be quite right. For what I have been saying about the university teaching of economics could be said, *mutatis mutandis*, of the university teaching of anything else. It amounts to saying little more than that those of us whose good fortune it is to teach and pursue research in the universities of this country are in business primarily to ask questions, not to provide answers; that the function of the university is not primarily to mould employment-fodder into prescribed patterns, nor to implant attitudes or preconceptions, still less - God forbid! - to establish doctrinal schools and recruit disciples; it is not even to fill young minds with knowledge. It is rather, in Newman's beautiful and classic phrase, "to open up the mind, to correct it, to refine it, to enable it to know."²²

That commission is by any standard formidable enough; judged against the measure of most of us its discharge to anything approaching perfection is manifestly impossible. The most we can do is to heed the advice of Thomas a Kempis:

do what lieth in thy power and God will assist thy good will.²³

(21) P.A. Samuelson, *Problems of the American economy: an economist's view*, Stamp Memorial Lecture 1961, Athlone Press, London 1962, p. 6.

(22) J.H. Newman, *The idea of a university*, Cambridge University Press, London 1931, Discourse V, pp. 46-7.

(23) Thomas a Kempis, *Of the imitation of Christ*, Nelson, London Chap. VII, p. 19.

For all of us who are citizens of this society we call the university, whether as students or teachers, are dedicated, are we not, to an ancient and tremendous proposition which is at once a reminder of this enormous commission and a promise of stupendous simplicity, a proposition which is inscribed, so I am told, over the library entrances of many universities in the United States of America, the proposition which runs: you shall know the truth, and the truth shall make you free.

