

## CHAPTER FOUR

### *Two Types of Mind\**

Accident has early drawn my attention to the contrast between two types of scientific thinking which I have since again and again been watching with growing fascination. I have long wished to describe the difference but have been deterred by the egotistic character such an account is bound to assume. My interest in it is largely due to the fact that I myself represent a rather extreme instance of the more unconventional type, and that to describe it inevitably means largely talking about myself and must appear like an apology for not conforming to a recognised standard. I have now come to the conclusion, however, that the recognition of the contribution students of this type can make may have important consequences for policy in higher education, and that for this reason such an account may serve a useful purpose.

There exists a stereotype of the great scientist which, though overdrawn, is not entirely wrong. He is seen, above all, as the perfect master of his subject, the man who has at his ready command the whole theory and all the important facts of his discipline and is prepared to answer at a moment's notice all important questions relating to his field. Even if such paragons do not really exist, I have certainly encountered scientists who closely approach this ideal. And many more, I believe, feel that this is the standard at which they ought to aim, and often suffer from a feeling of inadequacy because they fail to attain it. It is also the type we learn to admire because we can watch him in operation. Most of the brilliant

\* Reprinted with additions from *Encounter*, vol. 45, September 1975. Since the first publication my attention has been drawn to the fact that there is some similarity between the distinction drawn in this article and that drawn by Sir Isaiah Berlin in his well-known essay, 'The hedgehog and the fox'. This had not occurred to me but is probably true. But if I had been aware of it I would certainly not have wished to claim on my behalf that in contrast to the 'foxes' who know many things, I was a 'hedgehog who knows one big thing'.

## Two Types of Mind

expositors, the most successful teachers, writers and speakers on science, the sparkling conversationalists belong to this class. Their lucid accounts spring from a complete conspectus of the whole of their subject which comprehends not only their own conceptions but equally the theories of others, past and present. No doubt these recognised masters of the existing state of knowledge include also some of the most creative minds, but what I am not certain is whether this particular capacity really helps creativity.

Some of my closest colleagues and best friends have belonged to this type and owe their well-deserved reputation to accomplishments I could never try to emulate. In almost any question about the state of our science I regard them as more competent to provide information than a person of my own sort. They certainly can give a more intelligible account of the subject to an outsider or young student than I could, and are of much greater help to the future practitioner. What I am going to plead is that there is a place in the various institutions for a few specimens of minds of a different type.<sup>1</sup>

In my private language I used to describe the recognised standard type of scientists as the memory type. But this is somewhat unfair because their ability is due to a particular kind of memory, and there are also other kinds. I shall therefore here call this type simply the 'master of his subject'. It is the kind of mind who can retain the particular things he has read or heard, often the particular words in which an idea has been expressed, and retain them for a long time. This capacity one may lack, though one may possess a very good short-term memory even for isolated facts, as I know from my own

<sup>1</sup> The first instances of this contrast to strike me were E. von Böhm-Bawerk and F. von Wieser. The former, whom I saw only when I was a boy, was evidently an eminent 'master of his subject', while the latter, my teacher, was in many respects rather a puzzler. J. A. Schumpeter, another representative 'master of his subject', once described him as follows: 'The fellow economist who enters Wieser's intellectual world at once finds himself in a new atmosphere. It is as if one entered a house which nowhere resembles the houses of our time and the plan and furniture of which is strange and not at once intelligible. There is hardly another author who owes as little to other authors as Wieser, fundamentally to none except Menger and to him only a suggestion — with the result that for a long time many fellow economists did not know what to do with Wieser's work. Of his edifice everything is his intellectual property, even where what he says has already been said before him.' (From an article in a Viennese newspaper on the occasion of Wieser's seventieth birthday, quoted at somewhat greater length in my obituary of Wieser reprinted as an introduction to his *Gesammelte Aufsätze*, Tübingen, 1927.) A similar contrast appears to have existed between the two influential Chicago teachers of economics, Jacob Viner, very much a 'master of his subject', and Frank H. Knight, a puzzler if there ever was one.

## *Two Types of Mind*

experience, at least when I was a very young man. I owe it largely to the capacity to swot up in a few weeks before the end-of-the-year examinations the whole substance of a year's teaching in several subjects in which I had done no work whatever that I managed to complete a school education which gave me access to a university. But I forgot such knowledge as rapidly as I had acquired it; and I always lacked the capacity to retain, for any length of time, the successive steps of a complex argument, or to store in my mind useful information which I could not place into a framework of ideas with which I was familiar.

What preserved me from developing an acute sense of inferiority in the company of those more efficient scholars was that I knew that I owed whatever worthwhile new ideas I ever had to *not* possessing their capacity, i.e. to often *not* being able to remember what every competent specialist is supposed to have at his fingertips. Whenever I saw a new light on something it was as the result of a painful effort to reconstruct an argument which most competent economists would effortlessly and instantly reproduce.

What, then, does my knowledge consist of on which I base my claim to be a trained economist? Certainly not in the distinct recollection of particular statements or arguments. I generally will not be able to reproduce the contents of a book I have read or a lecture I have heard on my subject.<sup>2</sup> But I have certainly often greatly profited from such books or lectures, of the contents of which I could not possibly give an account even immediately after I had read or heard them. In fact the attempt to remember what the writer or speaker said would have deprived me of most of the benefit of the exposition, at least so far as it was on a topic on which I had already some knowledge. Even as a student I soon gave up all attempts to take notes of lectures – as soon as I tried I ceased to understand. My gain from hearing or reading what other people thought was that it changed, as it were, the colours of my own concepts. What I heard or read did not enable me to reproduce their thought but altered my

<sup>2</sup> This may sound a curious confession from a university teacher who for some forty years regularly lectured on the history of economic thought and enjoyed so doing. I was indeed always greatly interested in the works of earlier students, and learnt a great deal from them. And somehow I enjoyed reconstructing their lives and personalities, although I had no illusions that this in any way explained their scientific beliefs. I believe I also gave in my lectures a fairly adequate picture of their influence on the development of economics by discussing their effect on others. But what I told my students was essentially what I had learnt from those writers and not what they chiefly thought, which may have been something quite different.

## *Two Types of Mind*

thought. I would not retain their ideas or concepts but modify the relations between my own.

The result of this manner of absorbing ideas is best described by comparing it to the somewhat blurred outlines of a composite photograph: that is, the results of superimposing prints of different faces which at one time were popular as a means of bringing out the common features of a type or a race. There is nothing very precise about such a picture of the world. But it provides a map or a framework in which one has to discover one's path rather than being able to follow a rigidly defined established one. What my sources give me are not definite pieces of knowledge which I can put together, but some modification of an already existing structure inside of which I have to find a way by observing all sorts of warning posts.

Alfred North Whitehead is quoted as saying that 'muddleheadedness is a condition precedent to independent thought'.<sup>3</sup> That is certainly my experience. It was because I did not remember the answers that to others may have been obvious that I was often forced to think out a solution to a problem which did not exist for those who had a more orderly mind. That the existence of this sort of knowledge is not wholly unfamiliar is shown by the only half-joking description of an educated person as one who has forgotten a great deal. Such submerged memories may be quite important guides of judgment.

I am inclined to call minds of this type the 'puzzlers'. But I shall not mind if they are called the muddlers, since they certainly will often give this impression if they talk about a subject before they have painfully worked through to some degree of clarity.

Their constant difficulties, which in rare instances may be rewarded by a new insight, are due to the fact that they cannot avail themselves of the established verbal formulae or arguments which lead others smoothly and quickly to the result. But being forced to find their own way of expressing an accepted idea, they sometimes discover that the conventional formula conceals gaps or unjustified tacit presuppositions. They will be forced explicitly to answer questions which had been long effectively evaded by a plausible but ambiguous turn of phrase of an implicit but illegitimate assumption.

People whose minds work that way seem clearly to rely in some

<sup>3</sup> I did not know A. N. Whitehead personally, but from my impression of Bertrand Russell I sometimes wonder whether the two famous co-authors were not another pair of thinkers who well illustrate the contrast under discussion.

## *Two Types of Mind*

measure on a process of wordless thought, something the existence of which is occasionally denied but which at least bilingual persons seem to me often to possess. To 'see' certain connections distinctly does not yet mean for them that they know how to describe them in words. Even after long endeavour to find the right form of words they may still be acutely aware that the expression adopted does not fully convey what they really mean. They also show another somewhat curious feature which I believe is not rare but which I have never seen described: that many of their particular ideas in different fields may spring from some single more general conception of which they are themselves not aware but which, like the similarity of their approach to the separate issues, they may much later discover with surprise.

Since I wrote the preceding sections I have been struck by a further observation that certainly those of my close friends in my subject whom I regard as eminently 'masters of their subject', and by watching whom I have largely formed these ideas, seem also to be particularly susceptible to the opinions dominant in their environment and the intellectual fashions of their time generally. This is perhaps inevitable in persons who strive to command all the relevant knowledge of their time and who usually are inclined to believe that if an opinion is widely held there must be something in it, while the 'muddleheads' are much more apt stubbornly and undisturbed to go on in their own way. I do not know what significance this may have, except, perhaps, merely that the second type rarely takes the trouble carefully to study views which do not fit into their scheme of thought.

If there really are two such different types of mind who both have their contributions to make to the growth of knowledge, it may well mean that our present system of selecting those to be admitted to the universities may exclude some who might make great contributions. There are of course also other reasons which make one feel doubtful about the principle that all those, and only those, who can pass certain examinations should have a claim to a university education. The number of great scientists who were bad pupils at school and might not have passed such a test is large – and the proportion of the children who were at school very good at all subjects and later became intellectually eminent comparatively small. It seems to me also clear that the application of the now accepted principle is, in fact, lowering the proportion of the students who study because of a passionate interest in their subject.

At any rate, while I have serious doubts whether we ought to

## *Two Types of Mind*

increase further the number of those who acquire a claim to a university education by passing certain examinations. I feel strongly that there ought to be a second way where the intensity of the desire for the acquisition of scientific knowledge counts decisively. This means that it should be possible to acquire this right by some sacrifice of one's own. I readily admit that there is little relation between the strength of this wish and the capacity to pay for its satisfaction. Nor is the possibility of financing the study by current earnings from other work an adequate solution – certainly not in the demanding experimental subjects. In professional schools like law or medicine, loans to be repaid from later earnings may solve the financial problem. Yet this hardly helps in the selection of those to be enabled to devote themselves to theoretical work.

There are sacrifices, however, which are in everybody's power and which might be deemed to give a claim to the opportunity to devote oneself for a time wholly to the study of a chosen subject. If this privilege could be earned by pledging oneself for a number of years to an austere life of semi-monastic character, denying oneself many of the pleasures and amusements which at our present level of wealth youth often takes for granted, it would truly be by an effort of one's own and not by somebody else's judgment of his capacity that the passionate interest in a subject would come to count; a chance would thus be given to those whose talent will show itself only after they can immerse themselves in their special subject.

What I envisage is an arrangement by which those who chose this course would have such essentials as housing, simple food, and an ample credit for books and the like provided for them, but would have to pledge themselves to live beyond this on a very restricted budget. It seems to me that the readiness to give up for a few years some of the usual pleasures of the young is a better indication of the probability of an individual profiting from a higher education than the success in examinations in a variety of school subjects. I should also not be surprised if those who earned their right to study by such a personal sacrifice would be more respected by their fellows than those who had acquired it by passing examinations. It is probably still true and recognised that most great achievements as well as high esteem are due to a self-discipline which puts a single-minded pursuit of a self-chosen goal above most other pleasures – a sacrifice of many other human values which many of the great scientists had to bring at the most productive stage of their careers.

## *Two Types of Mind*

To be sure, even with such a system admission would require some proof of competence in the chosen field and recurrent evidence of progress in the course of the study. I would also hold up to those who, for some four years or so, stand the course with faithful observance of the special discipline, and who then show great ability, the prospect of an ample graduate scholarship with complete freedom. Even if a large proportion of those who started on this scheme fell by the wayside and either did not complete the course or showed no more than average performance, I believe such an institution would enable us to find and develop talents which without it may be lost. Indeed, it seems to me that the type that would be attracted thereby should constitute an important ingredient of any scholarly community – and a safeguard against the good examinees establishing a reign of sacred formulae under which all minds move in the accustomed grooves.