

CHAPTER VIII

CONCLUSION

It is quite evident from our discussion that the same attitude which we come across in his conception of scientific method manifests itself in his conception of economic science. It seems very unlikely that his views on logic and inductive reasoning had not played a vital part in his whole approach towards economic problems or any other social problems. It also seems unlikely that his statistical researches in economics did not influence his views as to the important part probability played in science in general.

On methodology, it has been pointed out that Jevons did not develop any specific method for social inquiry, for he believed that economic science or any other social sciences could be studied in the same objective manner as any natural or physical sciences. Many social scientists, who were interested in methodological problems but had not paid much attention to Jevons' Principles of Science, might have overlooked the significance and usefulness of his scientific method in social inquiry. Moreover, his omission of a specific or systematic analysis of the methods

of social inquiry, as Mrs. Rosamond Konekamp¹ pointed out, could have been intentional. This is because, she said, the companion volume to The Principles of Sciences, was to have been his Principles of Economics, and it was here that methods of inquiry in the social sciences would have been specifically dealt with - one of the chapter headings is entitled 'Probability,' probability being of course the fundamental concept of all scientific investigation, as Jevons himself made clear.

Jevons has rightly contended that "all the sciences meet somewhere, (and that) no part of knowledge can stand wholly disconnected from other parts of the universe of thought."² That is why it is possible to find in his diversified interests the unity of thought, as he had always examined a problem, whether it was in the philosophy of science, economics, or logic, from a definite unified standpoint.

¹ R. Konekamp, grand-daughter of Jevons, read through many of her grandfather's private papers and gave a modern assessment on his character and work in her article, "William Stanley Jevons, (1835-1882); Some Biographical Notes," in Manchester School of Economic and Social Studies, Vol. 30, 1962, p.251-273.

² W.S. Jevons, The Principles of Science, p. 154.

It appears that Jevons had found all sciences, whether of a purely formal or empirical nature, meet in logic itself. Had he lived longer, he might have been able, from the common basis of logic, to synthesise his views in both the philosophy of natural and social sciences.

From Jevons' description of economics in his Theory of Political Economy, we seem to get the impression that he seems to give the science too much of a psychological but too little of a social character. His theory of economics, we may recall, is described as "the mechanics of utility and self-interest," which is based on a "calculus of pleasure and pain." From his conception of "calculus of pleasure and pain" comes a theory of utility, whose economic importance, of course, would be difficult to exaggerate.

Despite its importance, this theory does not itself constitute the central theory of economics. It merely provides an essential datum or basis of economic reasonings, rather than as itself an integral position of the science at all. As a matter of fact, it seems more appropriate to include this theory in the applied psychology, to which the term hedonics may be attributed.

In his applied economics, we feel the unity of his conception, the freshness of approach, the

firmness of grasp, and the tenacity of scientific purpose. No wonder Marshall regards him as classical, in that he originated ideas which were capable of becoming the basis for long trains of systematic development. We cannot, as Professor Robertson says, assign to him a place below the first rank of economists in the history of economic thought.

There is no doubt that economics could become a precise mathematical science as Jevons had claimed. In fact, the present complexities in economics are so great that scientific method is making rapid progress in this direction. It is rather unfortunate, however, that Jevons had not developed explicitly that definite relationship between his mathematical logic and economic method. This probably may be the reason why some economists, though aware of the characteristics of Jevons' mind, have not been able to pursue successfully his special mathematical method.

On Jevons' application of mathematics to economics, it may be appropriate to quote Wicksteed's comments:

".....(it) was no accident, but stood in close relation to the general cast of his mind and scheme of his constructive thought. It was the same impulse that impelled him to

continue his logic machine, to attempt to ground the principles of science on the doctrine of chances, to look for the source of commercial crises in the supposed cycle of meteorological phenomena of which the spots on the sun were an indication, and to apply the principles of the differential calculus to the theory of value."³

However, a very controversial question still remains: Should mathematical techniques be applied in economics? I would have certainly agreed with Jevons, if he had merely said that mathematics ought to be as important tool in economics, but to say the economics is purely mathematical in character and that absolute use of mathematics is indispensable is, in my opinion, to over-emphasize the point. For Jevons seems to lose sight of the fact that mathematics is too abstract to be able to explain reality, too mechanistic an approach to take care of the human element in economic problems, and too static an analysis to deal with dynamic economic problems. Man is essentially unpredictable, and it is therefore difficult

³ P.H. Wicksteed, The Common Sense of Political Economy, Vol. II, London, Routledge & Kegan Paul Ltd., p. 809.

to express economic premises numerically or to arrive at any quantitative economic predictions. Even in areas where mathematics is absolutely applicable, a great dose of verbal analysis is also needed. This is very evident in Jevons' own work.⁴

I am, however, not implying that mathematics is unimportant or not applicable to economic analysis. Indeed, it is an important tool and should be applied more extensively in the solution of economic problems, but there should not be any misunderstanding in the nature of mathematics and its mode of application. Pure mathematics is not a 'language' and does not in itself prove theories. Rather, it is a powerful and excellent method of deductive, or even inductive, reasoning, and a tool for arguing and establishing conclusions from premises, which may be any self-consistent set of axioms. One ought to use mathematics only where the nature of the problem suggests this approach. For example, differential expressions and geometric curves and figures may be employed to determine the elasticity of demand, monopoly revenue, etc. But, in the solution of the problems of economics which involve

⁴ See Jevons' The Theory of Political Economy, in which much of mathematical treatment is accompanied by verbal analysis.

feelings, subjective judgement, etc., one should not over-emphasize the use of mathematics; instead, a more restrained and discreet use of it would be helpful.

It is worth noting that of all the social sciences, economics is most susceptible to mathematical treatment. This is because economics, which may be described as a science of man in relation to wealth, is more exact than the other sciences belonging to this group, and more quantitative in character, so that mathematical measurements are more appropriate and useful. As such, there is no fear of more extensive use of mathematics in economics, provided we do not lose sight of the limitations of the mathematical techniques.

Notwithstanding the limitations of the mathematical analysis, much credit should be given to Jevons for strengthening the foundation of the mathematical method.⁵ He in fact paved the way for many modern economists to

⁵ The foundation of the mathematical method was actually laid by Ceva as early as the beginning of the eighteenth century. But it was Cournot, who, more than hundred years after the first publication of Ceva's work, made extensive use of mathematics in solution of economic problems. It was left to Jevons, however, to publicise and strengthen the application of mathematics to economics, and the same tool is refined and more exhaustively applied by the later economists.

make more extensive use of mathematics in their treatises on economics. Among English treatises distinctly belonging to the "Jevonsian School,"⁶ we may cite F.Y. Edgeworth's Mathematical Psychics, in which he attempts to utilise Jevons' theory of value, (the utility theory) for establishing, on strictly mathematical lines, a science for social life, and also P.H. Wicksteed's The Alphabet of Economic Science, in which he also takes up the theory of value of Jevons, and gives a popular explanation of the fundamental theorems of the higher mathematics upon which it rests. Many others were ardent followers of the mathematical method; economists like Jenkin, Walker, Marshall, Fisher, and Pigou, etc. have all assumed a mathematical tone in their treatises on economics. It is perhaps worth noting that users of the mathematical techniques have played a leading role in exploring the dynamic properties of the Keynesian system and in investigating behaviour in the future markets.

In short, it may be said that mathematical economics is now riding high. In almost every branch

⁶ Though such a term as "Jevonsian School" has rarely been referred to, (unlike the terms "Austrian School", "German School," etc.) it should not be unjustified to make such a reference, because many mathematical economists today have actually followed quite closely Jevons' method of reasoning and analysis in one way or another, and have even attempted to make economics purely mathematical in character.

of economics, mathematical treatment has been applied by one writer or another. What is still controversial is the extent to which the mathematical techniques should be used in economics. It cannot be denied that literary analysis or verbal analysis, as opposed to mathematical analysis, has its place, too, but the degree of emphasis between the two types of analysis should depend on the nature of economic problems. Literary analysis is an indispensable ingredient in any approach, but to set up this phrase as the antithesis of the mathematical approach is neither accurate nor helpful. It, therefore, seems inevitable that mathematical analysis should go hand in hand with literary analysis. There is nothing dehumanizing in mathematics, neither is there anything degrading in language.

Jevons' works should serve as a great source of inspiration to all who seek to make more extensive use of mathematics in economics. Those who are involved in econometrics, a branch of science in which mathematical-economic and mathematical-statistical research are applied in combination, are actually taking the mathematical method a step further. Incidentally, the use of statistical techniques in economics, we may recall, has been greatly emphasized by Jevons, and economists and econometricians today would not have done him justice if they were not to acknowledge this fact. Rightly

has Jevons pointed out that deduction takes place according to the rules of logic, and since economics is essentially concerned with the nature of the connection between quantities, this science must to a great extent, (though not necessarily to an absolute degree, as Jevons seems to suggest) apply quantitative logic, that is, mathematics.

