ADAM SMITH AND THE DIVISION OF LABOUR: A BICENTENARY ESTIMATE*

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The ninth of March, 1976 saw the two-hundredth anniversary of the publication of the first edition of Adam Smith's *Inquiry into the Nature and Causes of the Wealth of Nations* and the development of a new, separate science which is now generally described as economics.[1] That this anniversary needs celebration among economists, who can all be described as the heirs of Adam Smith, does not have to be stressed. Many of these celebrations have been organised in the world,[2] and also, on a more limited scale in Australia. In writing a paper to celebrate this anniversary, an author is faced with a difficult problem of choice. Should he concentrate on a formal analysis of Smith's doctrines, as was so brilliantly done in the 150th anniversary fest-schrift[3], or should he analyse the research of Smith scholars in the last fifty years, to use the model adopted by W. R. Scott in 1940.[4] Perhaps a solution to this problem is obtained by combining aspects of these two approaches with that adopted by Professor Recktenwald in a recent paper[5] which emphasises the relevance of the *Wealth of Nations* for "today and tomorrow".

Such a combination is perhaps best achieved by concentrating on a particular aspect of Adam Smith's doctrine, by assessing the more recent research of Smith scholars in this area, and by looking at its relevance for today and tomorrow, not only for the historian of economics but also for the economic historian and the economic theorist. What better topic to select for this purpose than the topic particularly close to Smith's heart and which, at the same time, provides the foundation for his model of economic growth? I am referring of course to the division of labour, the starting point of Smith's inquiry into the nature and causes of the wealth of nations, a subject on which a substantial number of

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1 For a more detailed discussion of this generalisation, see my 'Thoughts on the Emergence of Economics as a Science', a paper delivered at the Third Conference of Economists, Adelaide (May 1973).

2 Appropriately, the University of Glasgow, together with the Royal Economic Society and the Scottish Economic Society, have organised the biggest celebration which took place in April 1976. The History of Economics Society celebrates the event at its annual conference in Chicago this year, the Ninth Conference of Historians of Economics takes place in Glasgow in September, while the Japanese and the Italians also have celebrations.

3 That is, J. M. Clark *et at., Adam Smith 1976–1926,* (Chicago, 1928).

4 W. R. Scott, "Studies relating to Adam Smith during the last fifty years", *Proceedings of the British Academy* (London, 1940).

5 Horst Claus Recktenwald, "Adam Smith Heute und Morgen", *Kyklos*, vol. 28, No. 1, 1975, pp. 5–22.

papers have been published in the last decade or so,[6] while in addition, Smith's treatment of this subject raises new questions for the economic historian,[7] and for the economic theorist.[8]

This paper will therefore concentrate on several aspects of the division of labour as the best manner of paying tribute to the sagacity and lasting relevance of the views of the author of the *Wealth of Nations.* The first part of the paper briefly outlines the importance of the division of labour to the Smithian system; the second looks at the importance of Smith's treatment of the subject in connection with education; the third examines the questions raised by the division of labour for the economic historian of the industrial revolution; while the final part assesses problems associated with the division of labour for the development of current economic theory.[9]

I

> "The first three chapters of Book I deal with Division of Labour. We are in the oldest part of the building, the part already completed in the Draft. Also, presumably because in his teaching Smith had so often gone over this subject, it is by far the most polished part of the whole. Though, as we know, there is nothing original about it, one feature must be mentioned that has not received the attention it deserves: nobody, either before or after A. Smith, ever thought of putting such a burden upon division of labour. With A. Smith it is practically the only factor in economic progress."[10]

There is little need to discuss the contents of these three chapters of the *Wealth of Nations* at length. Smith claims in the opening sentence of the book, that "The greatest improvement in the productive powers, and the greater part of the skill, dexterity and judgement with which it is anywhere directed, or applied, seem to have been the effect of the division of labour." In the subsequent discussion, he distinguished between the social division of labour or the division of society into occupations and professions, and the division of labour in manufactures or the industrial division of labour. It is the last which gets the greater emphasis—the famous pin example, probably derived from his observations of nail making in Kirkcaldy and his reading of the article, "Epingle", in Volume V

[6] That is, E. G. West, "Adam Smith's Two Views of the Division of Labour", *Economica,* 31, 1964, pp. 23–32; N. Rosenberg, "Adam Smith on the Division of Labour: Two Views or One?", *Economica,* 32, 1965, pp. 127–39; R. Hamowy, "Adam Smith, Adam Ferguson, the Division of Labour", *Economica,* 35, 1968, pp. 249–259; E. G. West, "The Political Economy of Alienation: Karl Marx and Adam Smith", *Oxford Economic Papers,* 21, 1969, pp. 1–23; R. L. Meek and A. S. Skinner, "The Development of Adam Smith's Ideas on the Division of Labour", *Economic Journal,* vol. 83, 1973, pp. 1094–1116; V. Foley, "The Division of Labour in Plato and Smith", *History of Political Economy,* vol. 6, Summer 1974, pp. 220–242.

[7] See S. A. Marglin, "What Do Bosses Do?", in *Radical Interpretations of Economic History, Review of Radical Political Economics,* VI, Summer 1974, pp. 61–112.

[8] See N. Kaldor, "The Irrelevance of Equilibrium Economics", *Economic Journal,* 82, 1972, pp. 1237–55; N. Kaldor, "What is Wrong with Economic Theory", *Quarterly Journal of Economics,* 89, 1975, pp. 347–357.

[9] Needless to say, no exhaustive treatment of these topics is offered here. A major intention of this paper is simply to indicate that the division of labour will probably supply sufficient questions to keep researchers going to 2076.

[10] J. A. Schumpeter, *History of Economic Analysis* (New York, 1959), pp. 187. Book I is of course Book I of *Wealth of Nations,* while "the Draft" refers to the early draft (1763) of *Wealth of Nations* published by W. R. Scott, *Adam Smith as Student and Professor* (Glasgow, 1937), pp. 317–360. A full discussion of changes in the treatment of the division of labour in Smith's writings (including the lecture notes taken from his lectures on the subject at Glasgow in the 1760s) is presented by R. L. Meek and A. S. Skinner, *op. cit.*

of the French *encyclopédie*—but within this industrial division of labour a further distinction is made on whether the "great number of workman" is collected or not collected "all into the same workhouse". The pin example most likely would fit the first case, the "linen and woollen manufactures", referred to subsequently by Smith, the second.[11]

"The great increase in the quantity of work, which, in consequence of the division of labour, the same number of people are capable of performing", is ascribed to three circumstances: increased dexterity, saving of time, and the invention of machines which facilitate labour.[12] Since the division of labour is more easily carried out in manufactures, it is in the manufacturing sector that costs would decline and it is this sector of the economy therefore, that is linked with increasing returns.[13] These consequences of the division of labour in turn are responsible for the tremendous rise in living standards experienced by civilised nations in the last hundred years, "or that universal opulence which extends itself to the lowest ranks of the people."[14]

Chapters 2 and 3, and the introduction to Book II discuss both the prerequisites for and the constraints on the division of labour. The division of labour is exclusively ascribed to the human "propensity to truck and barter, and exchange one thing for another." Division of labour is therefore only possible in an exchange economy, and hence is limited by "the extent of the market". The greater the market, or the potential demand for final output, the greater the division of labour that can take place. The importance of demand, as well as that of transport and communications, as factors in economic development is clearly illustrated by Smith in these chapters.[15]

A final requirement for the division of labour is given in the introduction of Book II, thereby linking the analysis of capital to that of the division of labour. In the second paragraph of this introduction, Smith demonstrates that a prior accumulation of capital must exist when the division of labour is practised, in order to maintain the labourer, "and to supply him with the materials and tools of his work till such time" that the production process has been completed and the output has been sold.[16] Later it is argued that the extent of the division of labour is in this way limited by the accumulation of capital and, in addition, that such accumulation encourages further division of labour because the capitalist wants to secure a maximum return for his advances.[17] The division of labour and the accumulation of capital are therefore strongly interrelated.

[11] Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations*, edited by E. Cannan (Modern Library edition, New York, 1937), pp. 3–6. All subsequent references will be to this edition. The various types of the division of labour referred to in the text are of considerable importance to the discussion in Part III of this paper.

[12] *Ibid.* pp. 7–10. A more detailed discussion of these three "circumstances" is given in part III below, while for the purpose of Part IV it should be noted that the division of labour was a dynamic concept for Smith, largely used for the analysis of economic growth. In this sense it is quite different from "increasing returns" as the static concept of modern economic literature.

[13] *Ibid.* pp. 6, 242–43. In subsequent pages (pp. 244–45) Smith established the dichotomy so noted in nineteenth century writings (such as the *Principles* of J. S. Mill and Marshall) of manufacturing industry with increasing returns and agriculture with diminishing returns.

[14] *Ibid.* pp. 11–12.

[15] *Ibid.* Chapters 2 and 3. The theory of development and trade sketched in Book I, Chapter 3, and at greater length in Book III, Chapters 3 and 4, illustrates Marshall's comment, "It's all in A. Smith".

[16] *Ibid.* pp. 259. A similar passage is contained in Smith's lectures; see E. Cannan (ed.), *Adam Smith's Lectures on Justice, Police, Revenue and Arms* (Oxford 1896), p. 181.

[17] Smith, *Wealth of Nations, op. cit.* pp. 260.

This summary of Smith's account of the division of labour has done little to illustrate the feature which Schumpeter found so remarkable and to which he drew attention in the quotation at the beginning of this section: the tremendous burden for the whole theory of economic growth which Smith placed on the division of labour. This particular feature of Smith's economics can be demonstrated through the use of the "growth model" developed from Book II, Chapter 3 of *Wealth of Nations* by Sir John Hicks.[18] In this model, the rate of growth of output in the economy is expressed in the following equation;

$$g = k.p/w - 1$$

where g is the rate of growth of output, measured in corn, k is the proportion of productive labour in the total labour supply (the savings ratio)[19]. p is the product *per* man year measured in corn (the productivity of labour), and w is the wage rate in terms of corn. This simple relationship provides a useful summary of the essence of Smith's economics.[20]

The rate of growth, the major topic of Smith's treatise as indicated by its title, therefore depends on "three variables: the savings ratio, the wage rate and the level of labour productivity. It is clear that a high savings ratio and high productivity imply a high growth rate, while high wages imply a low rate of growth. To appreciate the importance of the division of labour in this system, some comments must be made on Smith's expectations as regards the likely trends in these variables. In so far as k, the savings ratio was concerned, Smith argued that although accumulation had greatly increased and was still increasing, the "prodigality of the rich", especially rich landlords, would act as a severe constraint on the size of the savings ratio so that it was dangerous to place too much emphasis on its increase over time. In connection with wage rates, Smith not only argued that fast growth implied rising wages, but also that this should be the case since development which did not benefit the vast majority of the people was not worth having. In this manner, the effect on growth of the accumulation of capital was counter-balanced by rising wages.

A high growth rate therefore of necessity depended on rapid increases in labour productivity, and such increases, as Smith asserted in the first sentence of his work, depended on the division of labour. The productivity gains from the division of labour in this manner provided the major "causes of the wealth of nations". The more important policy conclusions which Smith derived from his critique of contemporary orthodoxy in Book IV to some extent depend on this result. The policy of free trade which Smith there advocated was closely linked with his ideas on the division of labour. If Smith's economic

[18] John Hicks, *Capital and Growth* (Oxford, 1965), Chapter 4. For the purpose of this analysis, Hicks assumes a simple corn economy. See pp. 36–38.

[19] In this simple model of the corn economy, the division of the labour force into productive and unproductive labour is synonymous with the division of output into saving and consumption. The proportion of productive labour in the total labour supply then equals saving as a proportion of output or the savings ratio.

[20] It also illustrates a great deal in the development of economics in the next two hundred years, when it is remembered that $p - w/w$ is the rate of profit. When $k = 1$, the simplest assumption of a propensity to save of the capitalists, the equation becomes $g = r$ where r is the rate of profit); this is the foundation of the "Cambridge theory of profits" developed by Kaldor, Kalecki and Pasinetti. See L. L. Pasinetti, *Growth and Income Distribution* (Cambridge, 1974), esp. pp. 121–122. The crucial difference between Smith and later classical economics (like that of Ricardo) is also illustrated: for Smith, p (labour productivity) rises over time owing to the division of labour; for Ricardo and the classical economists labour productivity falls over time as a result of diminishing returns in agriculture.

system is interpreted in this manner, it is only logical that the discussion of growth should commence with the division of labour.[21]

II

Smith's discussion of the division of labour was so widely accepted by his economist-successors that it was largely taken for granted and rarely critically discussed. This is illustrated, for example, by the fact that Ricardo in the ten volumes of his works made only four references to the division of labour,[22] none of which advance beyond the treatment of Adam Smith. In the work of Ricardo's leading contemporaries, the treatment of the division of labour, although more extensive, was in the same category.[23]

The one exception to this treatment of the division of labour in subsequent economic writings is associated with those authors who explicitly linked the division of labour with increasing returns. This was done by Nassau Senior,[24] but more strikingly by J. S. Mill, who in his *Principles of Political Economy* devoted a separate chapter to the division of labour which is followed by a discussion of production on a large and on a small scale.[25] Marshall's subsequent treatment of these matters,[26] which brought increasing returns to the forefront of economic discussion in the 1920s and 1930s, also hastened the demise of the division of labour in the economic literature. Increasing returns raised so many difficult problems for marginalist economic theory, that its discussion and that of its progenitor, the division of labour, were largely ignored in the analytical writings that followed.[27]

The above should not be taken to imply that Smith's treatment of the division of labour exerted little influence on the subsequent development of thought. One particular aspect of his discussion of the subject became a matter for considerable controversy in discussions of the social consequences arising from a society in which the division of labour was extensively practised. This controversy relates to Smith's opinion, given in

[21] In the light of this interpretation, I find it amazing that S. Hollander, in his recent *The Economics of Adam Smith*, pays so little attention to the division of labour. Chapter 7, on "Technical Change", devotes less than three pages to the subject while it does not even have a special reference in the index, being classed instead as "specialisation". This arises undoubtedly from the fact that Hollander wants to fit Smith into a neo-classical general equilibrium context, and not in the classical context of accumulation and growth.

[22] P. Sraffa (ed.), with the collaboration of M. H. Dobb, *The Works and Correspondence of David Ricardo* (Cambridge, 1951–1973), I pp. 94, 412; II p. 395; IV p. 25.

[23] See James Mill, *Elements of Political Economy* in Donald Winch (ed.) *The Selected Economic Writings of James Mill* (London, 1966), pp. 214–216; J. R. McCulloch, *Principles of Political Economy*, Murray reprint London, 1870, pp. 51–55. In his edition of *Wealth of Nations*, McCulloch provided few additional notes on this subject, thereby indicating that Smith's treatment in this case was still considered the last word on the subject.

[24] Senior, *An Outline of the Science of Political Economy* (London, 1951), pp. 73–82.

[25] J. S. Mill, *Principles of Political Economy*, Book I, chapters 8 and 9. Mill is critical of some of the advantages of the division of labour as listed by Smith, particularly in section 5 of Book I chapter 8.

[26] Marshall, *Principles of Economics*, Book IV, chapter 9 especially. The difficulties raised by increasing returns permeate the treatment of value in Book V, and are raised particularly in Appendix H. Edgeworth also linked the two explicitly, in his *Papers Relating to Political Economy* (London, 1925), I pp. 81–82.

[27] *Cf.* J. R. Hicks, "Thoughts on the Theory of Capital – The Corfu Conference", *Oxford Economic Papers*, vol. 12, No. 2, June 1960, pp. 128–129; F. H. Hahn and R. C. O. Mathews, "The Theory of Economic Growth: A Survey", in *Surveys of Economic Theory* (London, 1965), vol. II, p. 55. Some of these issues are explored in part IV of this paper.

Book V chapter 1 of *Wealth of Nations*, that the division of labour also exercised a harmful influence on the "labouring poor" which required State action in the form of public education.[28]

This harmful influence of the division of labour on the men who were employed in such a system of manufacturing arose from the repetitious nature of the work, and would make them "as stupid and ignorant as it is possible for a human creature to become."[29] Similar sentiments were expressed by Adam Ferguson in his *Essay on the History of Civil Society.*[30] These sociological aspects of the division of labour attracted the attention of political and social philosophers at the end of the eighteenth century, particularly in Germany, such as Schiller and Herder.

They were particularly concerned to draw out the human consequences of this growing subdivision in the functions of man, and to develop this as a humanistic critique of the new, commercial society. As Schiller put it:

> "Eternally tied to a single fragment of the whole, man himself develops into nothing but a fragment. Everlasting in his ear is the monotonous sound of the wheel which he operates. He never develops the harmony of his being, and instead of stamping the imprint of humanity upon nature he becomes no more than the imprint of his occupation and his specialised knowledge."[31]

This reduction in the humanity of man arising from his subdivision in the labour process not only fragmented man himself, as Schiller argued, but also fragmented society. Such a situation, in the view of these philosophers, was in strong contrast to classical Greek society, which formed for them the perfect society, since, being without a massive division of labour, it exhibited the harmony lost in commercial society. This aspect of the social consequences of the division of labour was not fully developed till the work of the mature Hegel and following him, in that of Marx.[32]

Like Smith, Schiller saw the solution of this social consequence of economic progress through the division of labour in the extension of education, in particular aesthetic education, which would regenerate not only the human personality but also the cohesion and harmony of society.[33] This idea was taken up by Hegel in his *Philosophy of Right* in which education is linked with the division of labour in a manner which Marx described as heretical.[34]

28 Smith, *Wealth of Nations, op. cit.,* Book V, chapter 1, Article II, "Of the Expense of the Institutions for the Education of Youth", esp. pp. 734–736.

29 *Ibid.* p. 734. This view of the division of labour has been described by one commentator as a contradiction to Smith's analysis of the division of labour in Book I. See the papers by E. G. West and N. Rosenberg in *Economica* referred to in note 6 above. To my mind, no such contradiction is apparent from a careful reading of Smith's text: the economic consequences are separated from the social consequences on the ground that the latter require government intervention. They are therefore treated in Book V dealing with public finance.

30 Adam Ferguson, *An Essay on the History of Civil Society* (Edinburgh, 1767), p. 280; see also his *Institutes of Moral Philosophy* (Edinburgh, 1769), pp. 31–32. For a discussion of the interrelationship between the ideas of these two Scottish philosophers on this subject, see the paper by Hamowy cited in note 6 above.

31 Schiller, *Briefe über die Ästhetische Erziehung der Menschen,* in *Werke,* Bonn, 1962, vol. 20, pp. 323, cited by R. Plant, *Hegel* (London, 1972), pp. 23.

32 The effect of the division of labour on the fragmentation of society are touched upon in Part III of this paper, since it more properly belongs to the economic history questions raised by this issue. Schiller's views on this subject were re-imported into England by Thomas Carlyle, and others, in the mid-nineteenth century.

33 Schiller, *op. cit.,* pp. 326.

34 See Marx, *Capital* (Moscow, 1959), I p. 363 n. 3.

Hegel's remarks on the division of labour in this work occupy only a few brief paragraphs which contain all the essential elements of the theory: rising productivity of labour, the interdependence of mankind in the exchange economy and the co-ordination which this requires, the fact that labour becomes more and more mechanical and therefore less stimulating, "until finally man is able to step aside and instal machines in his place."[35]

Education, Hegel argued, has precisely the opposite effect on man. "The multiplicity of objects and situations which excite interest is the stage on which theoretical education develops. This education consists in possessing not simply a multiplicity of ideas and facts, but also a flexibility and rapidity of mind, ability to pass from one idea to another, to grasp complex and general relations, and so on."[36] In contrast to the fragmentation of man's personality by his labouring activity conducted under a division of labour, is the "growth of the universality of thoughts [which] is the absolute value in education."[37] In this manner education acts as the countervailing force to the harmful social consequences of the division of labour.

It is not the purpose of this section of the paper to develop the history of ideas on education and division of labour[38] but rather to raise the question whether these high expectations of the value of universal education in this connection have in fact been realised, or to put it more strongly, whether they can be realised. At the present time especially, it can be argued that the education process itself has been absorbed into the division of labour, and that man, as a result of his modern, specialised education, has "become no more than the imprint of his occupation and his specialised knowledge", to quote Schiller's remarks once more. It is this aspect of education and the division of labour, particularly the division of labour in the education of economists, on which I want to make a few comments in this context, though I hasten to add that these comments are not nearly as fully developed as they should be.

It need not be stressed that the division of labour is now practised intensively in the study of economics. It is not only a separate discipline removed from related subjects such as history, sociology and politics; it has also subdivided into branches of learning which are becoming independent specialisations. The broad division of the subject into micro- and macro-economics is one example, the development of a separate labour economics, monetary economics, international economics, public sector economics, development economics and industry economics, indicates a further trend in this process.

As a teacher of the subject it is easy to see the advantages of this phenomenon: everything cannot be taught at once, and subdivision as a pedagogic device is useful in the teaching and learning process. At the same time, the explosion in publication and to a

[35] Hegel, *Philosophy of Right,* translated with notes by T. M. Knox, Oxford, 1962, pp. 129. To restore cohesion in the exchange economy, Hegel appeals to the state (following Sir James Steuart) rather than to the "invisible hand" of Adam Smith. His final comment on mechanisation and the division of labour is looked at further in Part III of this paper.

[36] Hegel, *ibid.*, pp. 129.

[37] *Ibid.*, pp. 29.

[38] In the first instance, this would require a lengthy analysis of Marx's views on the subject in *Economic and Philosophic Manuscripts* (1844) and in *Capital op. cit.* I Chapter 14. Opposing views to this argument were put by editors of Smith's *Wealth of Nations* in the nineteenth century, namely McCulloch and Garnier. See McCulloch, edition of *Wealth of Nations* (Edinburgh, 1850), pp. 350 n. 1. See also the paper by West on alienation, *op. cit.* and the literature there cited, and P. N. V. Tu, "The Classical Economists and Education", *Kyklos,* vol. 22, 1969, pp. 691–716.

lesser extent in knowledge in these areas makes it virtually impossible for the academic to keep abreast with the advances in all these branches of learning. Finally, there are the various occupational pressures which force specific specialisations on particular students.

The disadvantages of this development are less frequently mentioned. For example, the subdivision of the subject into micro- and macro-economics has had some disastrous consequences, particularly for the study of inflation. Secondly, the process of specialisation in the study of economics in the universities may lead to the production of graduates who have relatively little or no knowledge of such important aspects as monetary economics, public finance, planning and labour economics, and who can therefore hardly be described as adequately trained economists. Finally, there is the more general problem of the costs involved in the subdivision of economics as a separate subject away from other closely related subjects. During the nineteenth century, and again strongly in the last decade or so, there were and are many people who have lamented the separation of sociology and politics from economics, and the creation of a separate economic history.[39] In the twentieth century there has been as much, if not more emphasis on the fact that the economist's education is not complete without a reasonable degree of knowledge in mathematics and statistics, not to mention econometrics. Others have stressed the importance of legal studies and accounting knowledge for the proper understanding of economic phenomena. Here is another stultifying consequence of the division of labour in economics, with frequently disastrous consequences for the understanding of important economic problems.[40]

Enough has been said on this subject to indicate that education in general is not necessarily the complete answer to the problems raised by a division of labour for society as a whole, since the examples drawn from the education of economists are in principle applicable to virtually every other discipline. Here therefore is one question raised by Smith in connection with the division of labour which is one legacy from the *Wealth of Nations* whose value has not been dissipated.

III

The second problem raised by Smith's treatment of the division of labour for contemporary thought is connected with economic history, and in particular with the treatment given to the division of labour in discussions of the causes of the "Industrial Revolution" in England. Although it is generally agreed that Smith was a shrewd and intelligent observer of economic development in the England and Scotland of his day,[41] and while it has already been demonstrated that Smith regarded the growth of the division of labour as a major factor in this economic development, the division of labour in so far as I have

39 For the nineteenth century, two prominent examples are J. K. Ingram and Alfred Marshall; in the twentieth century such views have been expressed in many presidential addresses to economic societies (*e.g.*, those of Phelps Brown and Worswick published in the *Economic Journal*, 1971). Part of this dissatisfaction with the state of economics is reflected in the call for a revival of political economy.

40 The solution to this has been found in inter-disciplinary studies, the combinations of subjects offered by faculties, boards of study and schools, but these of course only provide a partial solution.

41 See, for example, S. Hollander, *The Economics of Adam Smith, op. cit.* and R. Koubner, "Adam Smith and the Industrial Revolution", *Economic History Review*, vol. X, No. 3, 1959.

been able to ascertain receives only scant attention in the economic history discussions of the industrial revolution.[42] It is the contention of this section that Smith himself was partly to blame for this oversight in historical investigation since his analysis concentrated to some extent on the wrong features of the productivity gains ascribed to the division of labour to the neglect of others.[43]

To simplify this discussion of a complex historical issue, recourse may be had to the, in some ways admirable, *Theory of Economic History* of Sir John Hicks which includes a general analysis of the industrial revolution.[44] Summarised briefly, Hick's argument is that the industrial revolution is nothing but "the rise of modern industry" and not the rise of industry as such, which raises the question of the characteristics of *modern* industry. For Hicks, modern industry is characterised by *fixed* capital while early handicraft and domestic industry is associated with *circulating* capital, capital that is rapidly turned over, and which essentially arose from merchant's capital. For Hicks, the crucial element in the explanation of the industrial revolution is the transformation of circulating into fixed capital or the replacement of handicraft (domestic) industry by factory industry.

This transformation in turn is ascribed to two factors: financial developments in the eighteenth century in England and science. The first resulted in declining interest rates as capital (loanable funds) became less scarce, while the financial developments were themselves constituted in institutional changes in banking, credit and the capital market which increased the liquidity of investment and thereby made it less risky. Secondly, there is the factor of science, technological change and innovation, and in particular as Hicks points out (p. 147) the developments of the machine tool industry which allowed construction of machines and which thereby greatly increased the efficiency of mechanisation through greater precision in the tool making process. In this discussion, Sir John Hicks has neglected the role of the division of labour, which, I would venture to argue, links his two factors more closely to the historical phenomenon of the industrial revolution.[45]

The division of labour, first of all, is strongly linked with this process of the transformation of circulating into fixed capital, a fact appreciated by some eighteenth century economists but not particularly by Adam Smith.[46] In eighteenth century England, there

42 A check on some standard economic history treatments reveals this lack of concern. This includes early works such as Arnold Toynbee, *Lectures on the Industrial Revolution of the Eighteenth Century in England* and those of William Cunningham, as well as more modern works such as Paul Mantoux, *The Industrial Revolution in the Eighteenth Century* (London, 1961); T. S. Ashton, *An Economic History of England in the Eighteenth Century* (London, 1964) and his *The Industrial Revolution 1760–1830* (Oxford, 1948); Phillis Deane, *The First Industrial Revolution* (Cambridge, 1967); Charles Wilson, *England's Apprenticeship 1603–1763* (London, 1967); and R. M. Hartwell (ed.), *The Causes of the Industrial Revolution in England* (1967), who, in his "Essay on Methodology" on the causes of the industrial revolution included in this collection, lists "more roundabout and larger-scale production (*e.g.*, enclosures and factories with greater division of labour..." (pp. 58) without developing this to any extent in the subsequent discussion. In his elaboration of technical change, his second cause of the industrial revolution (*ibid.*, pp. 68–71), the division of labour is not even mentioned.

43 The inspiration for this section of the paper is derived from S. Marglin's stimulating analysis in "What Do Bosses Do", *loc. cit.*

44 J. R. Hicks, *A Theory of Economic History* (Oxford, 1969), Chapter 9.

45 The only references to the division of labour are in the early sections of the work and are largely related to pre-(modern) industrial societies. See *ibid.*, esp. pp. 22–23.

46 Adam Smith, in his introduction to Book II of *Wealth of Nations*, largely treats the capital requirements of a division of labour in terms of circulating capital. (*Op. cit.*, pp. 259–261) Turgot, on the other hand, in the second part of his *Reflections*, linked the division of labour not only to circulating capital but to large scale fixed capital investment as well. See P. D. Groenewegen, "A Re-interpretation of Turgot's Theory of Capital and Interest", *Economic Journal*, vol. 81, June 1971, esp. pp. 332–333.

were in addition some specific features attached to the role of the division of labour in this transformation process. These arose from the saving in circulating capital which could be achieved by such a re-organisation of production within the one building or factory, because of the particular difficulties associated with domestic industry in this period. To analyse this further requires a brief summary of some of the features of this domestic organisation of industry as practised in the mid-eighteenth century.[47]

Domestic industry in eighteenth century England was a mode of production in which the workers-craftsmen furnished generally their own tools and equipment, as well as the workshop (generally a part of the home) but in which the materials were supplied by merchants who also disposed of the finished goods. The scanty fixed capital required was therefore supplied by the owner/manufacturer, while the circulating capital in materials, work in progress and finished goods was advanced by the merchant/capitalist. As Ashton points out, "The larger the time occupied in production, the greater the capital cost" to the merchant, especially to one who was putting out too many domestic workers.[48]

As Ashton also points out, there were many factors at work in eighteenth century England which made this particular form of the production process lengthy rather than short. "Many domestic workers were accustomed to give Sunday, Monday, and sometimes Tuesday, to idleness or sport." Such attitudes to work were possible because the worker himself remained in control of the hours worked, and were encouraged by the low grain prices which characterised the middle of the eighteenth century, and which made vitriolic complaints about the "idleness of the poor" a common phenomen in the contemporary economic literature.[49] Such work habits and lack of discipline in the workforce would have greatly lengthened the time period of production and thereby the capital cost.

A further wasteful feature of the domestic system was theft, fraud and embezzlement. ". . . textile workers mixed butter and grease with the fabric to increase the weight, and nailmakers substituted inferior iron for the rods they had received from the warehouse. Filching of materials was widespread. Acts of Parliament, with increasingly heavy penalties, were passed in 1703, 1740, 1749 and 1777, in an attempt to check it, and in the last of these years the employers were given the power to enter shops or outhouses for the purpose of search."[50] Again, it seems an easy conclusion that such practices greatly increased the costs of production of the putting out system.

Finally, Ashton mentions a "tendency for employers to spread work lightly over a large number of workers, partly to ensure that they would not be short of labour in times of pressure."[51] When transportation was slow, and above all, expensive, this must

[47] The account of the features of English domestic industry draws heavily on T. S. Ashton's economic work. See especially, his *The Industrial Revolution 1760–1830, op. cit.*, pp. 49–57.

[48] T. S. Ashton, *An Economic History of England. The Eighteenth Century, op. cit.*, pp. 111–112, *cf.* pp. 100–101.

[49] Ashton, *Industrial Revolution*, pp. 51, 54, see also Dorothy Marshall, *The English Poor in the Eighteenth Century* (London, 1926), pp. 32–33; for contemporary accounts see William Temple, *The Case as it stands between the Clothiers, Weavers and other Manufacturers* (London, 1739); *A Vindication of Commerce and the Arts* (London, 1748); J. Cunningham, *Considerations on Taxes as they are supposed to affect the Price of our Labour* (London, 1765). A detailed discussion of this issue is given in E. S. Furniss, *The Position of the Labourer in a System of Nationalism* (New York, 1920).

[50] Ashton, *Industrial Revolution, op. cit.* p. 54.

[51] *Ibid.* p. 55.

have raised the time of production and the costs even further.[52] Is it any wonder, therefore, that this type of manufacturing organisation was spurned by the newly developing industries, because the inefficiency and the costs of the traditional industries were so plain to see to the intelligent observer.

A division of labour which combined these processes under the one roof (a possibility noted and appreciated by Adam Smith)[53] would therefore mean a re-organisation of production which was particularly productive though the saving of circulating capital obtained by cutting the time period of production through the elimination of the time and expense of a great deal of transport, by the removal of many opportunities for embezzlement and theft of the materials and finished goods, and, above all, by the supervision and disciplining of a workforce which was characterised by absenteeism, drunkenness and other vices from the point of view of the employer. It is precisely this aspect of the "productivity" consequences of the division of labour which is absent from Smith's treatment in the *Wealth of Nations.*

Professor Marglin, in his paper, makes this point even more strongly:

> "It will be argued . . . that the agglomeration of workers into factories was a natural outgrowth of the putting-out system (a result, if you will, of its internal contradictions) whose success had little or nothing to do with the technological superiority of large-scale machinery. The key to the success of the factory, as well as its inspiration, was the substitution of capitalists' for workers' control of the production process; discipline and supervision could and did reduce costs *without* being technically superior."[54]

To prove this point, Marglin brings considerable evidence forward in support of this view from both the contemporary literature and from modern research into English economic history.[55] What is more relevant for the immediate purposes of this paper, he also devastatingly criticises the three grounds which Smith had listed[56] in support of his assertion about the high productivity of the division of labour.[57]

The first of these grounds, the saving of time, was indeed important, but not in the sense that Smith meant; enough has been said on this aspect to make further elaboration unnecessary. Smith's second argument about improved dexterity was probably not very important in the areas to which he applied it–unskilled labour quickly gained a high level of proficiency in its simple tasks under a division of labour–the motto, "practice makes perfect" applies with much greater force to skilled occupations, such as the work of the surgeon, the opera singer, the actor, the musician, the buffoon, all those occupations classified by Smith as unproductive labour. Finally, there is the third ground of a great propensity to invent as a result of the division of labour. Again, in the way Smith presented the matter, the gains from such on-the-job improvements were probably quite

52 Ashton, *Economic History of England, op. cit.*, pp. 102, where he states: "It is said that in the hosiery trade in the East Midlands as much as two and a half days a week might be taken up in getting orders and materials, returning finished work and collecting wages."

53 A. Smith, *loc. cit.*, p. 4. *Cf.* the remarks in *ibid.* p. 260 on the necessity of the capitalist to maximise the return on his advances of circulating capital which Smith argued elsewhere could be best done by reducing the turnover period of that capital. (*Ibid.*, pp. 112–114).

54 Marglin, *op. cit.*, p. 84.

55 Marglin, *op. cit.*, pp. 81–95, 102.

56 Smith, *Wealth of Nations, op. cit.*, p. 7.

57 Marglin, *op. cit.*, pp. 64, 66–70.

small; nevertheless, this particular aspect of the division of labour was important in a sense which was developed further by Marx, possibly from a suggestion in Hegel.[58]

To conclude the argument about the interrelationship between the division of labour and the transformation of circulating into fixed capital, which for Hicks is the essence of the industrial revolution, a few final comments may be made. It has been argued that the division of labour *when carried out in the one building*, saved circulating capital thereby reducing its relative importance in manufacturing substantially. At the same time fixed capital investment in buildings, and later in machines, substantially increased. This substitution was due not so much to the superiority of the new method of production—the techniques of production remained substantially the same for much of the eighteenth century in those industries where the domestic mode was important—but due to the organisational superiority of the new method. It is these organisational features (which preceded the technical innovations) which are also so frequently neglected in the economic history accounts of the industrial revolution.[59]

The second factor listed by Hicks as important in the rise of modern industry is "science", or to put it more precisely, technological progress especially in machine tool development and precision engineering. Here again, there is a close relationship with the division of labour, which Marx analysed in some detail[60] and which he concisely summarised at the end of his chapter on the division of labour:

> "One of its (*i.e.* manufacturing industry under a complex division of labour) most finished creatures was the workshop for the production of the instruments of labour themselves, including especially the complicated mechanical apparatus then already employed. A machine factory, says Ure, "displayed the division of labour in manifold gradations—the file, the drill, the lathe, having each its different workman in the order of skill." This workshop, the product of the division of labour in manufacturing, produced in its turn—machines. It is they that sweep away the handicraftsman's work as the regulating principle of social production."[61]

The argument in this section provides considerable evidence on the importance of the division of labour as a leading explanatory factor of the industrial revolution. To a large extent this argument supports and unifies the explanation given by Sir John Hicks, and in this manner transcends it by concentrating on the organisational features of the division of labour and the important consequences that flowed therefrom.[62] Furthermore, this analysis vindicates the intuitive emphasis placed upon the division of labour as a factor in economic development by the author of the *Wealth of Nations*, despite the faults in his analysis which have been noted.

58 This will be developed later in this part, since Marx's argument was that there was a strong connection between the division of labour and the technological progress in the machine tool industry in the nineteenth century. Hegel's argument (*Philosophy of Right, op. cit.*, p. 129) that as labour becomes more and more mechanical, it is easier to replace such labour by machines, has already been quoted.

59 In his *Economic History of England,* Professor Ashton made the observation that the organisational features of the manufacturing process in the industrial revolution have not received the attention they deserve. (*op. cit.*, p. 122).

60 Marx, *Capital, op. cit.*, I pp. 341–342 which gives examples from the tool making industry in Birmingham. See also *ibid.* pp. 371–386.

61 Marx, *ibid.* p. 368. The quotation from Ure is from Andrew Ure, *The Philosophy of Manufacturers,* second edition (London, 1835), p. 21.

62 Two of these important consequences are the factory system and the mechanisation of industry; these in turn led to the sharp division of society into a capitalist and a labouring class.

IV

The final task of this paper is to assess the relevance of the division of labour to contemporary economic theory. Earlier,[63] it has been argued that the linkage between the division of labour and increasing returns in manufacturing industry, which had already been made by Smith, and which was developed in the work of Senior, J. S. Mill and above all Marshall, led to a decline in the treatment accorded to this topic in twentieth century literature because increasing returns raised so many difficulties for marginalist economic theory. These difficulties, as is well known, related to implications of increasing returns for competitive theory,[64] and more recently, to the difficulties raised for general equilibrium analysis on the same score.[65]

Little purpose would be served in a general paper such as this, to enumerate the difficulties raised by increasing returns for theories of competitive equilibrium, whether general or partial. Aspects of these difficulties were covered by Marshall's analysis in Appendix H of his *Principles*.[66] In addition, increasing returns highlight factors of "change of another order" which lie, by definition as it were, outside the realm of equilibrium economics.[67]

These factors of change are aspects of economic development associated with increasing returns, that is, with its dynamic and historical connotations, and were emphasised in Allyn Young's very important paper, "Increasing Returns and Economic Progress", published in 1928. The more important issues raised in this paper were summarised by Young in the following manner:

(1) "the mechanism of increasing returns is not to be discerned adequately by observing the effects of variations in the size of an individual firm of a particular industry, for the progressive division and specialisation of industry is an essential part of the process by which increasing returns are realised. What is required is that industrial operations be seen as an interrelated whole."[68]

The point made here is not a plea for general equilibrium analysis but, as has frequently been pointed out,[69] it is a comment on the relevance of equilibrium economics for understanding the processes of economic progress. As Young succinctly put it elsewhere in his paper, "change becomes progressive and propagates itself in a cumulative way.";[70] something which alters the conditions of industrial activity in one sphere sets up a chain reaction in other, related industries, which in turn affects other industries. Far from the

63 See above, Part II, first two paragraphs.

64 See especially, P. Sraffa, "The Laws of Returns under Competitive Conditions", *Economic Journal*, 1926. A good survey of the controversy is in G. L. S. Schackle, *The Years of High Theory* (Cambridge, 1967), chapter 3.

65 See, *e.g.*, F. H. Hahn, "On the Notion of Equilibrium in Economics" (Cambridge, 1973), where he argues: "The first point to emphasise is that an Arrow-Debreu equilibrium *may* exist when there are increasing returns. Not only is this so when these increasing returns are not internal to the firm, but even if they are, *provided they are not too large*." (pp. 12–13, my italics). See also p. 32.

66 Marshall, *op. cit.* Appendix H, esp. pp. 805–808.

67 A. Young, "Increasing Returns and Economic Progress", *Economic Journal*, vol. 38, No. 4, 1928, pp. 528, 533.

68 *Ibid.* p. 539.

69 N. Kaldor, "What is Wrong with Economic Theory", *op. cit.*, p. 355; F. H. Hahn, "The Winter of our Discontent", *Economica*, vol. 40, 1973, p. 327; Joan Robinson, *History versus Equilibrium*, Thames Papers in Political Economy, London, 1974.

70 A. Young, *op. cit.*, p. 533.

initial change leading to a new, stable equilibrium position, the effect of such changes is to set up a whole series of further departures from equilibrium. In such an analysis, there is no role for the stable equilibrium position of equilibrium economics.

(2) "the securing of increasing returns depends upon the progressive division of labour, and the principal economies of the division of labour, in its modern forms, are the economies which are to be had by using labour in roundabout or indirect ways."[71]

In this way, as Kaldor has argued, the accumulation of capital and consequent capital deepening, "becomes a by-product rather than a cause of the expansion of production."[72] This is in fact the picture displayed in the previous analysis of the role of the division of labour in the industrial revolution in England. This interrelationship between capital deepening and the scale of operations also plays down the role of relative factor prices in such a process, as compared with the traditional, Austrian variant of capital theory.[73]

This is not the place to develop these subjects at length, but rather to draw out the basic point of difficulty for equilibrium theory from this process of "circular and cumulative change". As Hahn has summarised it, "at the point, when large historical vision is at issue, equilibrium economics is inadequate to the task."[74]

These arguments of Kaldor, Hahn and above all, Allyn Young, demonstrate the irrelevance of equilibrium economics to some important economic problems, while they also demonstrate the necessity to give increasing returns far greater prominence in the literature of economics. Without this, a great deal of contemporary economic theory must remain a more or less empty box. It is true that it can be argued with Hicks that such a procedure means the sacrifice of a great deal of elegance in economic analysis and the scrapping of a great many "economic laws" but surely, in the interest of the economic science whose birth is celebrated in the bi-centenary of the *Wealth of Nations*, such sacrifices may in the long run be repaid by the benefits of an increased relevance of the theory and the better understanding of the economic phenomena which are to be studied and explained. To brush increasing returns and the division of labour under the carpet "the *usual* assumption of increasing relative marginal costs"[75] may be analytically quite rewarding, but is it good science?

Smith's treatment of the division of labour (which incidentally is far more extensive and rewarding than this short paper can portray) remains therefore as fresh and stimulating in 1976 as it must have appeared in 1776. This is perhaps the greatest tribute that can be paid to an author on the two-hundredth anniversary of the first publication of his *magnum opus*.

[71] *Ibid.* p. 539.
[72] N. Kaldor, "What is Wrong with Economic Theory", *op. cit.*, p. 355.
[73] *Cf. ibid.*, p. 356, and his "The Irrelevance of Equilibrium Economics", *op. cit.*, p. 1242.
[74] F. H. Hahn, *On the Notion of Equilibrium in Economics, op. cit.* p. 32.
[75] P. A. Samuelson, "Diagramatic Exposition of a Theory of Public Expenditure", in R. W. Houghton (ed.), *Public Finance*, Penguin Modern Economic Readings, second edition, 1973, pp. 191–192 (my italics in the quotation).