

In the course of doing so, Longfield took J.B. Say's correct but vague productivity theory of factor incomes, and worked out, for the first time, a remarkable marginal productivity theory of the rental prices (i.e. prices per unit time) of capital goods (which Longfield oddly called 'profits', in a typical confusion of returns on capital with the pricing of capital *goods* that has plagued economics since the early nineteenth century). Working out the specifics, Longfield showed that the price of each machine will tend to equal the marginal productivity of the machine, i.e. the productive value (in terms of value of their products) of the least productive machine which it pays to keep employed on the market, i.e. the marginal machine.

Thus, for the first time, in an unknowing echo of Turgot, Longfield used the proper *ceteris paribus* method of analysing productive returns, holding one factor or class of factors constant, varying another set of factors, and analysing the result.

Longfield stopped there in his brilliant pre-Austrian contribution, applying marginal productivity analysis only to capital goods. He was content that the analysis showed that wages – the residual labour income left over after payment to capital – rose as the marginal productivity of capital goods fell with each increase in the amount of capital. In short, the accumulation of capital led to an increase in wages. Furthermore, Longfield demolished any Malthusian fears totally. Not only was hard-core malthusianism long in the discard, but even the soft-core emphasis on the workers' customary level of wages as determining the supply of labour had the causal chain reversed. Instead, custom, he sensibly pointed out, is guided by the actual prevailing market wage rather than the other way round. As an anonymous Irish follower wrote in the *Dublin University Magazine* a decade later (July 1845), custom will render it suitable to be paid whatever the prevailing wage rate may be, while it would be considered disgraceful to be paid below that norm. Hence the demand for labour, rather than its supply, will dominate the determination of the market wage.

Longfield's further demolition of even soft-core Malthusianism pointed out that population growth can have a favourable effect by widening the market for manufactured goods, thereby raising the marginal productivity of capital goods across the board. Hence population can grow, capital can develop, and both capitalists and workers will benefit – a far more realistic picture of capitalist development than the Ricardian.

Longfield's successor and disciple Isaac Butt, however, was not content to stop there, and he provided an outstanding development of the Longfieldian analysis. In the first place, Butt took the crucial step of seeing that Longfield's marginal productivity analysis could be generalized from capital goods to *all* factors of production: to wages, and to land rent. Each of these classes of factors could be analysed in terms of marginal productivity, and the result

would be that each of them would obtain the return, or price, of the least productive factor profitable to be employed on the market (the marginal labourer or acre of land). Thus, whatever kernel of sense there was to the Ricardian differential return theory of land rent, was isolated and incorporated into Butt's brilliant pioneering generalized theory of marginal factor pricing.

Not only that: Butt also built on Say's utility analysis and correct but vague productivity analysis, and integrated it at least in outline, with generalized Longfieldian marginal productivity theory. In short, in a prefiguring of the Austrian Menger-Böhm-Bawerk insight, the value of consumer goods, determined by the subjective utility of the goods to consumers, is imputed back on the market to the values of the various factors of production, which will be set equal to the marginal value productivity of each factor. Thus the unit price of every type of factor will tend to be equal to its marginal value productivity as imputed back through the competitive market process from the subjective utility of the final products.

Unfortunately, this excellent Say-Longfield-Butt tradition of productivity theory had no influence and no successors. Although Senior, as a fellow Whatelyan, certainly knew Longfield's work, he never referred to him or to Butt, and even Longfield's Irish successors at Trinity College, Dublin, while continuing the utility theory of value, neglected the corollary theory of imputation and productivity.

It is true that Longfield's marginal productivity analysis gained one faithful follower in England, Joseph Salway Eisdell, whose two-volume work, *A Treatise of the Industry of Nations* (1839), propounded a sophisticated version of the Longfieldian theory. The book by the unknown Eisdell, however, sank without trace, gaining no reviews in the journals, or citations anywhere else.

But if factor pricing had been analysed, what of profits? If profits could not be explained simply as a residual, then they had to be explained directly, and so some economists began to search for a satisfactory theory of what would determine long-run profits or what would later be called long-run interest return. For one thing, it was pointed out that Ricardo erred greatly in assuming instantaneous and total mobility of capital, and there was a harkening back to the more realistic outlook of Adam Smith. A writer in *Monthly Review*, in 1822, for example, stressed 'the impracticability of transferring capital and the personal acquirements of skill from one business to another'.

But if profits were only uniform as a long-run tendency, what explained them? Malthus moved closer to the correct view, in the *Quarterly Review* in 1824, by stressing that whereas rents are determined by productivity, profit, for example, that is earned in keeping wine and selling it when it matures, is due to 'waiting', and the longer the waiting the greater the margin of profit.

A particularly important contribution to the journal literature pointed to the eventually correct theories of profit and interest. This was an article by

William Ellis (1794–1872) in the Benthamite *Westminster Review* for January 1826. In a highly sophisticated analysis of saving and investment, Ellis pointed out that saving is induced by ‘the expectation of greater enjoyment from deferred than immediate consumption’, while, on the other hand, investment is called forth by the expectation of profit. In the course of analysing investment, Ellis, with great perceptiveness, distinguished between profit as a return to risk taking as against interest as a return on savings that may also carry a risk premium.

Particularly interesting was Ellis’s pioneering risk theory of profits. ‘The largeness of the profit’, he maintained, ‘must be proportioned to the risk incurred in drawing treasure from the hoard and employing it in production’. He also keenly stressed the importance of a large expected profit for undertaking technological innovation. New technology is ‘untried’ and its introduction must overcome ‘the loss of superseded machinery, the want of skill and practice, in workmen and the uncertainty of the result, all unite in preventing the adoption and application of that which is untried’. Chiding previous writers for ignoring innovation and its problems, Ellis pointed out that its difficulties ‘are only conquered ... by the prospect of the great additional profit, with which the adopted invention is expected to be accompanied’.

Ellis also introduced separating out the elements of ‘gross profit’ in a business firm, and distinguishing them from long-run normal interest. Where an entrepreneur uses his own capital exclusively, his gross profit, Ellis perceptively pointed out, can be broken down into premium for risk, remuneration for the entrepreneur’s labour and supervision, and, finally the ‘remuneration for the productive employment of his savings, which is called interest’. Productive loans in business tend to comprise the interest part of gross business profit.

Who was William Ellis who contributed such a startlingly perceptive and advanced article to one of Britain’s distinguished journals? Apparently this was Ellis’s sole foray into economics. Born in London, Ellis became a non-conformist missionary, and spent his life working and travelling for the London Missionary Society. Sent to Polynesia from 1816 to 1824, Ellis, who had worked as a gardener in his boyhood, acclimatized many tropical fruits and plants in Polynesia, and also set up the first printing press in the South Seas. The fruits of this labour appeared in his two-volume *Polynesian Researches* (1829). His interest in the theory of profits soon upon his return from his first Polynesian sojourn appears to have been a sport in Ellis’s busy missionary career.

While he was not as perceptive as Ellis, a similar analytic division of gross and net profits was contributed by the Scottish philosopher Sir George Ramsay (1800–71), in an unknown and unremarked work, *An Essay on the Distribution of Wealth* (1836). While much of the book was Ricardian, Ramsay

adopted the concept of entrepreneur from the French, and he too broke down the gross profits of capital into interest on the use of capital, and the ‘profits of enterprise’, which was in turn divided into wages of management and superintendence, and payment for the risk incurred by the ‘masters’, or entrepreneurs. Ramsay pointed out that, analytically, entrepreneurs receive the profits of enterprise, while capitalists receive interest or ‘profits’ on capital. In practice, however, the two returns are generally combined as the gross profits of capitalist entrepreneurs.

Ramsay was also the first Briton to adopt Destutt de Tracy’s analysis of the process of production as either change of the form of matter, or the geographical place, to which Ramsay added, a change in time.

4.10 Abstinence and time in the theory of profits

If profit were perhaps related to risk, what then accounts for the long-run ‘interest’ component of business profits? The dominant explanation for long-run interest in British economics soon became the abstinence theory of interest.

The first presentation of time as the determinant of interest came from a theory related but superior to abstinence: Samuel Bailey’s pioneering time-preference theory. Bailey’s discussion came in the course of his brilliant demolition of Ricardo’s labour theory of value and his championing of an alternative utility theory. Bailey begins his discussion of time and value by noting that if one commodity takes more time than another for its production, even using the same amount of capital and labour, its value will be greater. While Ricardo admits a problem here, James Mill in his *Elements of Political Economy* indefatigably asserts that time, being ‘a mere abstract word’, could not possibly add to anything’s value.

Rebutting Mill, Bailey points out that ‘every creation of value’ implies a ‘mental operation’ – in short, a subjective analysis of value. Given a particular pleasure, Bailey went on, ‘We generally prefer a present pleasure or enjoyment to a distant one’ – in short, the omnipresent fact of time-preference for human life. Thus:

We are willing, even at some sacrifice of property, to possess ourselves of what would otherwise require time, to procure it, without waiting during the operation ... If any article were offered to us, not otherwise attainable, except after the expiration of a year, we should be willing to give something to enter upon present enjoyment.

Considerations of time-discount influence buyers, sellers and capitalists, as well as both parties who realize, for example, that wine gains value by being kept for longer periods of time. Bailey, interested in rebutting labour and other objective theories of value rather than explaining interest *per se*, did not press on to explain time-preference as the basis of interest nor to discuss the time-discount rate. But his analysis clearly paved the way for the later Aus-

trian time-preference theory, although Böhm-Bawerk, the creator of the theory, remained unaware of Bailey's insights.²⁴

Six years later, G. Poulett Scrope – despite his unfortunate fringe views on Say's law – made an important contribution to profit (or interest) theory, by pioneering an abstinence theory of interest. Writing in the *Quarterly Review* for January 1831, Scrope deplored the absence of any genuine theory of profit in Ricardo, and proceeded to set forth an abstinence theory.

Despite Böhm-Bawerk's uncharitable strictures on the more highly developed abstinence theory of Nassau Senior, there is not a great deal of difference between the abstinence view and the later, and more sophisticated, Austrian theory of time-preference. Profit, said Scrope, was 'the compensation for abstinence from immediate gratification' involved in saving and investing rather than consuming. But Scrope did not stop at outlining an abstinence theory; much of profit, he pointed out, is the narrow form of profit identical with interest. What is vulgarly called 'profit', as Scrope called it, is identical with Ellis's 'gross profit'. This consists, Scrope went on, of interest on capital + insurance against the risks of business + wages for the superintendence labour of the capitalist. Scrope also added monopoly rent, in which he lumped the possession of superior soil or location along with the gains from patented inventions or processes.

But the *locus classicus* of the abstinence theory was the lectures of Nassau W. Senior. It is true that they were not published until 1836, when they were published as the *Outline of the Science of Political Economy* (and also as the article on 'Political Economy' for the *Encyclopedia Metropolitana*), but they were delivered earlier as lectures at Oxford in 1827–28.

Senior pointed out that savings and the creation of capital necessarily involve a painful present sacrifice, an abstinence from immediate consumption, which would only be incurred in expectation of an offsetting reward. Unfortunately, Senior lacked the concept of time-preference, so he was fuzzy about the specific motivation that would lead people to prefer present to future consumption. But he came to very similar conclusions, relating the degree of abstinence-pain (or, as the Austrians would later put it, time-preference for the present over the future) to 'the least civilized' peoples and the 'worst educated' classes, who are generally 'the most improvident, and consequently the least abstinent'.

Even more interesting and valuable than Senior's abstinence theory was his developed theory of capital, which strongly anticipated the Austrian doctrine. For Senior saw that factors of production could be divided into two classes: the original, primary ones: land (or natural resources) and labour; and all the secondary, intermediate goods which are produced by the joint efforts of the primary factors (as well as pre-existing intermediate factors). Eventually, the intermediate factors are transformed into consumer goods

that are able to satisfy the wants of the consumers. It might be thought that ultimately the intermediate factors, or capital goods, might be reduced to nature and labour, but this cannot be done, because another element is needed to combine the primary factors into more and more capital: abstinence. For again anticipating the Austrians, Senior saw that a crucial aspect of this process of production is that it must take *time*, and therefore an act of abstinence, 'a term' added Senior, 'by which we express the conduct of a person who either abstains..., or designedly prefers the production of remote to that of immediate results'.

Capital, or capital goods, then, taking time, are the result of the combination of land, labour and abstinence, and consists of the application of present resources to future production. Capital goods are *produced* rather than primary, factors of production. And the way in which production and living standards may increase indefinitely is by using the products of labour and nature, 'as the means of further Production'. Capital, Senior sums up,

is not a simple productive instrument: it is in most cases the result of all the three productive instruments combined. Some natural agent must have afforded the material, some delay of enjoyment must in general have reserved it from unproductive use, and some labour must in general have been employed to prepare and preserve it.

Senior, then, does not simply have a naive productivity theory of profit or interest. While all factors earn their productivity, and therefore labour earns wages, and land or natural agents earn rent, capital goods are not simple productive agents but complex products of other factors; and so, peeling away the influence of land and labour, the ultimate, distinct productive contribution of capital, is interest – the return to abstinence. While not fully arriving at it, Senior was here groping for a distinction between the *gross* return of capital goods, whose productivity is reflected in their market *prices*, and their *net* return (after deducting from the wages, rents, and prices of other intermediate goods in their production), which equals the rate of interest and is payment for abstinence or time-preference.

In his discussion of how increasing provision of capital funds can allow ever increasing extensions of the division of labour and the production of consumer goods, Nassau Senior captured the essence of the Austrian insight that capital, and eventually production, expands with increased saving because of the superior physical productivity of many longer, or more 'round-about', processes of production. Since it takes more time to invest in these longer processes and intermediate factors, there must be greater willingness to invest in future as opposed to present enjoyment.

Meanwhile, Senior's fellow Whatelyan, Mountifort Longfield, was working along similar lines. Even if capitalists *qua* capitalists and not as labour-

ers, produce nothing tangible, they perform a vital service in saving capital and paying factors to engage in 'time-consuming' processes of production. While most of the British classicists, including Ricardo, spoke perfunctorily of a period of production, they linked it strictly to the one-year harvest cycle in agriculture. Longfield was able to break out of this agricultural framework, moving 'toward making the time dimension of production a variable in his analysis. He did this by linking the period of production directly to the division of labour and identifying increases in one with extensions of the other'.²⁵

Longfield accomplished this linkage by repeating Adam Smith's famous discussion of the pin factory and the division of labour, while showing that extending that division will bring more roundabout processes into play. In short, greater capital investment will eventually lower the labour time required to produce a unit of output, but only by increasing the waiting time between the initial point of investment and the eventual unit of consumer goods. During the time of waiting for the eventual product, the workers must be able to live, and this living is precisely what the capitalists provide.

They do so by 'abstaining' from consumption, thereby allowing the worker to 'consume something produced by the toil of others, although nothing produced by him has yet been consumed by anyone'. In short, while the product of labour is off in the future, the capitalist saves money now and hires the worker: 'The person who employs him [the worker] and directs his labour, in general pays him in the first instance, and repays himself by the sale of the articles thus produced.'²⁶ In this way, Longfield was able to offer a remarkable anticipation of the Böhm-Bawerkian theory of capital.

The capitalists' gross profit, then, consists of two parts: a return for the service of advancing wages to the workers until the product is sold (long-run interest), and returns for the labour of direction and for the assumption of business risk. Longfield made no attempt to stress the latter and concentrated on the former, the return for the service of advancing wages. Hence, as Longfield points out in anticipation of the sophisticated and highly perceptive Austrian *discounted* marginal productivity theory of factor pricing, the worker in effect pays the capitalist a discount from his marginal productivity for the service of supplying money now rather than having to wait for the sale of the product. Again Longfield:

[The capitalist] pays the wages immediately, and in return receives the value of [the worker's] labour, to be disposed of to the best advantage... Hence the value of the labour fixed in ... any article, is greater than the wages of that labour. The difference is the profit made by the capitalist for his advances; it is, as it were, the discount which the labourer pays for prompt payment.

It is only a slight step from this analysis to the identification of this discount as a payment for time-preference.

Sir George Ramsay, in his work of 1836, also stressed the importance of time in production and capital, though hardly in as sophisticated a manner as Senior. Time, as well as labour, enters into capital, and Ramsay points as an example to two casks of identical wine. The cask that ages several years longer increases in value, so that value therefore depends not only on labour expended, but also 'on the length of time during which any portion of the product of that labour has existed as a fixed capital'. Lastly, in 1839, Joseph S. Eisdell, an unknown English follower of Longfield, generalized marginal productivity theory, also noting the important service of the capitalists in serving the worker by 'advancing his wages immediately on the performance of his work, before the goods are ready for sale, he being too necessitous to wait until the sale, and the receipt of the money for the goods'. Here Eisdell captured the essence of the service the capitalist renders the worker and for which the latter is willing to 'pay' the former his discount or profit return: the service of paying the worker *now*, at present, while the capitalist takes on the burden of waiting for his return until some point in the future.

4.11 John Rae and the 'Austrian' theory of capital and interest

The most remarkable contribution to the theory of capital and interest in the post-Ricardian period was by the drifter and eccentric, John Rae (1796–1872). Rae set forth his theory as part of a tract designed to argue for a protective tariff: *Some New Principles on the Subject of Political Economy* (Boston, 1834). Rae had the most extensive and fully developed analysis, until Böhm-Bawerk and the Austrians, of the crucial role of *time* in the theory of capital and interest. In the theory of capital, Rae saw that a key to production is increasing investment in capital goods, themselves the product of labour and nature, and that capital goods can be ranked on the basis of their rate of return, and the time necessarily involved from their formation until their depletion. Specifically, lengthening the process of production, or the time involved in the process of investing in capital, will enable the use of capital goods of greater physical productivity. But while waiting a longer time will enable one to tap more physically productive processes of production, this benefit must always be weighed against the unwelcome necessity of waiting longer into the future until the return from capital is obtained. And here, John Rae presented the fullest development to date of the time-preference theory of interest. To balance against the greater productivity of waiting longer into the future, the capitalist must charge an interest rate based on the greater desirability of present as against future goods. In short, investors must sacrifice present for future goods, and so they must be compensated for this investment by a return reflecting their degree of time-preference. Investors will be sacrificing a smaller present good

for a larger future good, the degree of difference – their interest return – being dependent on people's cultural and psychological willingness to take a long-run view of the future. Those with lower time-preference rates, i.e. those who take a longer view of the future, are particularly looking to raise the standard of living of their children; on the other hand, for Rae, those with higher time-preference possess weak intellectual and moral principles and suffer from a 'defect of the imagination'.

Rae also anticipated Schumpeterian theory in placing great emphasis on the importance of inventions, and stressed that inventions opened up new opportunities for highly profitable capital investment, and that resulting high profits stimulated such investment.

Schumpeter paid high tribute to Rae's achievement, calling his work a 'theory of capital, conceived in unprecedented depth and breadth', although, oddly enough, he doesn't mention Rae's stress on inventions. Schumpeter does add, however, that given 'ten additional years of quiet work, graced by an adequate income', Rae's *New Principles* 'could have grown into another – and more profound – *Wealth of Nations*'. And Böhm-Bawerk, who had not known of Rae's achievement in the first edition of his *History and Critique of Interest Theories*, for once was very generous in his glowing account in later editions, calling Rae's work 'exceedingly original and remarkable'.

John Rae's accomplishment was all the more striking because it did not come from a writer steeped in the economic discussions of the Great Britain of his day. On the contrary, it came from a man who must be described overall as a brilliant drifter, crank and loser. John Rae was a Scotsman, born in Aberdeen, the son of a prosperous self-made merchant and shipbuilder. Interested in invention and the natural sciences, Rae, as a young maths student at the University of Aberdeen, presented some inventions in mechanics to his professor, who pronounced them ingenious but impractical. Dropping the matter so as not to irritate his practical-minded father, Rae decided, upon graduation, to go to the University of Edinburgh to study medicine. But, typical of Rae, while studying for his M.D. dissertation, he became convinced that prevailing physiological theories were false, and so he dropped out of medical school, determined to write a grandiose 'philosophical history' of mankind. Embarking on this ambitious but truly impractical life work, Rae plunged into the study of biology, philology, ethnology, aeronautics, geology, education, and the social sciences, undoubtedly with radical ideas in them all. Very little of this ever got written or published, his published work consisting of a few scattered articles on such matters as emigration, education, Canadian religion, Hawaiian customs and legislation, and Polynesian languages. His extant unpublished papers are on geological topics.

This sort of life plan was scarcely calculated to yield John Rae a secure income, and the bankruptcy of his father, as well as a possible social stigma

from his marrying the daughter of a shepherd, drove him to emigrate to the backwoods of Canada, at the age of 25.

It was during this course of self-study that John Rae read the *Wealth of Nations*, and developed an antipathy to that Scotsman's general commitment to free trade and *laissez-faire*. In particular Rae acquired a lifelong interest in protectionism and government subsidies to industry. At least some of that reaction reflected a typically Scottish Calvinist hostility to luxury and consumer indulgence. A strong advocate of thrift and abstinence, Rae lamented any luxurious consumption among the lower classes, which weakens their 'effective desire for accumulation'. Sensual appetites lead the poor to marry and increase their number of children unduly, also weakening their propensity to save and to raise their standard of living. Rae's first interest in the protective tariff came in Scotland in 1819, attacking the desire of the numerous followers of Adam Smith to greatly lower the taxes and tariffs on whisky, and to allow the manufacture of whisky in small stills. Rae reacted angrily, worrying as he did about the 'general morals of the people' resulting from an abundance of cheap whisky.

Arriving in Canada, Rae soon became a schoolmaster at a private school and a physician in the small village of Williamstown, Ontario. Williamstown was a centre of the Scottish Presbyterian settlement in Canada, and Rae, a devout adherent of the Presbyterian Church of Scotland, embroiled himself in the claims of that Church to government support as against the exclusivist claims of the Church of England. Apart from Anglican élitism unsuited to North American conditions, Rae opined, the Presbyterian Church of Scotland insisted on austere morality as against the laxity of the Anglicans. He criticized the United States for not having an established religion, thereby lessening the incomes and tenure of the clergy and weakening the bonds of 'genuine religion'.

After a decade in Williamstown, John Rae felt it was time to move on. In 1831, he resigned his post as schoolmaster and as one of the three coroners of the Eastern District of Ontario, and moved to Montreal. He had decided to begin work on his life project, or at least a subset of it to be devoted to the 'Present State of Canada', which would present his ideas on Canadian geology and economic development, and to make a strong plea for continued Canadian membership in the British Empire. While in Montreal, he petitioned the government of Upper Canada for a travel and research grant to finance this projected work, but the Upper Canada Assembly felt there were more important things to be done and turned down Rae's grant proposal, despite the favourable recommendation of the lieutenant-governor.

Rae was still determined to work on his life project, and he repaired to the lumbering village of Godmanchester, not far from Montreal, where he apparently worked in menial tasks in lumbering while publishing pro-British Em-

pire articles in the *Montreal Gazette*. There he wrote what was supposed to be another subset of his master plan, his great work on the *New Principles of Political Economy*.

The spirit of revolution against the British Empire was abroad in Canada, and Rae's letters to the *Gazette* were vitriolic in denunciation. The criticisms of Britain, he fulminated, were 'gross misrepresentations, infamous falsehoods and horrid blasphemies'. Recalling the horrors of the French Revolution, Rae thundered that 'the banners of imperial justice must be displayed, else in a short time the reign of terror be attempted in Canada, and red ruin ride triumphantly'.

In view of Rae's strong connections in Montreal, it is difficult to see why he languished in Godmanchester. His sister, Ann Cuthbert, a poet and headmistress of a boarding school, was married to a wealthy dry-goods merchant, James Fleming. Fleming's brother, John, was a prominent writer as well as a leading official of the Bank of Canada and Bank of Montreal, and the family moved in the circle of leading Scottish Presbyterian merchants and ultra-loyalists of the British Empire, surrounded by a Canadian populace of what they took to be French-Canadian insurgents and radicals.

Rae conceived his *New Principles* to be another subset of his life work, this time devoted to the growth of nations and to the necessity for a protective tariff and other forms of government promotion of industry. He finished the book in 1833 and originally meant to publish it in England, but for some reason changed his plans and travelled to Boston to seek aid in publishing the book there. In Boston, Rae met and was taken under the wing of the powerful Alexander Hill Everett (1790-1847), a leading Boston Brahmin, a protégé of ex-President John Quincy Adams, and recently Adams's minister to Spain. An accomplished linguist and classicist as well as an attorney, Everett had left government service to become the editor of the prominent and influential *North American Review*. A decade earlier, Everett had written *New Ideas on Population* (1823), in which he sensibly attacked Malthus for not realizing that population growth can bring abundance, not poverty, by extending the division of labour, expanding markets and cities, and increasing the production of food and manufactures.

Everett, like the rest of New England, had lately shifted from free trade to the advocacy of a protective tariff, particularly for the region's nascent textile manufacturers. The protectionists were looking around wildly for textbooks and academics who would support their cause, since the works of Adam Smith and J.B. Say were dominant in American universities. Meeting and being impressed with John Rae and hearing of his new protectionist work, Everett was enthusiastic about him and arranged, sight unseen, to publish the book in Boston.

Apparently, Everett had bought a pig in a poke. Reviewing it in the *North American Review*, Everett damned Rae's *New Principles* with faint praise. He had been looking for a hard-hitting protectionist tract; instead, he found the book filled with technical jargon he could barely comprehend. And much of it had little or no bearing on the tariff issue. The bulk of the book dealt with the theory of capital and interest, and the importance of the expansion of capital to the growth of a nation. As Everett shrewdly pointed out, these views were not really at variance with those of Adam Smith. And none of it bore directly on the protectionist issue.

To Rae himself the connections were clear, if too remote for those interested in public policy. He believed that economic development depended jointly on new inventions and their application in capital investment, and most of his proposed government policies were subsidies and bounties to new inventions and industries, to be financed by heavy tariffs on the imports of 'luxuries'. In that way, Rae's Calvinist soul would be satisfied, for the government would be imposing moral principles by promoting thrift, invention and industry, while discouraging sinful luxuries, especially, in a prefiguration of Thorstein Veblen, where 'consumption is ... conspicuous' and therefore particularly wasteful. Rae's denunciation of luxurious consumption, which Rae boldly called 'a loss to the society, in proportion to their amount', did not sit very well with Everett, but his main criticism was that the country needed a 'well-written and well-reasoned essay on this [protectionist] question', a work of 'sufficient compass and authority to serve as a textbook'. Clearly, John Rae's work did not fill the bill.

The book was a commercial failure, and was quickly forgotten. The understandably chagrined and embittered Rae wrote in a letter, years later, that 'unfortunately, I was induced to publish in Boston, under the assurance from A.H. Everett that it would be appreciated there. He was, however, I believe scared of it. Could not make up his mind, nor could anyone there, if I was right or wrong, and so passed it by with praise of its style, etc. This damned it'. In addition, the free traders and the worshippers at the shrine of Adam Smith – who came in for considerable direct criticism in the book – attacked Rae's work. But possibly more fatal than any of these factors was the timing of the book. For after the tariff of 1833, lowering tariffs considerably, tariff agitation in the United States began to subside, and the tariff was repeatedly lowered throughout the 1840s. Free trade had apparently triumphed, at least until the Civil War.

In Canada, furthermore, there were scarcely any economists or academics fit to appraise Rae's work, and in Britain there was a general scorn for 'colonials', and failure to take North Americans seriously. In England, however, Nassau Senior, whose work on capital and interest was not far from Rae's, read the *New Principles* by the mid-1840s and admired it greatly, and

traces of Rae can be found in Senior's later writings. Senior passed the book on to John Stuart Mill, who commended it warmly in his overwhelmingly popular 1848 treatise, the *Principles of Political Economy*. Rae heard of Mill's praise five years later, through a Canadian friend, and wrote warmly if mournfully to Mill that 'it is the only thing connected with that publication which has afforded me any gratification'.

Here a mystery arises for the history of economic thought. Despite Mill's warm commendation of Rae's book in what was the dominant treatise on economics for a generation, no economist anywhere picked up on the reference, and knowledge of Rae virtually disappeared. The only exception was the great Italian classical economist Francesco Ferrara (1810–1900), who translated Rae's *New Principles* into Italian in the mid-1850s. Apart from that, nothing. W. Stanley Jevons, devoted to the history of economic thought, apparently never heard of the book, and even the great Böhm-Bawerk had never read John Rae when in the 1880s he wrote the first edition of his *History and Critique of Interest Theories*. Rae remained unknown to economists until his memory was revived, and his work reprinted, by Professor Charles Whitney Mixter at the turn of the twentieth century. Perhaps a clue to the puzzle is in Böhm-Bawerk's later editions, where he points out that Mill's encomiums to Rae, while warm, were general and even banal, and scarcely conveyed the brilliance and originality of his work on capital and interest. As Böhm-Bawerk explains it:

But it is a strange fact that in all his numerous quotations [from Rae] John Stuart Mill never included any of the material which constitutes the essence of Rae's original ideas. He quotes, instead, merely ornamental incidentals, and even among those only the sort of thing that could be used to illustrate the traditional doctrines that Mill himself was presenting. And since Rae's book seems to have been read in the original by only extremely few persons, just the most interesting part of its contents remained unknown to his contemporaries. There was little likelihood that they, and even less that subsequent generations would be apprised by Mill's quotations of the importance of the book, or impelled to conduct any research into his quickly forgotten work.²⁷

Disappointed in the reception of his book, unemployed and destitute, Rae won an appointment as headmaster of a government district grammar school in what was then the brawling frontier town of Hamilton, Ontario. There he lived in genteel poverty on a low salary and was continually in debt, but he was apparently beloved by his students and was known in Hamilton as a graceful and elegant ice skater as well as president of the Hamilton Literary Society. There he played a prominent role in the first contingent of Hamilton militia which, in 1837 and 1838, helped put down an armed rebellion by Canadian nationalists anxious to cut the ties with the empire. Rae engaged in aeronautical experiments with balloons, and wrote increasingly on geological

topics. He also continued to work on the economic geography of Canada, and finally in 1840, completed his *magnum opus*, a lengthy book on the 'Outlines of the natural History and Statutes of Canada'.

Unfortunately, however, the decade of the 1840s saw fate land a series of hammer blows against John Rae. First, the manuscript of his book on Canada was irretrievably lost en route to possible publishers in New York. Second, after teaching in Hamilton for 14 years, Rae was summarily fired in 1848. The problem was that Rae became inevitably embroiled in educational political struggles, particularly over getting Presbyterians appointed to teaching and administrative posts in the Anglican-dominated Ontario school system. Furthermore, in 1843, in the Disruption, the Church of Scotland (and hence its affiliated Presbyterian Church in Canada) split in irretrievable schism, with hard-core Calvinists opposed to secular state domination of the Church splitting off from the established Church of Scotland and forming the Free Church. As we might expect from his character, Rae, along with his friends, joined the Free Church, which lost him the political support of the established Presbyterian officials dominant in his school district. Rae's stay in Hamilton was doomed.

Rae then left Canada and did some school teaching in Boston and New York, where, a year after his dismissal, he received another staggering blow – news of the death of his wife, Eliza. Discouraged, restless, penniless and uprooted at the age of 53, John Rae began a new life of wandering and drift. Attracted by the gold rush, he sailed to California, where he did a little school teaching and carpentry; in ill-health in California, Rae was soon off to the Hawaiian Islands, where he was to spend the rest of his days. There, on the island of Maui, Rae prospered economically for the first time, teaching English to Hawaiian natives, farming, and functioning as medical agent for the board of health. Rae began to blossom politically because of his new friendship with a fellow Scottish expatriate, Robert Crichton Wyllie, a surgeon from Glasgow University, wealthy businessman, and now minister of foreign relations of the Hawaiian Kingdom. With Wyllie's patronage, Rae became coroner, notary public, medical attendant and district judge in Maui.

His favourable circumstances now led Rae to resume his various scientific interests: he wrote articles and papers on geology, particularly on volcanoes, ocean tides, and Hawaiian geology; on the Polynesian language; and tried to revive interest in marketing his long-neglected navigational inventions.

But John Rae was incapable of holding onto money, and so perpetually reverted to destitution. With his patron Wyllie dead, and in ill-health, Rae accepted the offer of an old friend and former student to pay for his trip from Hawaii to live with him permanently at his home in Staten Island. But Rae died on Staten Island the following year.

Restless and eccentric, John Rae in a sense wrote a suitable and poignant epitaph for himself in *New Principles*, in his sensitive appreciation of the lone role of the inventor or innovator in society:

Pursuing objects not to be perceived by others, or if perceived, whose importance is beyond the reach of their conceptions, the motives of their conduct are necessarily misapprehended. They are esteemed either idlers, culpably negligent in turning account the talents they have got, dullards deficient in the common parts necessary to discharge the common offices of life, or madmen unfit to be trusted with their performance; shut out from the esteem or fellowship of those whose regard they might prize, they are brought into contact with those with whom they can have nothing in common, knaves who laugh at them as their prey, fools who pity them as their fellows. Their characters misunderstood, debarred from all sympathy, uncheered by any approbations, the 'eternal war', they have to wage with fortune, is doubly trying, because they are aware, that, if they succumb, they will be borne off the field, not only unknown, but misconceived.²⁸

4.12 Nassau Senior, praxeology, and John Stuart Mill

There are few economists in any age who are self-conscious about the methodology of their craft. Even more was this true during the alleged heyday of the British classical school which, as we have seen, was an era of disintegration rather than triumph of the Ricardian paradigm. But an excellent methodologist was one of the finest economists of that epoch, Nassau W. Senior. Senior indeed took up the torch of the praxeological method that had been expounded and used by the great French economist of the early nineteenth century, Jean-Baptiste Say.

Senior began to spell out his views on methodology in his very first, introductory lecture at Oxford in 1826. With exceptional clarity, he began by stating that economic theory rests on the broadest general insights about human nature, insights that are self-evident in the sense that once stated they command universal assent. Economic theory, says Senior, 'will be found to rest on a very few general propositions, which are the result of observation, or consciousness, and which almost every man, as soon as he hears them, admits, as familiar to his thoughts, or at least, as included in his previous knowledge'. But if these premises, or axioms, rest on general knowledge of man and the world, then conclusions deduced from them must possess equal generality: 'Its conclusions are also nearly as general as its premises – those which relate to the nature and production of wealth, are universally true.' It is then the task of the economist to narrow down the conclusions to those areas which are directly relevant to the problem at hand. Thus:

those [conclusions] which relate to the distribution of wealth, are liable to be affected by peculiar institutions of particular countries – in the cases, for instance, of slavery, corn laws or poor-laws – the natural state of things can be laid down as

a general rule, and the anomalies produced by particular disturbing causes can be afterwards accounted for.

As specifically part of his apodictic conclusions, Nassau Senior generalized laws that other economists had been approaching or groping for. For example, Senior defined 'wealth' as all goods and services that possess utility and which therefore will be purchased in exchange. He then stated in his first 'fundamental proposition': 'That every person is desirous to obtain, with as little sacrifice as possible, as much as possible of the articles of wealth.' Not only did Senior thus ably generalize some important insights of universal human action: he also in that way dismissed Adam Smith's unfortunate distinction between 'productive' (material) and 'unproductive' (immaterial) labour; everything which people desired and were willing to buy was 'productive'. It is because Ricardo at least implicitly adopted this distinction that he was able to dismiss cavalierly any explanation of the pricing of immaterial services and hence to move toward a cost theory of value.

In elaborating on this first fundamental proposition, Senior moved on to an eloquent summation of the relationship between desire, individual diversity, choice, and human effort:

In stating that every man desires to obtain additional wealth with as little sacrifice as possible, we must not be supposed to mean that everybody, or indeed anybody, wishes for an indefinite quantity of everything... What we mean to state is, that no person feels his whole wants to be adequately supplied; that every person has some unsatisfied desires which he believes that additional wealth would gratify. The nature and urgency of each individual's wants are as various as the differences in individual character. Some may wish for power, others for distinction, others for leisure... Money seems to be the only object for which the desire is universal; and it is so because money is abstract wealth...

As equal diversity exists in the amount and the kind of the sacrifice which different individuals, or even the same individual, will encounter in the pursuit of wealth.²⁹

Two decades later, on returning to the Drummond chair at Oxford, Nassau Senior, in his introductory lectures in 1847, returned to the problem of the methodology of economics (published in 1852 in his *Four Introductory Lectures on Political Economy*). He now defined economic science as expounding 'the laws regulating the production and distribution of wealth, so far as they depend on the action of the human mind' – the latter clause emphasizing that economics was a 'mental' rather than 'physical' science. Indeed, Senior saw clearly that the proper scientific method was dualistic, the physical sciences treating the properties of matter, while the mental ones study 'the sensations, faculties, and habits of the human mind, and regard in matter only the qualities which produce them'. The methods of