



A peculiar Archaeology: Searching for Mr. Giffen's Behaviour

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Abstract

It has been claimed that references to 'Giffen behaviour' constituted a single research project, driven by attempts to establish whether an initial 'conjecture' by Alfred Marshall had empirical validity. There is, however, no stable basis for that claim, in part because Marshall produced contradictory accounts of Giffen behaviour and, while he referred to the statistician Robert Giffen as the source for his different accounts, Giffen rejected a key assumption made by Marshall. Moreover, by the mid-1920s, discussion of an upward-sloping demand curve attached no particular significance to an illustration referenced by Marshall because other and quite different explanations were regarded as equally important. The formulation of the Irish famine Giffen exemplar in P.A. Samuelson's *Economics* textbook illustrates how Giffen behaviour was stabilised as the single possible exception to 'the law of demand' in the 1960s.

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Myths structure our perceptions of history and of reality by providing guiding narratives that help to create, define and bond communities, most typically by giving them an origin and a destiny.

Patricia Fara

On his *New York Times* blog in 2008, Steven Levitt dubbed Robert Jensen “the Indiana Jones of economics” and, with that persona, Jensen recounted how he and his colleague Nolan Miller had succeeded in finding “an elusive fabled prize shrouded in mystery [and] travel to far-off lands”. They had been searching for a “verified example” of a “violation of one of the most sacred and holy laws in economics”, the possibility of which had “excited and intrigued economists for over a century”. Other economics blogs were also enthusiastic, if perhaps not quite so effusive, about the quest.¹ The occasion for the excitement was a paper by Jensen and Miller, published in 2008 by the *American Economic Review*, reporting the results of a field experiment which they characterised as providing “the first rigorous, empirical evidence of real - world Giffen behaviour”. The experiment, which involved subsidising the purchases of rice and wheat by poor households in China, removed the “minor embarrassment” that economists had been unable to provide convincing evidence for their theoretical argument that the “Law of Demand, while descriptively valid in many situations, may not apply to the very poor facing subsistence concerns.” Although Alfred Marshall had “first publicized this idea in the 1895 edition of his *Principles of Economics*” using the example of bread, and a discussion of Giffen behaviour could be found in “virtually every basic economics course”, empirical confirmation had been lacking for Marshall’s “conjecture”. If subsequent work had indicated that the “demand for neither wheat nor bread was upward sloping in Britain during Marshall’s time”, the “standard textbook example of a Giffen good, potatoes during the Irish potato famine of 1845 – 1849”, first published in Paul Samuelson’s *Economics*, was now “discredited”. More recent laboratory experiments on the topic were of little use as their conditions were “far removed from reality”, while other econometric work suffered from specification problems. Jensen and Miller concluded, however, that

Epigraph: Fara 1999, p.168. Any emphases in material quoted here appear in the original texts. While the usual caveat applies on responsibility for the final product, I thank Robert Dixon, Peter Groenewegen, Prue Kerr and Greg Moore for comments and suggestions.

¹ Levitt 2008; Jensen 2008. For the blog commentary, see Economist 2007; Moroney 2007; Rodrik 2007; Thoma 2007.

“the absence of previously documented cases most likely results from inadequate data or empirical strategies.” More generally, as neoclassical economic theory was the only analysis that could predict the behaviour of the Giffen phenomenon, their results also provided a vindication of the theory which “in recent years ... has come increasingly under attack” [Jensen and Miller 2008, pp.1553, 1554, 1558, 1576].²

Jensen and Miller thus presented their paper as the denouement of a long search for empirics that would support Marshall’s conjecture. It was precisely because the search had been marred by ‘inadequate data or empirical strategies’ that “Giffen behavior has long played an important, though controversial role in economic pedagogy, as well as in the history of economic thought” [Jensen and Miller 2008, p.1554]. Their analysis, however, actually undermined the picture of a single research project driven by the attempt to establish whether an initial conjecture had empirical validity. The Jensen and Miller results did not provide evidence for a “Giffen good” where, at least over a range, the market demand curve slopes upward. Following the previous secondary literature, Jensen and Miller note that the effects of the behaviour of the very poor could be swamped in a market, so their results were evidence of “Giffen behaviour” and not of a Giffen good. Indeed, because Jensen and Miller rejected the possibility of identifying such a market demand curve, their paper, in effect, sounded the Last Post for that project. In an analysis that is symptomatic of the more recent experimental turn in economics, the relevance of Giffen behaviour was now depicted in terms of devising welfare programs for the poor [Jensen and Miller 2008, pp.1558, 1575 – 76]. If Jensen and Miller were not clear about the significance of that point, some of the blog commentary claimed that they had identified a demand curve or, at least, a Giffen good.³

The publication of the Jensen and Miller paper in the *American Economic Review* might suggest that their history of Giffen behavior would be generally accepted in the economics profession, an impression that is reinforced by the blog commentaries on

² Jensen and Miller list the following requirements for Giffen behaviour. Households must be “poor enough that they face subsistence nutrition concerns”; their diet consists of “a basic (staple) and a fancy good”; the basic good provides the “cheapest source of calories”, accounts for “a large part of the diet/budget, and has no ready substitute” [Jensen and Miller 2008, p.1556]. This is formally consistent with the usual textbook account where the basic good must be inferior and the income effect dominates the substitution effect.

³ That commentary may have been influenced by the way that Jensen referred to the quest for a ‘Giffen good’ that violated ‘the Law of Demand’ [Jensen 2008].

the paper referred to above. That history is, however, a construction that, to a significant extent, reflects the way in which, by the 1960s, references to a Giffen good or behaviour came to be generally understood within the profession as the only possible explanation for an upward sloping market demand curve. The purpose of this paper is to consider how that history was constructed by examining three problematic aspects of the story. First, there was no stable and unique origin for an explanation of the significance of Giffen behavior in the work of Alfred Marshall because he produced contradictory accounts in his *Principles of Economics* (1895) and *Memorandum on Fiscal Policy of International Trade* (1908). Marshall then had to be read in a highly selective manner to produce the claim that he had discussed an upward sloping demand curve in his *Principles* (Section 1 below). Second, Marshall's references to the statistician Robert Giffen (1834 – 1910) as his source for the initial observation of such behavior further problematize the Marshallian origin story.⁴ Most historians of economics today would probably accept that there is no evidence that Giffen ever wrote anything more than that bread was, in subsequent terminology, an inferior good [Stigler 1947; 1948]. If that point sometimes seems to have a limited circulation,⁵ evidence will be presented here that Giffen could not have made the argument that Marshall attributed to him in the *Memorandum* (Section 2). Third, discussion of an upward-sloping demand curve by the mid-1920s attached no particular significance to an illustration referenced by Marshall's *Principles* because other and quite different explanations were regarded as just as, if not more, important. It was only with the subsequent formulation of the income and substitution effects framework in the 1930s that Marshall was referred to as providing the single acceptable explanation for an upward sloping demand curve. Nevertheless, the stabilization of that argument took some time. It has recently been suggested that the study of economics textbooks constitutes an "under-utilized data source for the study of the history of economics, particularly (but by no means solely) its modern variant". In part this is because by "forcing the authors to communicate to a wider audience, the textbook genre tends to preclude its authors from dealing with ... new ideas until there has been some measure of stabilization and normalization – processes that necessarily include interpretation and moves towards standardization of meaning" [Medema 2011, pp.5, 11]. Using the example of Samuelson's *Economics* textbook, it will be shown here how the stabilization of Marshall as the origin of a Giffen good

⁴ For biographical information on Giffen, see Mason 1989, ch. 3.

⁵ "[A Giffen good is named] after the nineteenth - century economist who first noted the possibility" [Varian 2010, p.105]. See also Schlefer 2012, p.88.

which could be the only explanation for an upward sloping demand curve took place in the 1960s. Moreover it was the stabilisation process in Samuelson's text that helps explain how his exemplar of the Irish famine Giffen good, subsequently widely replicated within the economics profession, came to be produced (Section 3).

1. Marshalling A Contradiction

In the third edition of his *Principles*, Marshall defended his consumer surplus analysis, acknowledging that, in strict theoretical terms, it required that the marginal utility of money remained constant. Provided, however, that there were only small changes in "the neighborhood of the customary price" and that special care was taken in dealing with "necessaries", the "substance" of the analysis remained valid and there would be "very few practical problems" in which changes in the marginal utility of money would have "any importance" [Marshall 1895, pp.208-9]. To illustrate the last point, he argued that

There are however some exceptions. For instance, as Mr Giffen has pointed out, a rise in the price of bread makes so large a drain on the resources of the poorer labouring families and raises so much the marginal utility of money to them, that they are forced to curtail their consumption of meat and the more expensive farinaceous foods: and, bread being still the cheapest food which they can get and will take, they consume more, and not less of it. But such cases are rare; when they are met with, they must be treated separately [ibid. p. 208].⁶

Contrary to the assumption in much of the subsequent literature, Marshall was not concerned with explaining an upward-sloping market demand curve in the *Principles*.⁷ Rather, the point of his analysis was to defend the concept of consumer surplus against the criticism that it was of little practical use because it was not possible to provide accurate estimates of aggregate consumer material welfare if there were marked differences in the distribution of income and thus the marginal utility of money between different groups of transactors. Rejecting that criticism, Marshall argued that the extreme case of the labouring poor increasing their consumption of bread as the price rose was atypical. Such behaviour did not threaten

⁶ The paragraph was largely unchanged in subsequent editions, although Giffen was elevated to Sir R. Giffen (he was knighted in 1895) and "they must be treated separately" became "each must be treated on its own merits" [Marshall 1961, 1, p. 132].

⁷ The following paragraphs draw on White 1990; 1991.

the estimation of consumer surplus with a downward-sloping market demand curve in general because 'such cases are rare'. To argue that the market demand curve was upward sloping would have destroyed the point of his argument. In the *Principles*, the question was not: what are the conditions in which a market demand curve has an upward slope? Rather the question was: is the concept of consumer surplus of practical use in estimating changes in consumer welfare, given a downward-sloping market demand curve?⁸

Marshall then produced a different argument in his *Memorandum*, which was first written in 1903 and published in 1908 [Marshall 1926 (1908), pp.380 – 85]. He now referred to an aggregate effect which entailed that the market demand curve for bread was upward sloping, at least over a range. Following a change that had occurred "about forty years ago",

nearly the whole of the English people can afford to buy as much bread as they want, and yet have money enough left to buy some more expensive foods: and, as Sir R. Giffen seems to have been the first to observe, a rise in the price of wheat still leaves bread the cheapest food, which they will consent to eat in any quantity; so that, having to curtail their purchases of more expensive foods, they buy, not less bread than they would have done, but more [Marshall 1926 (1908), p. 382].

In a subsequent exchange of letters with a sceptical F.Y. Edgeworth, Marshall defended his argument by referring to his own observations and to his familiarity with statistics underpinning estimates of demand and supply elasticities for wheat [Whitaker 1996, 220-224].⁹ He also referred to a hypothetical case regarding an

⁸ In the second edition of the *Principles*, possibly responding to criticism of the first edition, Marshall had distinguished between an explanation for a positive relation between price and quantity demanded in terms of a movement along, and a shift in, a market demand curve. There was an "implicit condition in this law [of diminishing marginal utility] ... It is that we do not suppose time to be allowed for any alteration in the character or tastes of the man himself. It is therefore no exception to the law that the more good music a man hears, the stronger in his taste for it likely to become; that avarice and ambition are often insatiable; or that the virtue or cleanliness and the vice of drunkenness alike grow on what they feed upon" [Marshall 1961, 1, p.94].

⁹ In the *Memorandum*, for example, when referring to "distant wheat-fields", Marshall noted that "there has been a rise [in price], as Mr. Powers has well shown, even when the price in Liverpool was falling rapidly in consequence of the great diminution in transport charges on

individual's behaviour to support his argument, although that was not relevant for the argument about empirical estimates of elasticity [Dooley 1992]. The key point, however, is that, within the space of eight years, Marshall argued that the English market demand curve for bread was both upward and downward sloping.

An explanation for Marshall's switch can be found in the different contexts in which the two arguments were produced. In the *Principles*, he was attempting to confute the critics of his consumer surplus analysis, particularly J.S. Nicholson, his former student who was professor of political economy at the University of Edinburgh. In the *Memorandum*, however, he was attacking the proponents, especially W.A.S. Hewins, first director of the London School of Economics, of the use of tariffs within a system of imperial preference.¹⁰ The question Marshall posed in the relevant section of the *Memorandum* was: what will be the effect on the price of bread of imposing a tariff on imported grain? The upward-sloping demand curve supported the claim that domestic consumers, rather than foreign suppliers, "might" bear the full incidence of the tariff.¹¹

the west of the Mississippi, as well as between Chicago and Liverpool" [Marshall 1926 (1908), p.383]. Marshall was referring here to Henry Huntington Powers (1859 - 1936), associated with the University of California, author of an article on "Expansion and Protection" in the *Quarterly Journal of Economics* [Powers 1899], contributor of three articles to the 1926 *Palgrave's Dictionary of Political Economy* and author of the following books: *Lectures on Money* (1893), *Wealth and Welfare* (1899); *America among the Nations* (1918); and, *America and Britain* (1918). Marshall also cited Powers on US wheat production in *Industry and Trade* [Marshall 1920, p. 776].

¹⁰ For the background to writing, and the contents of, the *Memorandum*, see Groenewegen 1995, pp.376–88. For the extensive correspondence regarding the initial writing of the *Memorandum* in 1903, following a request from the Chancellor of the Exchequer (conveyed by his private secretary, T. Llewelyn Davies, a friend of Marshall's), and its publication in 1908, see Whitaker 1996. Both Groenewegen and Whitaker have argued that a paper found in the Treasury archives (reprinted in Groenewegen 1996) is not, as had been previously suggested, the 1903 version of Marshall's text.

¹¹ Marshall argued that the incidence of the tax would depend on both the elasticities of demand ("England's total demand for wheat ... might now increase") and of supply, so that the tax "might raise and not lower the net price which foreigners obtained for their wheat" [Marshall 1926 (1908), pp.382-3]. It should be noted that Marshall used similar qualified language in his discussion of incidence earlier in the same paragraph of the *Memorandum*. Referring to a negatively sloped market demand curve, he suggested that: "It is, indeed, an almost universal rule, that a new tax on the importation of a commodity lessens its

The figure of Marshall as the origin of a single 'Giffen conjecture' erases the context, contradictions, complexity and specific arguments of Marshall's texts, imposing a question that, in the case of the *Principles*, would have destroyed the point of his analysis. Nevertheless, it became common to refer only to the *Principles* in subsequent references to Marshall having discussed a demand curve with a positive slope. An early example was W.E. Johnson's discussion of demand curves in 1913, which included perhaps the first published reference to "Giffen's paradox" [Johnson 1913, p.484]. Marshall did not use the latter phrase, which is not surprising as he rejected the notion of a paradox with regard to Giffen behaviour [Whitaker 1996, pp.222-23].

2. Dark Knights

Jensen and Miller claim that, whereas "naive intuition suggests that consumers should respond to a price increase by consuming less of the good in question, [neoclassical] consumer theory suggests that a sophisticated consumer ... might increase consumption" [Jensen and Miller 2008, p.1576]. They thereby create the impression that the identification of Giffen behaviour can be attributed solely to neoclassical theory. This is misleading as economists writing before the appearance of marginalist economics in the nineteenth century argued that demand could be positively correlated with price on two grounds. The first concerned luxury goods, such as precious stones. Working from Adam Smith's discussion of consumption and demand by the wealthy, John Rae's 1834 analysis of "conspicuous" consumption argued that the demand for pearls was due to their scarcity and that, if they could be produced at a 'trifling' cost, the rich would no longer purchase them and so neither would 'peasants'. Four years later, Augustin Cournot produced a variant of that argument in his *Recherches* as did William Whewell in an 1850 paper.¹² The second case concerned the demand for a basic commodity such as bread or potatoes. In the midst of the Napoleonic wars, Simon Gray argued that speculators could manipulate expectations of rising prices so that, at least over a certain range, more would be demanded as the price rose [Gray 1815, Book vii, chs.v,vii.]. Written in 1804, Gray's

consumption more or less; and the consequent diminution of demand tends to induce foreign producers to offer it on terms which are lower, though not always perceptibly lower" [ibid. p.382].

¹² See the discussion and references cited in White 1987b. With the exception of Cournot, none of these analysts couched their work in terms of a functional demand curve.

text was part of the debate regarding the role of speculators in aggravating or, as he suggested, creating wartime harvest 'scarcities'.¹³ A contemporary memorandum by Henry Beeke also suggested that there was no great scarcity and referred to a positive relation between wheat prices and demand [Rashid 1979]. If none of those authors required a marginalist theory to derive their results, the eponymous source for the neoclassical history of Giffen behaviour is also problematic.

As was noted above, Marshall claimed in the *Principles* that Robert Giffen had 'pointed out' that poorer labouring families would increase their consumption of bread as the price rose, while the *Memorandum* stated that Giffen 'seems to have been the first to observe' that nearly the whole of the English people behaved in the same way. Subsequently, when Marshall was pressed by Edgeworth regarding the *Memorandum*, he reduced Giffen's role to a "hint" [Whitaker 1996, p. 220]. His references to Giffen appear even more odd because there is no textual evidence that Giffen ever said or wrote anything more than that bread was, in later terminology, an inferior good.

There is some evidence that might suggest Giffen was actually uninterested in the topic of Giffen behaviour. In remarks at a meeting of the London Statistical Society in 1880, an Edward Power was recorded as saying that "a low priced bread tends rather to decrease than increase the consumption, because bread is always the cheapest food, and when the price of bread is high, the main bread-eating population are unable to get much meat, and are obliged to live more largely on bread" [Laws and Gilbert 1880, p.333].¹⁴ The record of the discussion at the meeting of the Society contains no indication that others present made any comment on that argument. Given Marshall's subsequent claims, it is odd that Giffen, the editor of the Society's *Journal* in which Power's remarks were published, was silent on that topic, although he was present at the meeting and intervened in the discussion, albeit on a different matter [ibid. p.339]. It should also be noted with regard to the statement in Marshall's

¹³ The most detailed published discussion of Gray [Masuda and Newman 1981] makes no mention of his speculation argument.

¹⁴ Power has been described as a London corn merchant [Mason 1989, p.62]. He was evidently not the Henry Powers cited in Marshall's *Memorandum* (see above). Two other candidates have been suggested as making the same case as Power - the statistician and Giffen's predecessor at the Board of Trade, G.R. Porter [Dooley 1985; 1988] and James Caird, the agriculturalist and member of parliament [Mason 1989, pp.85-7]. The textual evidence, however, does not support either reading [White 1987a; 1988; 1991, pp.83-4].

Principles regarding poorer labouring families, that Giffen was unenthusiastic about the validity of budget studies from which such behaviour could conceivably have been identified [Stigler 1947, p.156]. That would seem to make it unlikely that Giffen discussed such behaviour with Marshall.¹⁵ If Giffen appears to have been indifferent to the topic and uninterested in, or even hostile to, relevant statistical material with regard to the *Principles*' case,¹⁶ he also clearly rejected a key assumption underpinning the argument in Marshall's *Memorandum*.

Following the secular decline of the preceding twenty-five years, wheat (and other commodity) prices began to rise from the mid-1890s. In 1897, British fears of a potential wheat scarcity were fuelled by bread riots in Europe and an attempted corner on the Chicago exchange. With increasing international competition for food supplies, there was "a current of disquiet and dissent among naval officers, insurance underwriters, grain merchants, millers, landowners and farmers" that Britain would be unable to secure adequate supplies in time of war. By the turn of the century, "food supply had become one of the many 'fads' that animated the middle classes" [Offer 1989, p.223]. In that context, the chemist Sir William Crookes delivered his presidential address to the British Association for the Advancement of Science in 1898, arguing that the "exhaustion" problem facing Britain was not one of coal, as W.S. Jevons had argued in *The Coal Question* (1865), but rather of wheat on a world scale. With the pressure of population growth on available land, wheat prices would increase markedly in the future, principally because of soil exhaustion. By 1931, "England and all civilized nations" would face a shortage of wheat, which was

the most sustaining food grain of the great Caucasian race ... We are born wheat-eaters. Other races, vastly superior to us in numbers, but differing widely in material and intellectual progress, are eaters ... of other grains ... [The] accumulated experience of civilized mankind has set wheat apart as the fit and proper food for the development of muscle and brains.

¹⁵ Although Roger Mason argued that Giffen suggested the argument in the *Principles* to Marshall [Mason 1989], he provided no direct evidence to support that claim [White 1991].

¹⁶ The 'very poor' in the early 1890s appear to have been equated with a male breadwinner earning 20 shillings per week or less which, contemporary estimates indicated, accounted for over ten per cent of the East London population. Mason suggests that Giffen deliberately omitted any estimate of such income receivers from the *Board of Trade Blue Book* in September 1895 [Mason 1989, pp.44 - 7].

It was only chemists who could provide a solution to the problem by developing technologies to burn atmospheric nitrogen with cheap electricity to obtain the chemical fertiliser ammonia. Without that development, “the great Caucasian race will cease to be foremost in the world, and will be squeezed out of existence by races to whom wheaten bread is not the staff of life” [Crookes 1898, pp. 562, 563, 564, 569, 573].¹⁷

Crookes thought that his lecture had been “a brilliant success” [Brock 2008, p.381]. It certainly received much public comment, although a good deal of that was critical, including a leader in *The Statist*, which was possibly written by Giffen who had cofounded the journal in 1878 [Anonymous 1898]. When Crookes reissued his address in the following year with a reply to critics, including the *Statist* [Crookes 1899], Giffen responded with an acerbic signed review.¹⁸ Crookes had written “an alarmist statistical paper”, making a key statement “without the details and references enabling any one to verify and appreciate it”. The chemist’s character and authority were thus in question: “it was a matter of scientific good faith that he should have given the details and the references for the ... statement ... which he has not done”. Indeed, “he does not handle statistical data in the skilled scientific manner we should expect from a man of his eminence even in a field which he does not usually cultivate” [Giffen 1899, pp. 171, 170, 169]. Giffen was particularly irritated by Crookes’ depiction of the “relative place of wheat as an article of food supply to the Caucasian race”, which he “really speaks of as the principal food”. That, however, was not the case:

The fact is ... that wheat is only a fractional part of the food of some of the peoples who consume wheat, especially of the European peoples and the people of the United States, who are by far the largest consumers, and that it could be dispensed with and replaced by other articles wholly or in great part if necessity should arise. Take the case of United Kingdom alone. Our imports of wheat and wheat–flour last year amounted to rather less than thirty-eight millions sterling, and if we allow for home production we may place our national expenditure on wheat at about fifty millions annually at the outside. Our total annual expenditure on food must be about eight times that sum. Our

¹⁷ For biographical information on Crookes, see Brock 2008. For the context and discussion of his address, see Rothstein 1982; Offer 1989, pp.218-23; Brock 2008, ch.20.

¹⁸ Although the *Statist* leader was much shorter than the subsequent review, a comparison of the phrasing and statistical criticism suggests that both were written by Giffen.

expenditure on imported food alone – meat, cereals, sugar, rice, &c. – was last year over 170 millions sterling, and if we add to that the home production of meat, dairy produce and cereals, we very soon get to a total figure of 400 millions or thereabouts. Sir William Crookes is thus anxious about an article of food on which we depend only to the extent of one – eighth [Giffen 1899, p.170].

Crookes had also exaggerated the English consumption of wheat as human food:

It is asserted among farmers ... that a considerable quantity of wheat, more than used to be the case, has of late years been ... given to cattle. Every one knows, again, that flour itself in domestic economy is more and more being applied as an element in cooking articles of luxury, and that it is not really used to a large extent as a principal food at all.

If there was to be a shortage, such wheat consumption could be “diverted back ... to the primary use as food” [ibid. p.171].

The rejection of the argument that wheat (or bread) was the ‘principal food’ was not a new point for Giffen. In his Presidential address to the Statistical Society of London in 1883, for example, he indicated that wheat no longer had a ‘special importance’ in British working class expenditure:

It is notorious that [the price of] wheat, the staff of life, has been lower on the average of late years than before the free trade era ... Wheat had quite a special importance fifty years ago, and the fact that it no longer has the same importance - that we have ceased to think of it as people did fifty years ago – is itself significant ... [For example,] meat fifty years ago was not an article of the workman’s diet as it has since become. He had little more concern with its price than with the price of diamonds [Giffen 1883, pp.601, 602-3].

This was not simply because wheat prices had fallen, but also because real incomes more generally had increased, so that there had been “a complete revolution in the condition of the masses” [Giffen 1883, p. 605]. It should also be noted that, in 1879, Giffen had argued wheat and bread prices had not increased in the “bad harvests” between 1875 – 77 as they had in previous harvest deficiencies. Although domestic production had fallen below average by a quarter, “the usual rise in wheat and bread [prices] has not followed ... because the home yield is now less important than the aggregate foreign importations” [Giffen 1879, p.47].

While the suggestion that Giffen behaviour was only identified from within neoclassical theory and that its origin can be located in a single conjecture by Marshall constitutes a “mythical foundational narrative” [Fara 1999, p.170], the picture is further complicated by the purported role of Giffen. Although it cannot be precluded that a source for the ‘observation’ or ‘hint’ that Marshall claimed had come from Giffen might subsequently be identified, it can be concluded that Giffen could not have made the suggestion attributed to him in Marshall’s *Memorandum*.¹⁹ This is not simply because he rejected the assumption that wheat (or bread) was a principal component of expenditure. It is also because that assumption would have contradicted his argument, made since the early 1880s, that working class living standards had increased, part of the evidence for which was that relative expenditure on bread had fallen. The argument was particularly important for Giffen as it was directed against the “agitators for land nationalisation and collectivism among pretended representatives of the working classes” [Giffen 1883, p.595].²⁰ In that context, Giffen’s silence, when Powers suggested at the Statistical Society in 1880 that ‘low priced bread tends rather to decrease than increase the consumption’ (see above), could be plausibly interpreted not so much as a reflection of indifference, but rather as an indication that he regarded the suggestion as nonsense.

3. Just Like Oscar Wilde?

Paul Samuelson was awarded the Swedish Central Bank Prize in Economic Sciences in Memory of Alfred Nobel in 1970. Delivering his acceptance lecture in Stockholm, Samuelson referred to a mathematical analysis of how a firm producing a commodity would (*ceteris paribus*) lower the quantity of inputs used if the input price increased. In this case, “commonsense and advanced mathematics happen to agree. But we all know the Giffen pathology according to which an increase in the price of potatoes to Irish peasants, who must depend heavily on potatoes when they are poor, may itself impoverish them so as to force them into buying more rather than

¹⁹ George Stigler also cited an extract from Giffen’s evidence to the Royal Commission on Agricultural Depression in 1894, where Giffen was asked a question that Stigler glossed as “an invitation to state the [Giffen] paradox”, an invitation Giffen “refused” [Stigler 1948, p.61]. Giffen’s response, however, was rather cryptic and not as clear as the textual evidence cited above, although it was consistent with it.

²⁰ For the significance, and a critique, of Giffen’s statistics and arguments in the context of the 1880s debates over economic and social ‘questions’, where radicals and socialists were becoming more prominent, see Saville 1968, pp.25-37.

less potatoes. In that case common sense recognizes itself only under the search-light of mathematics" [Samuelson 1972a, p.253]. It was fitting that Samuelson made that reference in a lecture discussing his contributions to economics as the fifth edition of his *Economics* textbook had provided the canonical account of the potato as a Giffen good during the mid-nineteenth century Irish famine [Samuelson 1961, pp.445n, 448n]. Variants of the story soon appeared in other textbooks [McDonough and Eisenhauer 1995]. Thirty years on, however, the search-light had dimmed. Following a critique that the famine story was incoherent in terms of a (purely competitive) partial equilibrium supply and demand analysis [Dwyer and Lindsay 1984], a detailed theoretical and statistical examination of the topic concluded in an exasperated tone: "Since the Giffen paradox is not useful for understanding the Irish experience, is it too much for future writers of elementary textbooks to find another example? Fictions have no place in the teaching of economics" [Rosen 1999, p.S313]. Actually, other examples of exceptions to 'the law of demand' were at hand. They can be found in the early editions of Samuelson's *Economics*.

Although Samuelson had referred, in passing, to "Giffen's paradox" in his *Foundations* [Samuelson 1947, pp.115, 169], the first edition of *Economics* made no reference to Giffen (or to Marshall). In an appendix to a chapter on "Supply and Demand", Samuelson considered "three rather unimportant exceptions to the universal law of diminishing consumption" [Samuelson 1948, p.475]. The first exception was (in later terminology) a type of 'Veblen effect' where demand "may fall off" with a reduction in price. Examples were diamonds, "women's hats" and other commodities that were "valued not for their intrinsic qualities as much as for their 'snob appeal' and expensiveness". This was linked to the analysis of conspicuous consumption in Thorstein Veblen's *Theory of the Leisure Class* (1899), "where things are valued because their price tag shows all over them" [ibid. p.476].²¹

Although the three exceptions had been characterised as 'rather unimportant', the second example was described as "important especially in the short run". The

²¹ Samuelson's discussion in terms of a price dimension alone (that is, the price acts as the signal of exclusiveness) does not satisfactorily capture the analysis of conspicuous consumption in Veblen's *Theory of the Leisure Class*. Veblen presented a dynamic account, combining what economists were later [Leibenstein 1950] to separate out as a 'Veblen effect', a 'snob effect' (indicating membership of a group with higher social standing) and a

demand for stock market shares could be positively related to their price because of transactors' expectations that, following a price rise or fall, the price would subsequently change in the same direction. A footnote added that this was a 'dynamic' effect depending on the rate of change, rather than the level, of the price [ibid. p.476n] and a cross reference was provided to a subsequent chapter which discussed stabilising and destabilising speculation. In the latter case, "which aggravate[s] the variability of prices", traders "find themselves at the mercy of every idle rumour, hope and fear. For speculation is essentially a mass contagion", illustrated by "the inexplicable dancing crazes that swept medieval villages", the Dutch tulipmania, the South Sea Bubble and the US stock boom of the 1920s. In the last case, with buying on margin, buyers' actions further increased prices which in turn fuelled expectations: "When the whole world is mad, 'tis folly to be sane" [ibid. p.573]. A discussion of different types of speculators followed, the most relevant for the discussion here being the distinction between 'amateurs' (who enter near the top of a boom) and 'professionals' (who "avoid the extremes of enthusiasm of the mob") in what seems to be a discussion of movement trading [ibid. p.576].

The third exception was "rather unimportant in practice, but interesting as a curiosity". It was illustrated by the case of potatoes in nineteenth-century Ireland, bought by the poor because they were "cheap and filling". If the price rose, for "the despairing housewife, this would be just like a cut in her man's income. The family now became so poor that, paradoxically, they would have to give up all meat and luxuries and fill up even more than before on potatoes. Consequently, the higher the price, the more may potatoes be demanded!" The discussion closed with a warning that a student attempting to think of other exceptions should distinguish between shifts in and movements along a demand curve. If not, "he will receive harsh treatment at the bar of justice" [Samuelson 1948, p.476]. This account remained essentially unchanged in the second (1951), third (1955) and fourth (1958) editions of *Economics*, although the third further diminished the relevance of the potatoes example by describing it as "trifling" [Samuelson 1955, p.395].

The three cases entailed different explanations of behaviour. The Irish potatoes case could be explained using a neoclassical framework of either the (Marshallian) marginal utility of money or of income and substitution effects (see below). The

'bandwagon effect' (a desire to emulate those in the higher group), by different socio-economic groups [Rutherford 1987; Bagwell and Bernheim 1996, pp.349-50].

snob/conspicuous consumption and stock market cases, however, depended on quite different assumptions. These included interdependence, where the behaviour (or perceived behaviour) of some transactors acts as an information variable for other transactors; the role and explanation of expectations; heterogeneity, as compared with homogeneity, of commodities; the meaning of 'rational' behaviour under conditions of uncertainty; and, the price level or its rate of change serving as an information variable in suggesting characteristics of a commodity. The stock market price story also posed the question of the relevance of a static, as compared with, a dynamic analysis. These are clearly difficult matters, some of which were evident in Harvey Leibenstein's subsequent discussion, especially with regard to the Veblen effect [Leibenstein 1950].²² The reader of *Economics* was, however, given no means of assessing the significance of the various behavioural assumptions because they were not clearly identified.²³

A basis for Samuelson's discussion can be traced to his time as a student at Chicago where, in 1935, he attended the "famous 301 graduate course in economic theory" that was taught by Jacob Viner who "put considerable store on the historical development of the subject" [Samuelson 1972b, pp.5, 7]. In 1925 the *Journal of Political Economy* published Viner's defence of marginal utility theory against the "slashing criticisms" of contemporary critics who argued that the theory depended on an "obsolete" and "unsound" psychology [Viner 1925, pp.371, 372]. Viner argued, in part, that while some examples of apparently 'exceptional' behaviour (such as a miser) could be ignored, others could be incorporated within the theory. What were subsequently termed network effects as well as changes in "fashion and style" could be dealt with

²² To take one example, the shape of a demand curve with the Veblen effect was unclear. Leibenstein suggested that it was possibly "like a backward S" [Leibenstein 1950, p.205], although that depended on the relative size of the Veblen and 'price' effects. A further and related problem resided in Leibenstein's (and Samuelson's) distinction between the 'intrinsic' and 'external' components of utility. There was no discussion of how these different components were to be theoretically identified and it is difficult to see how they could be within Leibenstein's 'conventional analytical methods'.

²³ As noted above, Samuelson referred to 'the inexplicable dancing crazes that swept medieval villages'. Recent work suggests that the outbreaks of 'choreomania' in the Rhine and Moselle valleys between the late fourteenth and early sixteenth centuries were instances of mass psychogenic illness, induced by acute physical and mental distress (due, for example, to floods, famine and disease), in communities that believed a Christian legend that a dancing curse had been visited on them by St. Vitus or St. John [Waller 2008].

as parameter shifts of a demand curve which would have a negative slope “at any moment”. In other cases, however, a demand curve would have a positive slope, at least over a range. These included instances of prestige commodities where consumers regarded the relative price as an indicator of quality; a necessary commodity, defined in terms of caloric requirements, where the reference point was Marshall’s *Principles*; and speculation, where expectations were based on interdependent behaviour [ibid. pp.379-81]. There was no explicit reference to a ‘Giffen good’ and Marshall’s *Principles* provided only one reason for why a demand curve could have a positive slope.

Viner rejected Veblen’s argument that a neoclassical “static or instantaneous flashlight” analysis should be replaced with an explanation of “the origins and growth of ... wants and desires” although, in that context, he “regretted that utility theorists have often called their ... analysis a theory of consumption” because, at most, it “open[ed] a pathway to the development of such a theory”. At the same time, there did “not appear to be much promise that efforts further to refine or elaborate upon the utility theory will be productive of results commensurate with the effort involved. It may even be true that the theory has already been overrefined and overelaborated for all theoretical and practical purposes” [Viner 1925, p.386]. Viner’s approach was, however, erased in the subsequent ‘refinement and elaboration’ of the neoclassical ordinalist framework which reworked the explanation for demand curves in terms of income and substitution effects. In the influential account of J.R. Hicks, for example, the only exception now allowed to the ‘universal law of demand’ was the “celebrated Giffen case referred to by Marshall [in the *Principles*]”, although it was acknowledged that, with that effect occurring over a range, the precise shape of the demand curve was unclear [Hicks 1934, pp.68-9].²⁴ Nevertheless, because the Giffen case required a commodity that was an inferior good which accounted for a large proportion of expenditure for consumers with a low standard of living, “the simple law of demand ... turns out to be almost infallible in its working. Exceptions to it are rare and unimportant” [Hicks 1939, p.35]. Consequently, the “Veblenesque example beloved of the textbooks”, where demand depended on price was ruled out as a “trifle”. More important was the exclusion of speculative demand (“another familiar text-book point”) where a change in price could result in a change of demand in the same direction due to an effect on expectations. If, in that case, the marginal rate of

²⁴ See also Schultz 1938, pp.50-52, who referred to Vilfredo Pareto’s *Cours d’Economie Politique* (1896) in that regard.

substitution of the commodity for money was not dependent on prices, Hicks acknowledged that the relevant analysis would be difficult because the outcome depended on the 'psychology' of transactors and the time period under consideration [ibid. pp.56, 271-2].

Hicks set out the terms in which the meaning of a Giffen good or paradox eventually came to be understood by most economists in the postwar period.²⁵ The change was not, of course, an immediate one. In the second edition of Frederic Benham's widely used textbook, for example, written while he was teaching at the London School of Economics, a number of 'exceptional demand curves' were discussed. The expectations case, illustrated by financial securities, was now depicted as a shift in a demand curve. However, other cases, with a positive demand curve over a range were allowed for. These included the purchase of "high price" commodities to display wealth and consumers using price as an indicator of quality. The most important instance, however, concerned bread and potatoes for the very poor who faced a subsistence constraint, explained by a calorie requirement. That such consumers could increase the quantity of bread purchased following a price rise "is suggested by the fact that a poor family often spends less on bread when its money income increases, prices remaining the same. Thus the demand curve for two or three commodities ... may slope upward for part of its length" [Benham 1940, pp.54-5].

Benham's textbook shows that, by 1940, both potatoes and bread could be used to illustrate an upward-sloping demand curve, albeit without reference to income and substitution effects. It can also help to explain Samuelson's discussion in the early editions of *Economics*, referred to above, which might appear odd, given Samuelson's own contributions to the ordinalist framework with the analysis of revealed preferences [Wong 1978]. Samuelson's use of both the (Marshallian) marginal utility of money and of the income and substitution effects frameworks in the early editions suggests, however, that he was tailoring his account to different

²⁵ Viner's account may well have drawn on his detailed knowledge of the history of economics. Simon Gray's 1815 argument (see above) had been given a brief and derisory mention in the first edition of *Palgrave's Dictionary* [Powell 1926 (1896), p.257]. That Viner had to remind both Schultz [1938, p.52n] and Stigler [1947, p.154n] of that entry might suggest the narrowing terms in which the Giffen effect was considered by the 1930s and 1940s. References to the 'Giffen paradox' were also part of the US debate in the 1930s and 1940s regarding the theoretical explanation for, and measurement of, demand curves [Mirowski and Hands 1998, esp. pp.266-74].

audiences. In that regard, a significant shift appeared in the fifth edition of *Economics* (1961). Irish potatoes were now referred to in two chapters, with the first in a discussion of income and substitution effects to explain demand curves. The Irish famine was also introduced as a "possible, albeit extremely rare" exception to downward sloping curves:

When the 1845 Irish famine greatly raised the price of potatoes, families who consumed a lot of potatoes merely because they were too poor to consume much meat might have ended up consuming *more* rather than less high-P potatoes. Why? Because now they had to spend so much on potatoes, the necessary of life, as to make it quite impossible to afford any meat at all and hence were forced to become even more dependent than before on potatoes. In brief, the substitution-effect was here overcome by the perverse income-effect applicable to a peculiar 'inferior' good, such as the potato, which tends to *decrease* in the poor-man's budget when incomes *rise* [Samuelson 1961, p.445n].

In the following chapter, the three exceptions to the law of demand were relegated to a footnote and their relative importance was rearranged. The stock market price case, formerly described as 'important especially in the short run', now became "a less clear-cut example", although the Veblen reference provided a "still better ... example". The previously 'trifling' Irish potato case now had priority and not simply in the order of discussion. A cross-reference to the previous chapter's mention of the famine was accompanied by the observation that it was a "legitimate exception to the law of downward-sloping demand ... This is called 'Giffen's phenomenon' after Sir Francis Giffen who is supposed to have suggested it in the nineteenth century" [Samuelson 1961, p.484n]. If this laid the basis for the subsequent textbook claim that Giffen had observed the Giffen phenomenon during the Irish famine [McTaggart, Findlay and Parkin 1996, p.179; Himmelweit, Simonetti and Trigg 2002, p.42], by the sixth edition of *Economics* in 1964 there was no reference to other possible explanations for a positively-sloped demand curve. Samuelson was reported as saying, "I am told the book [*Economics*] is well written. It should be. I sweated blood over it. I am like Oscar Wilde. I spend a morning putting in a comma, and the afternoon taking it out" [Thomas 1973].²⁶ His reference to Sir Francis Giffen suggests,

²⁶ "[Wilde] related also, with much gusto, how in a country-house he had told his host one evening that he had spent the day in hard literary work, and that, when asked what he had done, he had said, 'I was working on the proof of one of my poems all the morning and took

however, that the new approach was uncontaminated by historical research and Sir Francis still occupied the text in the seventh edition of 1967.

While the first four editions of *Economics* suggested that upward sloping demand curves were exceptions, they were still represented, at least in part, as having some contemporary relevance or reference points. By the sixth edition, however, the possibility of such a curve had been reduced to an historical curiosum and the rhetorical significance of the reference was constructed in a different fashion. When the famine story appeared in the fifth edition, it immediately preceded Samuelson's account of Adam Smith and the water and diamonds 'paradox of value' [Samuelson 1961, pp.445-6], the basis for which can also be traced to Samuelson's time at Chicago. The reader was thus presented with an historical account of why demand curves with a positive slope were practically irrelevant and of how (neoclassical) economists had provided the correct explanation for downward sloping curves, solving a theoretical problem that had puzzled economists until c.1871. The role of the Giffen good was now part of a triumphalist neoclassical story about the empirical validity of, and theoretical explanation for, downward sloping demand curves. If the two historical references were fabrications, it was appropriate that Samuelson combined them in that fashion because the first edition of *Economics* had also provided the canonical textbook account of the mythical paradox of value [Samuelson 1948, pp.482-3; White 2002].²⁷

The Irish famine Giffen good in *Economics* was devised to illustrate the only case where the ordinalist neoclassical framework allowed that a demand curve could have a positive slope. *Pace* Jensen and Miller, what is 'embarrassing' about this episode is not so much the disregard of relevant historical evidence but rather that, although Samuelson's illustrative device was widely replicated in other textbooks, twenty years elapsed before it was noticed, at least in print, that it was analytically incoherent.²⁸

out a comma.' 'And in the afternoon?' 'In the afternoon, - well, I put it back again'" [Sherard 1902, p.72].

²⁷ Kennedy [2010] also attributes Samuelson's *Economics* with the canonical statement that Adam Smith's 'invisible hand' paragraph in the *Wealth of Nations* should be understood in terms of a neoclassical perfectly competitive analysis.

²⁸ Jensen and Miller suggest "it is even possible that if the right data were available, the claims by Marshall and Samuelson that bread and potatoes were Giffen would be verified" [Jensen and Miller 2008, p. 1575]. They do not explain how that could be the case for

The replication of erroneous textbook illustrations is not, of course, confined to the economics discipline and owes a good deal to the market structure and the corresponding incentives for textbook writers [Gould 1992, chapter 10; Paul 1998, chapter 3; McDonough and Eisenhauer 1995, pp.753-55]. At the same time, it should also be noted that, while economics textbooks today generally eschew any discussion of interdependent behaviour, the replication of the Irish famine Giffen good story demonstrates its relevance.

Conclusions

Jensen and Miller tell a neat historical story of Giffen behaviour, consisting of an origin with a conjecture by Marshall, followed by the subsequent failure to establish supporting evidence and a triumphant denouement with their own paper. It is a stereotypical whig history, redolent of an introductory textbook account of how economic knowledge progresses via searches for empirical verification. It assumes that the historical characters who inhabit the narrative were all asking the same question, while struggling to find the evidence that would confirm a particular result from an 'abstract' theory. The denouement follows the production of an appropriate data set and the utilization of new statistical technologies.

The linear narrative, however, dissolves under closer examination. The explanation of and the significance attributed to Giffen behaviour shifted with the reformulations of 'neoclassical' economics. Instead of a single theoretical object, there have been different questions and analytical objectives since the late nineteenth century. The roles of and meanings attributed to Giffen behaviour have thus depended on different contexts and objectives. The latter have included: a defence of the concept of consumer surplus; a critique of proposals for British imperial tariffs; one reason, or the only reason, for why demand curves might slope upwards; a textbook rhetorical device to demonstrate the superiority of neoclassical economics; econometric exercises in search of a Giffen good; and, a field experiment for devising welfare programs for the poor.

The criteria of an acceptable standard of empiricism, that is, "what it means to have economic theories grounded in the best available empirical evidence" have also shifted. It has been noted that, for the "early ordinalists" writing in the late nineteenth

Samuelson's story, given that the quantity available of potatoes fell drastically during the famine while the price increased.

and early twentieth centuries, the sources of “insights about economic behavior were common sense, introspection and thought experiments rather than the laboratory experiments that are common today”. Hence, the understanding of empiricism has been “historically contingent and intertemporally unstable. The epistemic preferences of the economics profession, like the preferences of economic agents in general, are highly context – dependent“ [Hands 2011, pp.388, 405]. If the Jensen and Miller story of failure assumes that earlier economists were working with today’s notions of empiricism while hampered by ‘inadequate data and empirical strategies’, the claim that their own results have ‘vindicated’ neoclassical theory is careless. The theory of income and substitution effects on which they rely cannot depict Giffen behaviour in a determinate manner because that theory rejects any explanation for the formation of preferences and thus has “no criteria for determining what is a low standard of living or what constitutes a large proportion of a person’s income” [Wong 1978, p.44]. While the theory may be utilised as part of a modelling strategy that identifies caloric requirements for an explanation of Giffen behaviour, a model is not the same thing as a theory.²⁹

If, as Jensen and Miller argue, Giffen behaviour has played an important role in economic pedagogy via textbooks and lectures, it might be thought that, as Samuelson had omitted any reference to the Irish famine Giffen good by the fourteenth edition of *Economics* [Samuelson and Nordhaus 1992], all traces of the illustration would disappear from other textbooks. That, however, is not the case.³⁰ Indeed, a recent edition of a widely used textbook informs the reader that “the term [Giffen good] is named for economist, Robert Giffen, who first noticed the possibility”. While an upward-sloping demand curve is “a matter of economic theory”, “historians

²⁹ In view of the claim that Giffen behaviour provides the only satisfactory explanation within neoclassical economics for a positive relationship between quantity demanded and price, it should be noted that some of the considerations of the interwar discussion of upward sloping demand curves discussed in this paper have recently been revived. Within an information asymmetry framework where purchasers use price as a signal of quality, it has been argued, “uninformed” purchasers of financial securities could perceive that an increase in price is a signal of a future increase, so that the relevant demand curve is upward-sloping [Stiglitz 1987, pp.2 - 4; see also Grenville 1998, p.27 and Cassidy 2010, p.310]. It is not clear why such an analysis could not be described as ‘neoclassical’.

³⁰ “Giffen thought that potatoes in nineteenth-century Ireland provided an example of the paradox, but subsequent research did not support his belief” [Salvatore 2003, p.104, where the reference is to Rosen 1999].

suggest that potatoes were a Giffen good during the Irish potato famine of the 19th century". The paper by Jensen and Miller has "produced similar but more concrete evidence for the existence of Giffen goods." Hence, "the theory of consumer choice allows demand curves to slope upward, and sometimes that strange phenomenon actually occurs. As a result, the law of demand ... is not completely reliable. It is safe to say, however, that Giffen goods are very rare" [Mankiw 2008, pp. 472, 473]. Apart from the unproblematic Giffen origin, the Irish famine has been restored to pride of place, with the veracity of the latter now sourced to unnamed historians rather than another economics textbook. And, in a final irony, the Jensen and Miller search for evidence to support the Marshallian 'conjecture', the report of which clearly stated that the famine story was 'discredited' and emphasised that they had provided evidence only of Giffen behaviour, now becomes part of the confirmatory evidence for a Giffen good. As this suggests, textbooks do not simply reflect processes of stabilization and normalization within the economics profession. They can also play an active role in stabilizing particular stories by creating mythical accounts of its history and procedures, a process facilitated by the homogenization of textbook content and the incentives for authors to replicate existing stories.

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