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approach to consumption and time**

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Some notes on Gossen's 'submerged and forgotten' approach to consumption and time

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Abstract: Hermann Heinrich Gossen (1810-1858) — a civil servant who, in 1854, published at his expense the book *Entwicklung der Gesetze des menschlichen Verkehrs und der daraus fließenden Regeln für menschliches Handeln* — has traditionally been considered a forerunner of the neoclassical theory of consumption based on the law of diminishing marginal utility.

It is only with the long-awaited publication, in 1983, of the English translation of Gossen's book, that his editor, Nicholas Georgescu-Roegen, started to see in *The Laws of Human Relations and the Rules of Human Action Derived Therefrom* the roots of a wholly different theory of consumption in which the flow of calendar time plays a crucial and non-trivial role.

By going through the works of Jevons, Menger and Walras, the paper argues that the logical and theoretical connection between Gossen's approach to consumption choices and the marginalist school is unwarranted. Theoretical connections, if any, can be found between Gossen and the classical economists on the one hand and the English 'liberal' tradition of John Stuart Mill and J.M. Keynes on the other.

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Introduction

It is well known that Sraffa referred to the Classical approach to the theory of value and distribution as having been “submerged and forgotten since the advent of the marginal method” (Sraffa, 1960, p. v). That approach consisted in a theory of income distribution based on the idea that distributive antagonism should be incorporated within the theory by assuming that either one of the distributive variables, the wage rate, as it is in Ricardo and Marx, or the profit rate, as it is in Smith, should be considered as exogenously given, while the value of the remaining one stems from the technical conditions of production. In their attempt to develop a rigorous theory of distribution, the classical economists approached the theory of value instrumentally. The labour theory of value in Ricardo, the theory of the component parts in Smith — both expressing the ‘natural’ tendencies as opposed to the vagaries of market prices determined by oscillations of demand and supply — served the purpose of isolating the determination of the distributive variables from the exchange values. For what concerns demand, the classical economists essentially relied upon a sociological explanation of it, with social classes showing specific consumption patterns and individual, specific, consumption choices being governed by their temperament rather than by rational calculus “as every man's humour regulates the degree of his consumption” (Smith, 1976 [1776], p. 895).

Ricardo, following Smith, considered *usefulness* only a prerequisite for the exchangeable value of any commodity to be positive and refrained from investigating upon the demand for those non-reproducible commodities, whose value “varies with the varying wealth and inclinations of those who are desirous to possess them” (Ricardo, 1951 [1821], p. 12), whereas he concentrated on the complex relationship between income distribution and exchangeable values of the reproducible commodities. Then, in the concluding lines of Chapter XXX of the *Principles*, Ricardo restated the idea that only the prices of the “commodities which are monopolized, either by an individual, or by a company, ... fall in proportion as the sellers augment their quantity, and rise in proportion to the eagerness of the buyers to purchase them; their price has no necessary connexion with their natural value: but the prices of commodities, which are subject to competition, and whose quantity may be increased in any moderate degree, will ultimately depend, not on the state of demand and supply, but on the increased or diminished cost of their production” (*ibidem*, p. 385). Contrary to Ricardo, Smith explored also the subjective dimension of the labour theory of value as a basis for explaining individual appreciation of the objects of exchange. In fact, according to Smith’s notion of ‘labour commanded’, regardless of how exchange ratios are determined in the various stages of society, “what every thing really costs to the man who has acquired it, and who wants to dispose of it or exchange it for something else, is the toil and trouble which it can save to himself, and which it can impose to other people” (Smith, 1976 [1776], p. 34).¹

On the other hand, Jevons, Menger and Walras, the ‘founders’ of the neoclassical theory of value and distribution, aimed at replacing the instrumental theory of value of the classical economists with the supply—and—demand theory of prices (both for goods and services of factors of production). The notion of *marginal utility* served to add the demand side of the market that Smith and Ricardo had ‘neglected’. Within the research programs of Jevons and Walras, it served also the purpose of launching the mathematization of economic theory.

Hermann Heinrich Gossen (1810-1858) — a civil servant who, in 1854, published at his expense the book *Entwicklung der Gesetze des menschlichen Verkehrs und der daraus fließenden Regeln für menschliches Handeln* — has traditionally been considered, also by the ‘revolutionary’ themselves, one of the main forerunners of the neoclassical research programme. The aim of this paper is to question such a link and to argue that also Gossen’s approach to economic theory has been *submerged and forgotten* together with the classical one of Smith and Ricardo since the advent of supply—and—demand as a general explanation of all economic phenomena.

¹ Smith’s use of the labour theory of value as a theory capable of explaining exchange ratios only in “that early and rude state of society” and his notion of labour commanded attracted Marx’s criticism (Marx, 1969 [1863]) and, to some extent, also Sraffa’s (1951, pp. xxxv-xxxvii). For a defense of Smith’s theory of value, see Nisticò (1991a, 1991b and 2002).

The paper is organized as follows. Section 2 outlines the essence of Gossen's contribution to a theory of human behavior, trying to show that the blueprint of his approach is the fundamental role of time as a measure of both benefits and costs. Section 3 summarizes the contributions of the three authors considered the founders of the marginalist revolution, Jevons, Menger and Walras, emphasizing that any substantial link between Gossen and neoclassicism is unwarranted. Section 4 concludes.

Gossen: a 'behavioral', non—neoclassical marginalist

From Bentham to Gossen

Gossen is generally considered a 'case in point' in the history of science, the point being whether his contribution did not go through the attention of his contemporaries because, in 1854, when he finally succeeded in publishing his book, the ground was not fertile enough for his arguments to spread, or just because Gossen is a typical instance of those genial "minds that may think above their time", as Georgescu-Roegen argues in the opening pages of his brilliant introductory essay (Georgescu-Roegen, 1983) to the long-awaited English translation of Gossen's *Entwicklung, The Laws of Human Relations – and the Rules of Human Action Derived Therefrom*.

Interesting as it might be to assess whether it was 'inevitable' for the marginalist revolution to take place precisely in the 70s of the XIX century, with Gossen being its genial precursor rather than a minor anticipator of that revolution, the point to be clarified is to what extent Gossen, Menger, Jevons and Walras do actually belong to the same 'school of thought'. In order to answer this question, it is convenient to start from what is not under dispute: Gossen's approach to human behavior is definitely both hedonistic and founded on rigorous mathematical reasoning. As such, hedonistic utilitarianism must have had some influence on him. He was such a bad historian of thought that one can hardly find in *The Laws* any reference to past or contemporary authors; and Jeremy Bentham is among the many neglected, who might have influenced the Prussian civil servant. In fact, it is difficult to disagree with Schumpeter (1987 [1954], p. 1022) that Gossen should be considered a hedonistic utilitarian.²

² On the other hand, Schumpeter shares the 'continuity thesis' between Gossen and the neoclassical marginalists, a thesis that this paper aims to enquire into. Schumpeter's whole passage from the *History* is the following: "The historical alliance of utility theory with utilitarian philosophy was obvious. We cannot blame men who were no theorists for suspecting that there was also a logical one. Moreover, some of the most prominent exponents of marginal utility were in fact convinced utilitarians: Gossen was, and Jevons, and Edgeworth. They, and others too, had used language that was apt to create the impression that marginal utility theory depended upon utilitarian or hedonist premises — Bentham certainly thought so— and could be attacked successfully by attacking these. Jevons was the chief culprit: he even went so far as to call economic theory a 'calculus of pleasure and pain'—Verri had done so before—and elicited from Marshall the rebuke that he was mixing up economics with 'hedonics'" (Schumpeter, 1987 [1954], p. 1022).

Bentham's 'axioms' on human behavior had, and still have, an enormous impact on economics. In a footnote of his *Preface to An Introduction to the Principles of Morals and Legislation*, Bentham expressed his view on the importance of rigorous thinking based on sound behavioral axioms:

For example.—It is worse to lose than simply not to gain.—A loss falls the lighter by being divided.—The suffering, of a person hurt in gratification of enmity, is greater than the gratification produced by the same cause.—These, and a few others ... have the same claim to the appellation of axioms, as those given by mathematicians under that name; since, referring to universal experience as their immediate basis, they are incapable of demonstration, and require only to be developed and illustrated, in order to be recognised as incontestable (Bentham, 1823, p. v-vi)

... truths that form the basis of political and moral science are not to be discovered but by investigations as severe as mathematical ones, and beyond all comparison more intricate and extensive. (*ibidem*, p. xii).

Bentham's concern with the use of mathematics in social sciences is echoed in the Preface of *The Laws* where Gossen argues that "economics concerns itself with the interplay of a variety of forces and that it is impossible to ... present the true system of economics without the aid of mathematics" (Gossen 1983 [1854], pp. cxlvii-cxlviii). On the other hand, it is important to stress that Bentham did not envisage the possibility to use mathematics in terms that are analogous to the modern utility-maximisation approach which interprets human behaviour in terms a choices among alternative bundles of goods and services, whose *utility* can be ranked according to well defined preference orderings.

In another footnote, preceded by the heading 'Addition by the Author, July 1822' inserted by Bentham in the first Chapter, titled *On the Principle of Utility*, we find the following, interesting, specification about the possible (mis)use of the word utility:

"To this denomination has of late been added, or substituted, the *greatest happiness or greatest felicity* principle: this for shortness, instead of saying at length *that principle* which states the greatest happiness of all those whose interest is in question The word *utility* does not so clearly point to the ideas of *pleasure and pain* as the words *happiness* and *felicity* do" (*ibidem*, p.1).

In fact, for Bentham, utility is a property of the tools, of the instruments by which individuals or societies try to achieve the ultimate goal of their action, namely enjoying pleasures or reducing pains:

Nature has placed mankind under the governance of two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as to determine what we shall do ...

By utility is meant that property in any object, whereby it tends to produce benefit, advantage, pleasure, good, or happiness, (all this in the present case comes to the same thing) or (what comes again to the same thing) to prevent the happening of mischief, pain, evil, or unhappiness to the party whose interest is considered (*ibidem*, p.2).

The circumstance that utility is nothing else than a property of the objects is also clear to Gossen, who never mentioned utility as the *maximand* variable of human actions.

It is only with neoclassicism that maximizing utility becomes an end in itself. Becker (1965) will even reverse the original Benthamian meaning by attributing the property of utility to the final activities (which he will surprisingly call *commodities*) as opposed to the market goods used by the household in their production functions.³ In what follows, I'll try to argue that *The Laws* can be considered, essentially, an attempt to express Bentham's behavioural axioms in rigorous, mathematical terms. Only to this limited extent concerning the use of mathematics, Gossen can be considered a forerunner of Jevons and Walras. On the other hand, the connection between Gossen and Menger, the latter having made almost no use of mathematics, can be found in the attempt to take time seriously into account when dealing with consumption choices.

Gossen's 'forgotten' path-dependent approach to time use

Gossen casts his theory of human behaviour in a timeful context. The goal of consumption experiences, which are the object of individual choices, is to make the flow of our lifetime as pleasant as possible taking into account that our preference ordering over alternative activities inevitably changes through time. What we find pleasant today depends also on what we did, or did not, yesterday; as much as a possible unpleasant experience today might have an influence on our ability to enjoy pleasant time tomorrow. In fact, Gossen's attention towards the intertemporal dimension of consumption choices, with a clear 'evolutionary' and path-dependent conception of preferences emerges from the very beginning of his book:

“Now, on the one hand, the life of a human being covers a considerable time span, and there are large number of pleasures in life that man can obtain immediately; yet those pleasures have the consequence of imposing later, disproportionate deprivations. On the other hand, the most elevated, the purest pleasures become comprehensible, become real pleasures, only after man has educated himself for their appreciation. ... In other words: Enjoyment must be so arranged that the total life pleasure should become a maximum” (Gossen, 1983 [1854], p. 3).

Having specified the maximand — total pleasant lifetime — and the context — calendar time — of individual choices, Gossen goes on with the definition of the fundamental behavioural assumptions upon which to erect his theory. These are condensed in his laws of pleasure:

A.1. The magnitude [intensity] of pleasure decreases continuously if we continue to satisfy one and the same enjoyment without interruption until satiety is ultimately reached.

³ For a critique of Becker's *Theory of the Allocation of Time*, see Nisticò (2015, pp. 7-14).

A.2. A similar decrease of the magnitude [intensity] takes place if we repeat a previously experienced pleasure. Not only does the initial magnitude [intensity] of the pleasure become smaller, but also the duration of the pleasure shortens, so that satiety is reached sooner. Moreover, the sooner the repetition, the smaller the initial magnitude [intensity] and the shorter the duration. (Gossen, 1983 [1854], p. 6)

Gossen's laws, in that they emphasise the negative effects of reiterating the same enjoyment *through time*, clearly clash with the now established static version of marginal utility as a decreasing function of the stock of the quantity available in a given moment of time, or of hypothetical, alternative, quantities consumed in a timeless context. Gossen's emphasis on the need to let time flow for the law to be meaningful is attested to first of all by his didactic choice to start his explanation of the laws of pleasure with reference to intellectual enjoyments:

Who does not remember the pleasure he has derived from the discovery, real or fancied, of a new truth! Subsequently, some pleasure is derived from dwelling on the subject for a while; but this diminishes more and more until in the end any further contemplation of the topic results in boredom (*ibidem*, p. 7).

Moreover, when extending his argument to the more typical case of material goods, Gossen does not even mention the physical satiation induced by an increase in consumption. He rather emphasises the mental satiation induced by repetition through time of the same enjoyment:

Experience confirms beyond doubt that repeated satiation with the same fare causes a decrease of pleasure and a reduction in the quantity of the enjoyable consumption similar to the contraction of the period of the intellectual pleasure... The poor man who has a roast only on holidays undoubtedly derives greater pleasure from eating his roast than one who has his daily fill of it; but for the latter, the pleasure afforded by eating all the roast he wants is all the more increased, the longer the enjoyment is delayed" (*ibidem*, pp. 7–8).

Gossen devotes, roughly, the first 100 pages of his book to an economic analysis of time, the two laws reported above constituting the prologue together with the the corollary of the second law according to which "with each specific pleasure, there is one fundamental manner of enjoying it, determined by the frequency of the repetition of the enjoyment" (*ibidem*, p. 13). *Time* remains throughout the fundamental character of Gossen's story, i.e. the fundamental resource, whose allocation determines the total amount of pleasant time that individual can enjoy. The fundamental role of time clearly emerges also from Gossen's graphical representation of the first law reported in Figure 1 that he describes in the following terms:

"The incalculable importance of the law makes it desirable to obtain the clearest possible notion of it. A geometric diagram may be of help here. ... In our case, such a diagram can be drawn in the following manner: *Let the time during which a pleasure lasts be presented by line ab ...* , so that any point on the line *ab* represents a corresponding instant of this time; hence every segment of the line represents a corresponding time interval. In this case, therefore, \overline{ad} , the first tenth, corresponds to the first tenth

of the time period; \overline{df} , the second tenth, corresponds to the second tenth of the time period; and so on” (*ibidem*, p. 9).

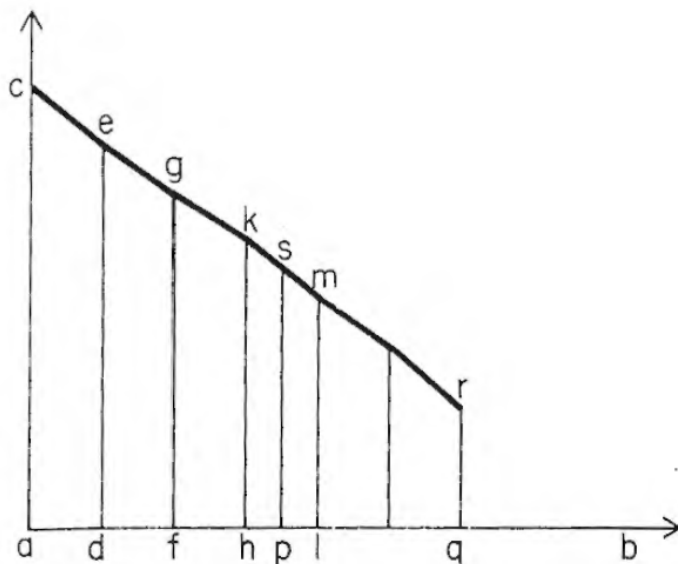


Figure 1: Gossen's own graphical representation of his first law of pleasure

Gossen is very cautious in letting time remain the fundamental independent variable, as well as the measure of ‘pleasures’, also when he moves to the role that goods play in economic choices. In fact, according to Gossen, consideration of “the pleasure-generating powers in nature does not require an essential modification of the laws according to which valuation is to be made” and “the diagram of enjoyment also serves directly as the diagram of value of the means of enjoyment *because in their case the yardstick of the [value of] possession is the duration of enjoyment* (*ibidem*, pp.32-33). In order to do so, Gossen resorts to the simplifying assumption that “for the means of enjoyment that are consumed through one single use ... the quantity used increases in proportion to the time during which they provide us with our pleasure” (*ibidem*). In other words, according to Gossen’s simplifying assumption, the shape of all functions describing the marginal value of the goods necessary any activity simply reproduces the shape of the marginal pleasure of the activity itself. The flow of time remains, therefore, the context in which individuals can feel the dynamics of their appreciation for the “means of enjoyment”, whose diagram, reported in Figure 2, is described by Gossen in the following terms:

“In order to obtain a presentation of the value of the means of enjoyment, one needs only to represent by \overline{ab} ... the quantity of the means of enjoyment required to satisfy the pleasure during the period \overline{ab} ” (*ibidem*).

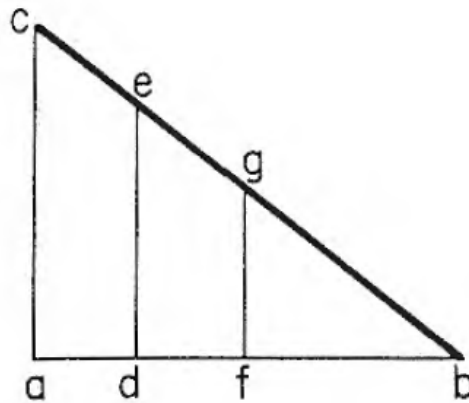


Figure 2: Gossen's representation of the decreasing 'value' of the means of enjoyment

Having accomplished the extension to the use of material goods of the laws of enjoyment with *time* remaining the fundamental choice variable, Gossen goes on, in the second chapter of *The Laws*, to analyze the side of the 'pains', where labour time shows up as the essential cost, since "for the production of ... goods, some human effort is necessary, and this effort causes man more or less discomfort". Moreover, since pleasures and pains are both homogenous magnitude measured in terms of time units, the conclusion can be drawn that "the value [pleasure] of what is obtained by effort is decreased exactly by the proper measure of the discomfort" (*ibidem*, p.40). Here is where Gossen comes close to Smith's above mentioned subjective labour theory of value and to the consideration of labour time, intended as effort required to enjoy the pleasures of life, as the fundamental economic variable by which the cost of consumption goods should be computed, when developing a theory of consumption:

"If we take into account that the means of enjoyment must be produced by labour, the fundamental principle of the science of pleasure is that *In order to maximize his life pleasure, man must distribute his time and energy among various pleasures in such a way that for every pleasure, the intensity of pleasure of the last atom produced shall be equal to the magnitude [intensity] of the discomfort experienced by him at the very last moment of his expenditure of effort*" (Gossen, 1983 [1854], p. 53).⁴

⁴ In a paper devoted to the analogies between Gossen's laws of pleasure and the labour theory of value, Hagendorf, (2010) notes the differences between the translation (by Rudolph Blitz) of the version edited by Georgescu-Roegen and the following one provided by Tugan-Baranovsky, who cited Gossen in his *Theoretical Foundations of Marxism*: "*In order to maximize his life pleasure, man must distribute his time and energy among the preparation of various pleasures in such a way that the value of the last atom yielding each pleasure shall be equal to the magnitude of discomfort experienced by him if this atom had been created in the very last moment of the employment of force.*". It is especially in the last words of the sentence that Tugan-Baranovsky's translation is closer to the original German passage: "Mit Rücksicht auf die Notwendigkeit der Beschaffung der verschiedenen Genüsse durch Arbeit lautet daher der oben gefundene

Gossen devoted only the 16 pages constituting chapter 7 of *The Laws* to the theory of exchange and, as it is clarified in section 3.3 below, it is to these pages that Walras will refer to when acknowledging Gossen as one of his precursors. Curiously enough, however, it is precisely this chapter of *The Laws* that shows how Gossen was much closer to the classical than to the neoclassical approach to price determination. It is in particular Ricardo's above mentioned idea that the demand side is of no help, at least under competition, for the determination of prices, this latter being dependent on costs alone, that constitutes the focus of the chapter. Gossen seems to go further than that, and by resorting to some notion of *joint consumption*, expresses his view that an analytical treatment of demand is useless for price determination:

“One further observation is in order: In considering the determination of value, we have noticed that when a number of goods provide a pleasure through their union, the determination of the value of each specific item is impossible; only the value they have through their joint effect can be determined. This does not, however, prevent establishing a price for each component, and in this way the reward to its producer will settle at the appropriate level. If someone wants to obtain for himself a pleasure of this type, he will consider its total cost in order to determine the quantity that he wishes to buy. No matter how the price of each component may have been established, it will soon become apparent whether the producer's reward in this instance is normal; should it be otherwise, it will soon move to its proper level by the well-known processes. In this case, the processes actually are accelerated. The increase or decrease in production called for by the abnormality in the compensation of one of the components requires a proportionate increase or decrease in the case of all other the components since only in their union do they bring about the specific pleasure.” (*ibidem*, p.113).

To my knowledge, the problems connected with complementary goods have been analyzed with reference to the stability of general equilibrium (Hicks, 1946, p. 42-77) and to the same definition of complementarity (Lange, 1940; Ichimura, 1951; Hicks, 1956; Lancaster, 1957; Machlup, 1957) but not to the question raised by Gossen about the logical difficulty of identifying the individual's willingness to pay for one unit of a commodity belonging to a set of complements; and instances of complementarity appear particularly pervasive when the focus of demand theory is on the quantities of goods and services used as inputs in time-consuming activities.

At the beginning of this section, I stated that Gossen was interested in elaborating a general theory of human behavior and not a theory of exchange alternative to that proposed by the Classical school; and

Hauptgrundsatz der Genußlehre: *Um ein Größtes von Lebensgenuss zu erhalten, hat der Mensch seine Zeit und Kräfte auf die Bereitung der verschiedenen Genüsse der Art zu verteilen, dass der Werth des letzten bei jedem Genuss geschaffenen Atoms der Größe der Beschwerde gleich kommt, die es ihm verursachen würde, wenn er dieses Atom in dem letzten Moment der Kraftentwicklung schaffte.*“ The main problem of this ‘subjective labour theory of value’ is that Gossen's conclusion is unwarranted, in that nothing ensures that the total amount of available time allows individuals to realize the condition of equality between marginal pleasure and marginal discomfort for all activities. For the correct formulation of the optimality condition in Gossen's approach, see Nisticò (2014, pp-288-91).

the passage quoted above supports my statement. Before closing this section, it is worth quoting another passage, whose reading has also inspired my statement:

[Political Economy] sets for itself the task of developing the rules governing the provisioning of the human race with the so—called material goods and how the most advantageous results of this process can be achieved. It thus limits the applicability of its rules to the so—called material goods. There is absolutely no good reason for this limitation since man engaged in enjoyment is completely indifferent whether the pleasure is created through material or nonmaterial goods. This limitation was imposed solely by the circumstance that it seemed impossible to formulate rules applicable above and beyond the material goods. The present conventional name of this science is no longer appropriate if we set aside this limitation and extend the purpose of this science to its real dimension —*to help man obtain the greatest sum of pleasure during his life*. With this idea in mind, in the sequel I shall speak instead of the *science of pleasure*” (*ibidem*, pp. 38-9).

As we will see in the next section, nothing of the above conception is to be found in the authors of the marginalist revolution who, far from following Gossen’s suggestion, successfully changed the name of our discipline into *Economics*, pointing towards a direction wholly different from the one Gossen had indicated.

The marginalist ‘revolution’

It can hardly be denied that the neoclassical theory of demand, whose building blocks have been laid down by Jevons, Menger and Walras has exerted, and still exerts, an enormous impact on our discipline. It was in particular the possibility to derive a well-behaved demand function (to be used in conjunction with supply to determine prices and quantities) from some basic assumptions on individual preferences that attracted the attention of several brilliant scholars in our field. The development of an axiomatic approach to economics, rather than following the path that Bentham and Gossen had started to explore, took the ‘track’ of thought experiments. More specifically, with the marginalis revolution, the idea started to emerge that a demand theory could be erected on purely logical grounds assuming that individuals have, once and for all, a well defined and stable preference ordering, an assumption that is clearly inconsistent with any significant role of time. The following passage from Lancaster’s (1957) comment on Hick’s (1956) *Revision of Demand Theory* is illustrative of the appeal that such an idea had on later theorists:

Now, in the absence of any axioms of any kind concerning human behaviour in a situation of choice under constraint, there is no a priori demand theory at all. But why set up a full-dress theory of choice merely to derive the consistency tests? Why not use the consistency test itself as the axiom of demand theory? ... As an axiom, this seems, in itself, as "self-evident" as the choice or preference axioms, and surely more so than any of the utility concepts. *Much (but not quite all) of it is implied by the "constancy of tastes" which is a pre-axiom to utility theory. This one axiom is sufficient to derive the whole meaningful content of demand theory.* (Lancaster 1957, p. 355, emphasis added).

As I will try to argue in the following sections, the contrast between Gossen's behavioral, path-dependent approach and the neoclassical, atemporal, theory of demand was clear from the very start, i.e. from the outbreak of the marginalist revolution.

Jevons

Jevons felt he was heading an intellectual revolution ready to dethrone the Ricardo-Mill school and to give a mathematical character to Political Economy. Such an attitude of a revolutionary leader he displayed since the writing of the Preface to the first edition of the *Theory*, where he warns the readers that “it has often been ultimately proved that authority was on the wrong side” (Jevons 1871, p. vi). Jevons shows, the same attitude, possibly reinforced, in the long preface to the second edition where, besides the announcement of the replacement of the old name, ‘Political Economy’, for the new one, ‘Economics’ — which survived in the title for editorial reasons — we find the following well-known reprimand of Ricardo and J.S. Mill:

“When at length a true system of Economics comes to be established, it will be seen that that able but wrong-headed man, David Ricardo, shunted the car of Economic Science on to a wrong line, a line, however, on which it was further urged towards confusion by his equally able and wrong-headed admirer John Stuart Mill” (Jevons, 1879, p. lvii).

Jevons dedicated to Gossen eight pages of his Preface to the second edition of the *Theory of Political Economy* (Jevons, 1879, p. xxxv-xlii), where he asserts that “the coincidence ... between the essential ideas of Gossen's system and my own is ... striking”. However, Jevons admits that he “never saw nor so much as heard any hint about the existence of Gossen's book before August 1878” (*ibidem*, p. xl), an admission that clearly serves the twofold aim to explain the absence of any reference to Gossen in the First Edition of the *Theory* and to stress the originality of his own ‘revolutionary’ ideas. In fact, when presenting the summary of Gossen's book, Jevons admits to “describe the contents of this remarkable volume as they are reported to me by Professor Adamson” (*ibidem*, p. xxxvi).⁵ The first information that Jevons considers relevant for his readers is that the German word *Werth*, whose obvious English translation is *Value*, “may, Professor Adamson thinks, be rendered with strict accuracy as *utility*” (*ibidem*, pp. xxxvi-vii). By relying on this second-hand reading of Gossen's book, Jevons then pursues the task to convince the readers that Gossen and himself shared the same ‘track’, different from the one chosen by Ricardo and Mill, to use the notion of utility to explain value; such a second-hand reading wholly neglects the role of time-consuming

⁵ Robert Adamson was a philosopher and a close friend of Jevons. He was appointed successor to Jevons's chair of Logic at Owen's College. Adamson had spent some time in Germany and was, therefore, a better reader than Jevons of the original German edition of Gossen's book. In fact, Jevons admits to have never been able, “in spite of many attempts” to become “familiar enough with German to read a German book (*ibidem*, p. xl).

experiences altogether. In fact, Professor Adamson's summary, as reported by Jevons, reaches the goal of giving the readers the impression that the general aim of Gossen was also to provide a subjective explanation of *exchangeable values* and that, instrumentally, his German forerunner addressed demand theory in the quantity-utility space.

In fact, Jevons is crystal clear from the very first chapter of his *Theory* that his main concern is a critique of the classical theory of value and that such a critique is based on the *new* notion of marginal utility as a decreasing function of the stock of goods possessed at the moment of exchange:

“Prevailing opinions make labour rather than utility the origin of value; and there are even those who distinctly assert, that labour is the cause of value. I show, on the contrary, that we have only to trace out carefully the natural laws of the variation of utility, as depending upon the quantity of commodity in our possession, in order to arrive at a satisfactory theory of exchange, of which the ordinary laws of supply and demand are a necessary consequence” (Jevons, 1871, p. 2).

Jevons devotes the second chapter of his book, titled *Theory of Pleasure and Pain*, to translating into graphic language Bentham's thesis according to which the two fundamental circumstances allowing a quantitative assessment of pleasures and pains are their *intensity* and their *duration*. In following the 'line' traced by Bentham, Jevons is somehow forced to follow also Gossen's 'track' that it is the passage (flow) of time that governs the dynamics of the pleasure enjoyed and that individuals' wellbeing is directly measurable in terms of pleasant time without any need to resort to the notion of utility:

“if the intensity of a feeling were to remain constant, the quantity of feeling would increase with its duration. Two days of the same degree of happiness are to be twice as much desired as one day; two days of suffering are to be twice as much feared. If the intensity ever continued fixed, the whole quantity would be found by multiplying the number of units of intensity into the number of units of duration” (Jevons, 1879, p. 32).

It is then, by introducing the assumption that “the intensity of feeling is ... gradually declining” (*ibidem*, p.33) that Jevons draws the Gossen-type graph reproduced in Figure 1, where, “along the line ox we measure *time*, and along parallels to the perpendicular line oy we measure *intensity*” (*ibidem*).

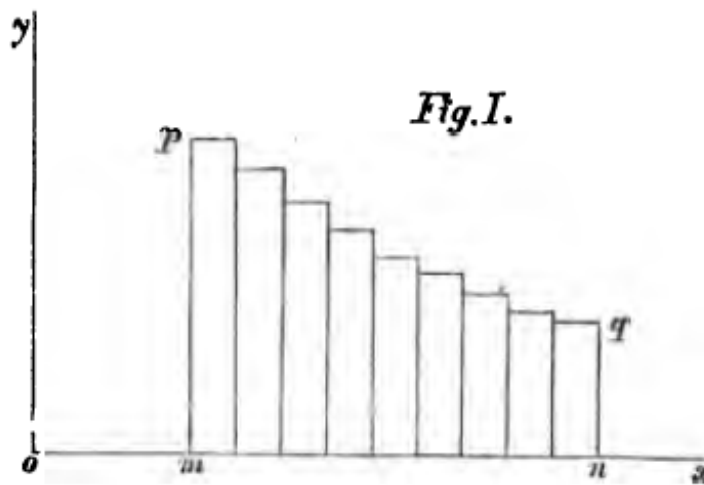


Figure 3: Jevons' representation of the intensity of pleasures plotted against their duration

However, rather than following the line traced by Bentham and Gossen, Jevons 'shunts the car' of a potential behavioral theory of time use on a dead track, and proceeds on his 'atemporal', line of research, namely that of the link between the stock of commodities and their *utility*:

"... to maximise pleasure, is the problem of Economics. But it is convenient to transfer our attention as soon as possible to the physical objects or actions which are the source to us of pleasures and pains. ... By a *commodity* we shall understand any object, substance, action or service, which can afford pleasure or ward off pain. ... Having acquired, by a common process of confusion, a concrete signification, it will be well to retain the word entirely for that signification, and employ the term *utility* to denote the abstract quality whereby an object serves our purposes, and becomes entitled to rank as a commodity" (*ibidem*, pp.40-41).

Shunting the analysis of demand, that Gossen had casted in the time-enjoyment space, on the quantity-utility space allowed Jevons to address the fundamental task of his revolution, namely to rescue the car of the determination of prices that Ricardo and Mill had shunted on the wrong track. In fact, the precise relationship between quantities of goods and their utility could constitute the basis for adding the missing side of demand to the classical theory of value:

"Economics must be founded upon a full and accurate investigation of the conditions of utility; and, to understand this element, we must necessarily examine the wants and desires of man. We, first of all, need a theory of the consumption of wealth. J.S. Mill, indeed, has given an opinion inconsistent with this. 'Political Economy', he says, 'has nothing to do with the consumption of wealth, further than as the consideration of it is inseparable from that of production, or from that of distribution. We know not of any laws of the consumption of wealth, as the subject of a distinct science; they can be no other than the laws of human enjoyment'. (*ibidem*, p.43).

Jevons's assertion that "Economics does rest upon the laws of human enjoyment; and that ... those laws must be developed by economists" (*ibidem*) clearly echoes Bentham. On the other hand, Jevons was convinced that a sound explanation of value could be given by resorting to the analogy with the laws of equilibrium in Statical Mechanics. The promising line of research, which considered time use as the fundamental choice variable, with goods and services being only input of consumption activities, had therefore to be abandoned. In the end, Jevons conceived the law of decreasing marginal utility of any commodity as entirely detached from the passage of time, solely dependent on the amount of it already possessed by the potential buyer; and such a conception was perfectly fitting the mechanical metaphor, in which the force exerted on the demand side of the scale, counterbalancing the force exerted by supply on the other side, could be used to explain *equilibrium values*.

It is then by mentioning that those laws of Economics 'I have found convenient in illustrating ... in my College lectures during fifteen years past' that Jevons lets *time* disappear from the scene and goes back to the atemporal graphical representation, reported in Figure 2, where, "the line ox [is] used as a measure of the quantity of food" (*ibidem*, p.50):

"A pound of bread per day supplied to a person saves him from starvation, and has the highest conceivable utility. A second pound per day has also no slight utility: it keeps him in a state of comparative plenty, though it be not altogether indispensable. A third pound would begin to be superfluous. It is clear, then, that *utility is not proportional to commodity*: the very same articles vary in utility according as we already possess more or less of the same article. The like may be said of other things" (*ibidem*, p.48).

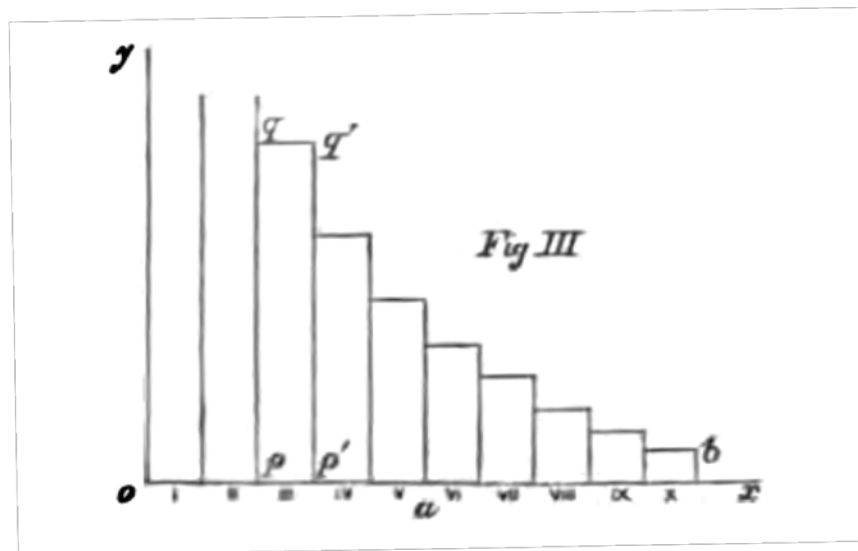


Figure 4: Jevons' representation of the intensity of utility plotted against the quantity of commodity

Menger

Menger's *Principles of Economics* (Menger, 2007 [1871]) can be considered a sort of 'Austrian variant' of the marginalist revolution essentially for three reasons. First of all, contrary to Jevons (and Walras), Menger did not see in the use of mathematics a fundamental ingredient of the new approach. In his essay 'Carl Menger' published on *Economica* in 1934 — and also published, in the same year, as *Introduction* to the reprint (in German) of Menger's *Grundsätze Der Volkswirtschaftslehre* by the London School of Economics as volume I of the *Collected Works of Menger* — Hayek (1934) notes as “a curious fact that, so far as I am aware, he [Menger] has nowhere commented on the value of mathematics as a tool of economic analysis” (Hayek, 1934, p. 396). As a matter of fact, in his Preface to the *Principles*, quoting also Bacon in this respect, Menger argues that “past attempts to carry over the peculiarities of the natural-scientific method of investigation uncritically into economics have led to most serious methodological errors, and to idle play with external analogies between the phenomena of economics and those of nature” (Menger, 2007 [1871], p.47). Second, also because of the limited diffusion in the German speaking countries of the works of the Classical Economists, Menger did not feel there was any car to be brought back on the right line, the names of Ricardo and Mill appearing only occasionally in Menger's *Principles*. Third, time and out-of-equilibrium paths are essential elements of Menger's analysis. Gossen, on the other hand, is never mentioned in the *Principles*, although Menger acknowledges, in the last two paragraphs of his Preface, a sort of German character in the theory he was going to develop (*ibidem*, p. 49).

The first occurrence of the Austrian, timeful flavour in Menger's analysis of consumption shows up in Chapter 2 of the *Principles* when he endorses a Gossen-like intertemporal dimension of individual choices by introducing the notion of a plan covering the specific time horizon of the individual:

“The concern of men for the satisfaction of theirs needs thus becomes an attempt to *provide in advance* for meeting their requirements in the future, and we shall therefore call a person's requirements those quantities of goods that are necessary to satisfy his needs within the time period covered by his plans” (*ibidem*, p. 79)..

Consistently with the idea that consumption choices need to be made in advance of the emergence of needs — since “except in a very few instances ... no individual decides, say, how much bread to buy while eating bread” (Georgescu-Roegen, 1983, p. lxxx) — Menger emphasises the uncertainty characterizing consumption choices about non-recurrent needs:

“If, ..., men were always correctly and completely informed, as a result of previous experience, about the concrete needs they will have, and about the intensity with which these needs will be experienced during the time period for which they plan, they could never be in doubt about the quantities of goods necessary for the satisfaction of their needs ... But experience tells us that we are often more or less in doubt whether certain needs will be felt in the future at all. We are aware, of course, that we

will need food, drink, clothing, shelter, etc., during a given time period. But the same certainty does not exist with respect to many other goods, such as medical services, medicines, etc., since whether we shall experience a need for these goods or not often depends upon influences that we cannot foresee with certainty (*ibidem*, pp. 80-81).

After having acknowledged the problems related to the uncertainty of both future needs and the quantities of goods necessary to satisfy them, Menger ends by ruling out the problem, imagining that individuals can easily manage them, since ‘experience teaches us that, in spite of their deficient foresight, men by no means fail to provide for their eventual satisfaction [and] even among the goods of the poorest people I believe that some goods will be found that are expected to be utilized only in unforeseen contingencies’ (*ibidem*, p.82). The idea, then, shows up in the *Principles* that an explanation of the rules governing individual choices on the demand side of the market can be given on the individuals’ ability “to direct the quantities of consumers’ goods available to them, ... to the satisfaction of their needs in the most appropriate manner” (*ibidem*, pp.95-96). Therefore, notwithstanding their emphasis on time, also Menger’s *Principles* share the idea that the stock of commodities already possessed at the ‘moment’ of exchange, rather than the calendar time devoted to the enjoyment of pleasures, is the crucial variable determining the individuals’ evaluation of consumption goods in conjunction with their allocation among the various needs. Menger is then, rightly, included among the revolutionaries aiming to provide a new, subjective, theory of prices. In fact, for Menger “value is ... nothing inherent in goods, no property of them, but merely the importance that we first attribute to the satisfaction of our needs (*ibidem*, p.116). It is precisely because of the possible misconception of value as an objective attribute of the goods that Menger avoids using the term *utility* (*ibidem*, pp. 116-18). According to Menger’s extreme subjectivism a theory of value can be elaborated without any reference to costs:

“Comparison of the value of a good with the value of the means of production employed in its production does, of course, show whether and to what extent its production, an act of past human activity, was appropriate or economic. But the quantities of goods employed in the production of a good have neither a necessary nor a directly determining influence on its value” (*ibidem*, p.147).

Occasionally, in the preliminary pages of his chapter on the theory of value, Menger directed his investigation towards time-consuming activities, since individuals “weigh especially the relative importance of the separate acts leading to the more or less complete satisfaction of each need, and how they are finally guided by the results of this comparison into activities directed to the fullest possible satisfaction of their needs (economizing)” (*ibidem*, p.128). Moreover, the Austrian flavor of Menger’s analysis shows up in relation with both the limits of the assumption of full rationality and with a partial rejection of the assumption of a given preference ordering. As to the first, Menger observes that since individuals have to take decisions in real time, they “are especially prone to let themselves be misled into overestimating the

importance of satisfactions that give intense momentary pleasure but contribute only fleetingly to their wellbeing, and so into underestimating the importance of satisfactions on which a less intensive but longer enduring well-being depends” (*ibidem*, p. 148). As to the second, Menger acknowledges that “we can also observe fluctuations in the values of goods that are caused simply by changes in the knowledge men have of the importance of goods for their lives and welfare” (*ibidem*).

Notwithstanding the presence of these hints at a Gossen-like treatment of time, Menger’s analysis rests upon the idea that market values should be explained by looking at the demand side of the market, where individuals allocate quantities of goods among different, *given* needs.

Walras

In the Preface to the fourth (definitive) edition of the *Elements of Pure Economics*, Walras refers in the following terms to the above mentioned eight pages that Jevons dedicated to Gossen in his Preface to the second editions of the *Theory*:

“In 1879 Jevons, who had meanwhile become a professor at University College, London, published the second edition of his *Theory of Political Economy*. On pp. xxxv-xlii of his Preface to this edition he partly conceded to Gossen, a German, the priority of discovering the starting-point of mathematical economics, which, as stated above, I had already conceded to Jevons. I have written an article on Gossen, entitled “Un économiste inconnu, Hermann-Henri Gossen”, in the *Journal des Economistes* for April and May 1885, in which I described his life and work, and endeavoured to determine what remained as my own contribution, after making due allowance for the contributions of my two predecessors. At the end of Lesson 16 of this present volume the reader will find a paragraph in which I revert to this matter. He will there see that once again, in 1872, the importance of considering *rareté* in the [theory of] exchange was discovered and stressed, independently of the three of us, by Carl Menger, a professor of economics at the University of Vienna. I readily acknowledge Gossen’s priority with respect to the utility curve and Jevon’s priority with respect to the equation of maximum utility in exchange, but these economists were not the sources of my ideas” (Walras, 2000 [1885], p. 36-7).

Walras clearly shared Jevon’s concern for a new, post-classical conception of Political Economy, wherein its mathematisation, i.e. its metamorphosis into ‘Economics’ was an essential element; and in the passage above, he acknowledges Gossen (and Jevons) as a forerunner of the process leading to the establishment of economics as a pure science, a process at the end of which “mathematical economics will rank with the mathematical sciences of astronomy and mechanics; and on that day justice will be done to our work” (*ibidem*, p.48).

Walras presents his intensive (marginal) utility function in part 2 of the *Elements*, titled *Theory of Exchange of Two Commodities for Each Other*. Let us note, first of all, how Walras, conscious of the thorny problem of time, tries to escape it:

“... let us draw two co-ordinate axes On the vertical axis Oq , starting at point O , I lay off successive lengths, Oq' , $q'q''$, $q''q'''$... , which represent the units of (B) which holder (1) would successively consume in a certain interval of time if he had these units at his disposal. I am assuming that, during this interval, the utility, both extensive and intensive, remains fixed for each party, which makes it possible for me to include time implicitly in the expression of utility. Were this not the case and had I supposed utility to be a *variable* functionally related to time, then time would have had to figure explicitly in the problem. And we should then have passed from economic *statics* to economic *dynamics* (*ibidem*, p.117).

Having eliminated, by assumption, the disturbances connected with the possible path-dependence of utility curves, Walras goes on with the well-known representation of his ‘intensive utility’ or ‘intensity of wants’ — labelled on the horizontal axis of the graph with the term *rareté* (see Figure 3) — and adds “I postulate that intensive utilities always diminish from that of the first unit or fraction of a unit consumed to that of the last unit or fraction of a unit consumed” (*ibidem*, p.118).⁶

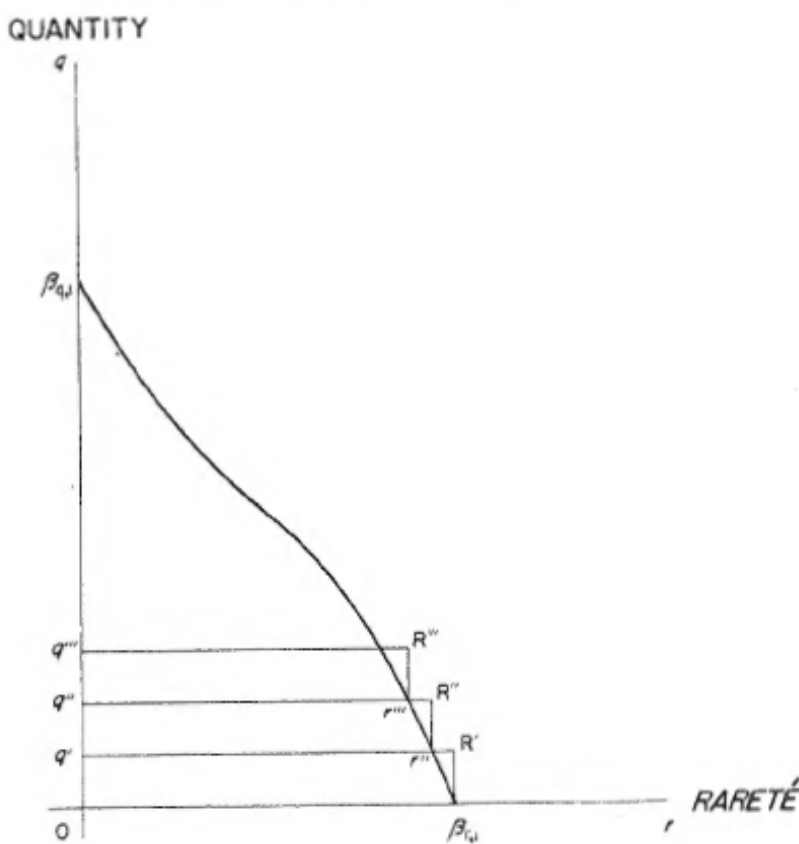


Figure 5: Walras's representation of the intensive utility curve

Here the difference between Menger's and Walras's approaches is worth being emphasized. In Walras, the idea of diminishing marginal utility derives from a temporal order — within a period in which,

⁶ Walras uses the term *effective utility* to designate total utility and clarify both its geometric (area below the curve) and analytic (definite integral of the function) relationship with intensive utility (see *ibidem*, p.119).

by assumption, the utility curve does not shift — of the different doses consumed. In Menger, the decreasing marginal utility results from comparison of different stocks of the commodity ‘hypothetically’ possessed by the individuals planning to build up the ‘inventories’ necessary to satisfy the needs expected to show up within the time horizon. Both approaches, in turn, differ from Gossen’s, according to which the *laws of pleasure* arise in the context of the allocation of time units among different activities, while these laws have nothing to do with the determination of the value of the goods used as means of enjoyment, which ultimately depends, according to Gossen, on their cost of production.

In fact, Walras shared with Jevons the need to fill the gap left in the theory of value as elaborated by his predecessors. After having made reference to Gossen in the *Preface*, Walras mentions Gossen again in Lesson 16 of the *Elements*, dedicated to the *Exposition and refutation of Adam Smith’s and J.B. Say’s doctrines of the origin of value in exchange* where he refers to the ‘English solution’ to the problem of the origin of value stated by “Adam Smith, Ricardo and McCulloch, ... which traces the origin of value to *labour*” as opposed to the ‘French solution’ “that of Condilliac and J.B. Say ... which traces the origin of value to *utility*” (*ibidem*, p.201). Walras argues about the limits of both solutions and, as it is well-known, he advocated ‘scarcity’ (*rareté*) as the general solution, while indicating his father, among the others, as the one “who made it an integral part of economics (*ibidem*, p.204). The merits of Jevons and Menger are then acknowledged, though distinguished from his own; Menger’s analysis being limited for not relying on mathematics and Jevons’s for his equations of exchange being limited to the case of two goods only.

When referring to Gossen, Walras skips altogether the timeful analysis contained in the first 99 pages of *The Laws* and quotes the passage at page 100 from the above mentioned chapter 7 referring to the conditions for a barter exchange to produce the maximum ‘value’. Accordingly, Walras does not mention any of the passages from the second part of chapter 7, where Gossen endorses the classical theory of natural prices and the impossibility to rely on demand to determine the prices of goods.

Let me conclude this section by noting that Walras himself, in his article on Gossen⁷ circumscribed the affinity between Jevons, Gossen and himself to the mathematical exposition of the analysis (Walras, 2000 [1885], p. 252). In fact, the aim of Walras’s article was to argue that “among the ... numerous examples of scientific injustice, there is none so blatant as the ingratitude received by Gossen” (*ibidem*).⁸ It

⁷ Walras’s article “Un économiste inconnu, Hermann-Henry Gossen, originally published in 1885 on the *Journal des Economistes*, has been included by Walras also in his *Etudes d’Economie Sociale* published in the same year. Only recently *Les Etudes* have been translated in English (Walras, 2000 [1885], pp. 250-68).

⁸ The last pages of Walras’s article contain an interesting summary of Gossen’s life provided by his nephew Hermann Kortun, “professor of Mathematics at the University of Cologne” who, upon Walras’s request sent him a note “after having taken the time to delve into his uncle’s papers (*ibidem*, p. 262). A richer biography of Gossen can be found in (Georgescu-Roegen, 1983, pp. xxvi-li).

is, in particular, Walras's observation that one should "reproach Gossen for having neglected [the] whole sequence of investigations" related with the demonstration that "the values are proportional to the raretés" and with the deduction of "the laws of the variation of values" (ibidem, p. 359) that confirms my thesis that according to which Gossen can hardly be considered a forerunner of the subjective, marginalist theory of value.

Conclusion: Gossen's reemerging legacy

In this paper, I tried to argue that any substantial theoretical link between Gossen and the subjective, neoclassical theory of value is unwarranted, on the one hand, for the analytical failure of the latter to deal properly with the fundamental economic variable of Gossen's approach, namely *time*; and, on the other hand, for Gossen's clear adherence to the classical idea that exchangeable values ultimately depend on costs of production. In fact, if one considers the mathematization of Economics and, in particular, the use of 'small increments' (atoms in Gossen's language) as the essence of the so called marginalist revolution, one could easily include Gossen among the revolutionaries, together with Jevons and Walras. In this case, however, little room in the group were left for Menger. If, on the other hand, we consider the endeavor to dethrone the Ricardo-Mill school of thought in order to build a supply—and—demand theory of price, as the main goal of the revolutionaries, then there is no room for Gossen's signature under their manifesto.

Since a few decades, Gossen has been rescued from playing the role of a minor forerunner of the marginalist school and is being promoted to that, more congenial to his merits, of a forerunner of an economic theory of human behavior. Most of the merits of this 'rehabilitation' must be attributed to Georgescu-Roegen for his extensive and fascinating introduction to the English Translation of Gossen's *Laws*. Georgescu's work has later inspired Ian Steedman, whose book *Consumption Takes Time* (Steedman, 2001) has shown the weaknesses of most of the analytical conclusions of the neoclassical theory of demand when one considers time, besides money, as a fundamental constraint of utility-maximising individuals. Moreover, Steedman – who titled the second chapter of his book *Back to Gossen* – has gone beyond the criticism of the neoclassical treatment of consumption and started to build 'analytically' on Gossen's foundations; as I did (Nisticò, 2014; 2015), drawing inspiration from him, but also from Adam Smith, whose measurements of values in terms of 'labour commanded' allows a precise computation of the efficiency of human activities in terms of 'time units' *à la* Gossen without any reference to the notion of *utility*.

Gossen's claim that Political Economy should have been renamed as *Science of Pleasure* reminds me about the enormous difficulty with which our discipline deals with some pressing economic problems

unrelated with *scarcity*. In particular, I have in mind J.S. Mill's and Keynes's concern with the 'leisure problem' in opulent societies. In John Stuart Mill ideal of a 'stationary state' "society would exhibit these leading features: a well-paid and affluent body of labourers; no enormous fortunes, except what were earned and accumulated during a single lifetime; but a much larger body of persons than at present, not only exempt from the coarser toils, but with sufficient leisure, both physical and mental, from mechanical details, to cultivate freely the graces of life, and afford examples of them to the classes less favourably circumstanced for their growth" (Mill, 1909 [1848], p. 750). On the other hand, Keynes envisaged for us, 'his grandchildren', the difficulty to find a good use, other than working, for our spare time, when "three hours a day [will be] quite enough to satisfy the old Adam in most of us" and, Keynes argues:

for the first time since his creation man will be faced with his real, his permanent problem-how to use his freedom from pressing economic cares, how to occupy the leisure, which science and compound interest will have won for him, to live wisely and agreeably and well.

Yet there is no country and no people, I think, who can look forward to the age of leisure and of abundance without a dread. For we have been trained too long to strive and not to enjoy. (Keynes, 1931 [1930], p. 367-70).

Gossen's conception of our discipline as a (potential) science of pleasure did not go through the minds of his contemporaries; and the marginalists, by eradicating time from it, have shunted his car on the track of axiomatic reasoning. As Rotheim put it, in the neoclassical approach "the consumption bundle of an individual may be altered by changes in relative prices and income, but she herself, i.e. her preference orderings are never affected by those ... changes" (Rotheim, 2002, p. 63). On the other hand, Gossen's laws of pleasure show how our orderings of enjoyable activities and hence our choices might change through time irrespective of changes in prices and income. Gossen's emphasis on time and enjoyment has, nevertheless, survived in our discipline.

In a book wholly centered on time use published almost half a century ago, Staffan Linder (1970) tried to provide an answer to the Mill-Keynes problem, which he labelled 'the paradox of affluence' noting that "not even those endowed with the necessary intellectual and emotional capacity have shown any propensity for immersing themselves in the cultivation of their minds and spirit" (*ibidem*, p.2). A few years later, in *The Joyless Economy*, a path-breaking book trying to open the black box of the neoclassical 'given—preferences assumption', Scitovsky observed that "we buy time-savings gadget to save time, but, having no better use for the time saved, we unwittingly waste it on more of the same activity" (Scitovsky, 1992 [1976], p. 164).

The paradox of affluence calls for a discussion of how individuals choose about time allocation, even if for the great majority of individuals there is little room for an autonomous change in the amount of

weekly time devoted to work, both for those who would like to work more (e.g. the unemployed) and for those who would like to work less. Going back to Gossen, as Steedman suggests, might definitely help in understanding what is going on with how we use our time; and one could possibly reach the conclusion that the cars we thought were ‘shunted on the wrong line’ can be brought back in motion and reach interesting destinations.

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