Missing: the strange disappearance of S. J. Chapman's theory of the hours of labour

Tom Walker, 2008

Abstract: Sidney Chapman's theory of the hours of labour, published in 1909 in The Economic Journal, was acknowledged as authoritative by the leading economists of the day. It provided important insights into the prospects for market rationality with respect to work time arrangements and hinted at a profound immanent critique of economists' excessive concern with external wealth. Chapman's theory was consigned to obscurity by mathematical analyses that reverted heedlessly to outdated and naïve assumptions about the connection between hours and output. The centenary of the theory's publication offers an occasion to reconsider what has been lost by economists' neglect of Chapman's theory.

The days are gone when it was necessary to combat the naïve *assumption that the connection between hours and output is one of direct variation, that it is necessarily true that a lengthening of the working day increases output and a curtailment diminishes it.*

Lionel Robbins

On August 26, 1909, Sydney J. Chapman unveiled his economic theory of the hours of labour in his presidential address to the Economics and Statistics Section of the British Association for the Advancement of Science meeting in Winnipeg, Manitoba. The theory was subsequently published in *The Economic Journal* (Chapman 1909). Chapman's analysis arrived at several remarkable and far-reaching conclusions. First, the length of working day that would be best for workers' welfare is shorter than the length that would produce the largest output. Second, the play of competition would tend to make the working day too long, even from the standpoint of production. Third, improved methods of production would lead to a progressive reduction of the optimal length for the working day. As a consequence, renewed conflict over the length of the working day would break out from time to time.

Not only were those conclusions novel from the point of view of conventional economic theory, they also had important practical implications for public policy regulating the hours of work. If the hours of work established by the market were likely to be too long, even from the perspective of total output, then legal limitation of the working day could aid not only equity but also economic efficiency.[1] This possibility challenges the popular myth – often presented as an economic truism – that there is a "trade-off" between equity and efficiency goals and, furthermore, that economic efficiency is best served through the workings of a competitive market. Chapman's theory calls both of those suppositions into question. It does so from within the tradition of neoclassical economics, using the approved tools and standard assumptions.

The leading economists of the day acclaimed Chapman's theory. Alfred Marshall (1961) cited Chapman's theory as authoritative. So did Marshall's successor at Cambridge, A.C. Pigou (1920), who based his own discussion of working time in *The Economics of Welfare* on Chapman's theory. Lionel Robbins (1929) referred to Chapman's article as having effectively dealt with "one of the chief problems of the analysis of economic equilibrium" (p. 25) – i.e., the determination of the hours of work in industrial civilization. John Hicks (1932), called the theory the "classical statement of the theory of 'hours' in a free market" (p. 102n), and presented a meticulous six-page précis of it.

[1] Pigou had summarized these inferences as, "If then, as we have shown, the play of normal economic forces is liable to make the working day too long for the best interests of the national dividend, a fortiori it is liable to make it too long for the best interests of economic welfare" (p. 467).

Twenty-four years after Hicks had proclaimed Chapman's theory authoritative, H. Gregg Lewis (1956) referred to something completely different as the "orthodox approach" to analyzing the individual supply of labour time. According to the newly-crowned orthodoxy, individuals choose how many hours they want to work based on their relative preferences for income and leisure. In the income-leisure choice model, leisure is viewed as a normal consumer good – no different from shoes, cabbages or sealing wax. Between the earlier classical statement of the theory of hours and the later orthodoxy lay a gulf and an enigma. In his history of worktime thought, Chris Nyland (1986) described the unchronicled transition as a matter of "now you see it, now you don't" (p. 32).

Now you see it: Chapman's theory of hours

It wasn't as if Chapman's theory was eccentric or Chapman himself was a radical fringe figure. Chapman's theory built on Stanley Jevons's well-established analysis of individual labour supply, supplemented by an accumulation of statistical and experimental evidence. Chapman had been Marshall's star pupil at Cambridge for three years before moving on to Manchester where he completed a prize-winning study of the Lancashire cotton industry (Tribe, 2004). He rapidly rose to a professorship of political economy at Manchester's Owens College (which in 1904 became Victoria University) and was appointed dean of the newly established faculty of commerce and administration there. In that role, from 1904 to 1917, he pioneered an exemplary teaching and research program.

At the start of the first world war, Chapman was asked by the British government to direct research into wartime production. By 1918, he had become a full-time civil servant. The following year he was appointed joint permanent secretary of the Board of Trade and subsequently served seven years as permanent secretary. In 1920, he was knighted for his contribution to the war effort. In 1927, Sir Sydney Chapman was appointed chief economic advisor to the British government, a post he held until 1932.

Before chronicling the eclipse of Chapman's theory, it would be appropriate to present a brief summary of it. Chapman argued that the importance of leisure, both to industrial productivity and to individual well-being, must rise along with technical progress. As industrial processes became more intensive and specialized, the faster pace of working and the mental concentration demanded from workers would accelerate fatigue and thus would make it less productive to continue working longer hours. The optimal length of the working day would thus decline. At the same time, increased incomes from higher output would also make leisure time more attractive and affordable to workers. Those changes in both the optimal length of the working day and the value of leisure to workers would lead to demands for corresponding reductions in the actual length of the working day: "agitation for shorter hours will be constantly breaking out anew" (Chapman, 1909, p. 358).

Chapman arrived at this conclusion after reviewing a mass of evidence from the 19th century that reductions in the hours of work had not led to proportionate declines inoutput. From that evidence, he inferred that workers required more leisure time to fully recover from the fatigue of work as industrial methods became progressively more intensive. Thus when the hours of labour were reduced, the better-rested workers were often able to produce as much or more in the shorter hours than they had previously in longer hours.

Most importantly, Chapman's analysis also suggested that competition between employers would make it unlikely that a working day of optimal length could be established solely through the working of a free market. The reason for this was that the long-term maintenance of a working day of optimal length for output would require employers to exercise short-term restraint. Such restraint, however, could be undermined because competing firms could always offer higher wages to poach well-rested employees from a firm that did exercise such restraint. The enlightened firm would thus be making a sort of investment without equity in the workers' well-being. For this reason, the length of working day sought by employers under competitive conditions would tend to be longer than would be optimal for output. A working day of optimal length could only be maintained if all employers acted together in enlightened accord.

The length of day that would be best for workers' welfare would be shorter than that which could produce the greatest total output. But workers, too, would tend to disregard the long-term effects of working time on fatigue, productivity and ultimately on wage levels. In forming their preferences for income and leisure, they would be predominantly influenced by *current* wage levels. This would result in workers seeking a working day longer than would be prudent in the long run, although still shorter than that sought by employers acting competitively. The prevailing concern of both employers and workers for immediate self-interest would bias the preferences of each toward a longer than optimal length of the working day.

Now you don't?

So much for the theory; now to its disappearance. Nyland's explanation for the disappearance of Chapman's theory was that Robbins and Hicks, in 1929 and 1932 respectively, had each introduced a simplifying assumption that the given length of the working day was optimal for output. According to Nyland (1989), the requirement for such a move arose because the variability of both the duration and intensity of working time made it difficult – if not impossible – to calculate returns to the various factors of production. Subsequently, in Nyland's account, Robbins's and Hicks's simplification came to be regarded as the way things were in reality.

However, a re-examination of the texts by Robbins and Hicks fails to detect the simplifications that Nyland identified. Both authors made statements that may seem to announce such a simplification. But a careful re-reading of the wording and context of those statements challenges Nyland's interpretation. In Robbins's article (1929), the context for the statement Nyland takes to be a simplifying assumption involved, first, acknowledgements to Chapman for his theoretical analysis of the hours of labour and to Philip Sargant Florence for the empirical confirmation of Chapman's theoretical insights. Second, Robbins offered the disclaimer that in his discussion, he wasn't examining what factors might lead to a reduction of the hours of labour but *only* the effects that would proceed from it, assuming such a reduction to take place. Finally, came the alleged simplifying assumption itself: "If we are to predict the effect of a given variation in hours we must conceive of it in relation to a working day of maximum productiveness" (p. 27). Robbins's working day of maximum productiveness is thus not posited as the *given* working day but only a point of reference to which any given *variation in hours* must be related. If the given day was longer than the hypothetical day of maximum productiveness, then a reduction in hours would induce an increase in production. If the day was already shorter than optimal, then a further shortening would lead to an decrease in production. Such an analysis remained in accord with Chapman's theory.

What Hicks did with Chapman's theory in *The Theory of Wages* cannot be called a simplification either – at least not an acknowledged one. If he did assume somewhere that the given length of the working day was optimal (which he may well have done), Hicks didn't announce it. What Nyland mistook for such an acknowledgement, was only an appeal to disregard *transition costs* in entertaining the concept of a given length of a working day that was optimal for output.[2] Hicks did not specify that he was assuming that the given day actually was that length. The difference is that the assumption Hicks actually made still allows for the circumstance where the given day is longer or shorter than optimal, whereas the alleged simplification would not. The statement cited by Nyland as evidence of a simplifying assumption was thus also in accord with Chapman's theory.

The closest Hicks (1932) came to specifying the alleged simplification is when he argued that, "[provided certain limitations were respected], it is perfectly possible to treat labour as a commodity consisting of discrete homogeneous units, for which there are well- defined curves of supply and demand" (p. 92). Such treatment may imply the assumption that the given day is optimal for output because it would be hard to conceive of Chapman's hours – during which productivity may vary with the effects of fatigue – as consistent with "discrete homogeneous units". Indeed, if such homogeneity implies that output per hour is constant, then treating labour as homogenous could go farther down the simplifying path than merely assuming that the given day was of optimal length. Hicks acknowledged, though, that treating labour as such was "a method with very considerable dangers, which can only be avoided if we think back our arguments into a more cumbrous but more realistic form as frequently as possible" (p. 93)

Although Hicks didn't explicitly introduce a simplifying assumption, that isn't the end of the story. Hicks discussed Chapman's theory and the optimal length of the working day in his chapter on the theory of individual labour supply (Ch. V). Later on in the book, though, Hicks turned his attention to the regulation of hours and working conditions (Ch. XI). Here Hicks no longer dealt with pure theory but with "reality" – at least with reality as Hicks perceived it. He announced at the beginning of Part II that it was, "now time for us to take a further step towards actuality" (p. 136). This was the moment Hicks had anticipated when he referred to "think[ing] back our arguments into a more cumbrous but more realistic form." Chapter XI was intended to present that 'more realistic' discussion of hours and working conditions than the purely theoretical discussion of Chapter V! But was it more realistic?

At the beginning of Chapter XI, Hicks credited Robbins with having conducted the "general study of the economics of hours-regulation" and declared that there was "no need for us to go over yet again ground which is by now sufficiently well trodden" (p. 217). After stating (without further explanation) that there was no material difference between the situations created by union demands for reduced hours and that created by demands for increased wages, Hicks surmised that it was "true that if the working day has previously been fixed at a length which is greater than the 'output optimum' the Union will not usually need to exert any considerable pressure in order to bring about a reduction" (p. 217). On the sole basis of that assertion, then, Hicks limited the rest of his discussion to a situation where union demands

[2] Compare Nyland and Hicks: Nyland: "[Hicks] assumed 'for the present' the existence of an optimum working day that would yield a greater supply of labour than any other" (p. 33). Hicks: "If, for the present, we leave out of account these transitional effects of changes in the length of the working day, and fix our eyes only on the supply of labour which will be reached when a given length of day has been in force for some time, we inevitably reach the conception of an "optimum"…. There will be some length of working day which, if it were maintained, would yield a greater supply of labour than any other…" (p. 104).

would reduce the hours of work below the hypothetical output optimum. If such a limitation had been proposed in a theoretical discussion, it would indeed have represented a simplifying assumption. As Hicks presented it, however, it was an alleged, but unverified 'fact' – a fact, moveover, that contradicted what theory would predict.

For Hicks, then, thinking back his argument to a "more cumbrous but more realistic form" involved making an unexplained leap from the observation in Chapter V, consistent with Chapman's theory and historical evidence, that "[p]robably it had never entered the heads of most employers that it was at all conceivable that hours could be shortened and output maintained" (p. 107) to the claim in Chapter XI that, "[a] very moderate degree of rationality on the part of employers will thus lead them to reduce hours to the output optimum as soon as Trade Unionism has to be reckoned with at all seriously" (p. 218). It is not a question of whether Hicks's assertion was right or wrong. His claim simply didn't follow from his own premises and, in key respects, contradicted them.

Although Hicks's *non sequitur* feat of "realism" may be one element in the disappearance of Chapman's theory, surely it can't be held solely responsible for its eclipse. For an explanation of that, we need to turn to a subsequent general shift in formal economic analysis (in which Hicks was deeply involved) that took place in the 1930s. This shift inherited some of its fundamental premises from the thought of Leon Walras, Vilfredo Pareto and Enrico Barone, proponents of the Lausanne school of economics.

The eclipse of work in neoclassical economics

The approach to the analysis of individual labour supply that replaced Chapman's theory took no notice of the effects of technological change on fatigue or on the subjective experience of the worker. It treated labour itself as a residual of the individual's consumption preferences. According to the new orthodoxy of income-leisure choice, leisure is assumed to be a normal good. Work is something featureless that takes place in the weeds behind the billboard of consumption and disposable time. Because this commodity-leisure itself lacks any definitive quality other than not being work, work is reduced to the hollow double negative of 'not not-working'. There is no pain in this hollowed-out work, neither is there joy.

A chorus of criticism surrounds the income-leisure choice model. Spencer (2003, 2004) objected that the model ignores the qualitative dimension of both work and leisure, a dimension that was specifically addressed in the approaches of Jevons and Marshall. Philp, Slater and Harvie (2005) disputed the epistemological coherence of the model's microfoundations, concluding that, "the indifference curves which underpin labour-leisure preferences are themselves founded on axioms which have been shown to be problematic elsewhere in neoclassical economics" (p. 80). Jennings (2004) analyzed the dead metaphors that signify measurement in the labour supply model, pointing out that measurement already requires a metaphor but that unmeasurable homogenous units of labour are a metaphor for a metaphor – a *catachresis* (literally "wrong use"). She cited Barthes's criticism of such speech forms as foundational for mythologies that "falsely universalize by removing the historical referents of signifiers" (p. 137) and noted his warning about the disingenuous "depoliticization" inherent in such speech.

Pencavel (1986) concluded that, considering the consistency with which empirical research produces values that violate the model's predictions, "the scientific procedure is surely to regard the theory as it has been formulated and applied to date as having been refuted by the evidence" (p.95). Other criticisms point out that the income-leisure choice model "cannot provide any substantive analytical predictions on the course of labor supply by an individual or a group" (Altman, 2001, 199) and takes no account of the non- pecuniary benefits of working (Farzin and Akao, 2006).

Derobert (2001) questioned the pedigree of the model, noting the paradoxical disappearance of labour, documenting bibliographical anomalies in the model's transmission and finding that the model's formal consecration by Tibor Scitovsky (1952) was accompanied by a warning about its pitfalls – specifically, that regarding leisure as a commodity may lead us to mistakenly assume there is a "conflict between the efficient specialization among workers and the efficient distribution of leisure" (p. 107). "It is much safer," Scitovsky went on to explain,

as well as more natural, to look at the face of the medal and concentrate our attention on work and the burden it involves, rather than on freedom from work and the satisfaction this yields. We can, if we like, think of work as a negative commodity, of its burden as a disutility or negative satisfaction, and of the earnings received for work as a negative price..." (p. 107).

Scitovsky's 'safer' and 'more natural' approach, however, would require abandoning the opportunity-cost value theory at the foundation of the income-leisure choice model, without which the model itself would cease to have any meaning.

In tracing the emergence and triumph within economic theory of the income-leisure trade- off model, Ugo Pagano (1986) gave an account of a compromise between English and Austrian marginalist circles about what could be regarded as the "ultimate standard of value": pain cost or opportunity cost. The English side of the debate, argued by F. Y. Edgeworth (1894), featured Jevons's calculus of pleasure and pain whereby, after a certain point, increased units of work time produced an increasing amount of pain or disutility while additional goods purchased with the income from those extra hours supplied diminishing increments of utility. At some point the increase in disutility from work matches the increment in utility from additional income and the worker will choose to stop working. The Austrian perspective, argued by Eugen von Böhm-Bawerk (1894), regarded cost as being wholly constituted by the sacrifice one had to make, given scarce resources, to be able to consume any particular bundle of goods. One had to allocate one's scarce resources between wants that were, in principle, unlimited. The Austrians considered the hours of work to be institutionally fixed by custom or law and thus any hypothetical pain or disutility of work was, for them, not a factor in the individual's utility calculus.

Eventually, a compromise between these two positions was achieved by adopting what Pagano referred to as a "leisure semantic device". This device originated in the work of Leon Walras (1954) and bridged the differences between English and Austrian approaches by finding a way of including work and leisure in the opportunity-cost equation. It did so by defining the "disutility of work" to consist solely in the fact that the worker had to sacrifice leisure time in order to obtain income. According to Pagano, the adoption of the device underlies modern economic theory's "almost complete ignorance of the difference between human labour and the other resources" (93).

According to this leisure device, labour can be divided into two parts, the first part of which is self-consumed as leisure. The second part is sold and used in the production of goods for other people. Pagano notes two advantages of the leisure device for treating labour: first, it enables the treatment of labour in the same way as other consumption goods and thus greatly simplifies the analysis. Second, because the amount of time available to each individual for working is constrained (there are only 24 hours in a day), the system does take into account – or at least *seems* to take into account – the fact that labour expended in production affects the welfare of individuals. The more time the individual works to obtain income, the less leisure time he or she is left with.

Despite those advantages, Pagano viewed that leisure device as very misleading because it assumes that workers are only affected by the total amount of labour time expended and not by the way in which that time is allocated to the performance of different tasks.

The days are gone…

Further questions concerning the coherence of the Walrasian leisure device, beyond those identified by Pagano, are raised by examining the context in which Walras first introduced it and the form it took in the John Hicks's influential *Value and Capital* (1939), which is cited by both Pencavel and Scitovsky (although disputed by Derobert) as the source of the now orthodox model. Walras introduced the argument in *Elements of a Pure Economics* as part of his definition of the role of the "services of persons" (i.e., labour) in his theory of production. There, Walras discusses "the pleasure enjoyed by the idler" as constituting the income of "those who do nothing but travel and seek amusement"(p. 214). Walras's use here of the word "income" is metaphorical. No money changes hands. The rewards enjoyed by Walras's idler are what normally would be considered intrinsic whereas income refers to an extrinsic reward. Thus Walras's usage of the term 'income' is not just metaphorical but more precisely *ironic*.

There is no indication in his treatment that Walras intended such pleasure of the idler to also include the after-hours (non-monetary) "income" of someone who was a worker for the other 8 or 10 hours a day. On the contrary, Walras explained that "the idler who has wasted today will waste tomorrow; the blacksmith who has just finished this day's work will finish many more..." (p. 215) *Doing nothing* for Walras thus would appear to be the specialized occupation – the *vocation*, so to speak – of the idler, not something the blacksmith or the lawyer does in the hours after he or she has finished the day's work.

In *Value and Capital,* Hicks's treatment of work and leisure is laconic. It appears virtually as an aside in his discussion of the difference between the consumer's demand, if it is assumed to be fixed in terms of money, and what happens if the consumer is also a seller with a fixed stock of some commodity, who might hold back some of that commodity for his own consumption depending on the market price. "Thus a fall in wages," Hicks wrote,

may sometimes make the wage-earner work less hard, sometimes harder; for on the one hand, reduced piece-rates make the effort needed for a marginal unit of output seem less worth while, or would so, if income were unchanged; but on the other, his income is reduced, and the urge to work harder in order to make up for the loss in income may counterbalance the first tendency (p. 36).

The salient detail to note about Hicks's 'wage-earner' is that he is being paid by piece- rates, not on an hourly wage. That is to say, his income presumably varies in proportion to his output, not as a function of the number of hours he spends on the job or the number of hours of leisure he sacrifices to do so. The possibility that he may "work less hard" could thus mean either that he would exert less effort or that he would reduce the amount of time he worked. Or it could mean some combination of the two.

The dichotomy of working harder or less hard also introduces a certain ambiguity into exactly what is being traded-off, particularly if the wage-earner's hours at work remained unchanged. In the latter case, working less hard could be interpreted as a way of making work time more enjoyable (or less painful) and thus would be a backdoor re-introduction of the rejected pain-cost theory of value.

The canonical labour-supply model, based on the analysis of income-leisure choice, differs from both Walras and Hicks in establishing the constraint of 24 hours as the sum of the hours of leisure and of labour. In very general terms, the formula for such a calculation was stated by David I. Green (1893). Green argued that "the laborer stops work at a certain hour, not simply because he is tired, but because he wants some opportunity for pleasure and recreation" (p. 222) and further, that "the economic opportunities which a man sacrifices by pursuing a certain course of action are more capable of objective measurement. These sacrifices of opportunity are what constitutes the principal part of the costs of production which determine normal exchange values" (p. 223).

Although Green made explicit a trade-off of limited hours between labour and leisure, he didn't take the obvious next step of dividing the day into 24 hours to be apportioned between the two activities, nor did he specify an hourly wage. Enrico Barone (1908/1935) did, however:

It is convenient to suppose – it is a simple book-keeping artifice, so to speak – that each individual sells the services of all his capital and re-purchases afterwards the part he consumes directly. For example, A, for eight hours of work of a particular kind which he supplies, receives a certain remuneration at an hourly rate. It is a matter of indifference whether we enter A's receipts as the proceeds of eight hours' labour, or as the proceeds of twenty-four hours' labour less expenditure of sixteen hours consumed by leisure. (pp. 248-249).

Barone's "simple book-keeping artifice" constituted a second, not entirely congruent, version of opportunity-cost doctrine. The first version, as articulated by Green, was vague enough about time to defeat the pain-cost argument as an explanation of prices. Barone's version was precise enough about the division of the 24 hours in a day to be incorporated into mathematical formulae. Such precision came only at the (unexamined) cost of resurrecting what Robbins called the 'naïve' assumption that "the connection between hours and output is one of direct variation."

Abram Bergson (1939) adopted Barone's framework as a basis for his "Reformulation of certain aspects of welfare economics." Although it may have seemed a matter of indifference to Barone whether to count the receipts of labour as eight hours or as twenty- four hours minus sixteen hours of leisure, the book-keeping artifice was essential to the flourishing of the indifference-curve analysis, unhampered by the essentially unquantifiable spectres of worker fatigue, unrest or even intrinsic enjoyment of work. The founding myth of the new orthodox approach thus passed unannounced into the canon. Chapman's theory was rendered expendable not by an explicit simplification but by the quiet revival of a naïve and anachronistic assumption about the connection between hours and output.

Chapman theory appears to have covered both the opportunity-cost and pain-cost bases. In a technical footnote, he drew two dotted-line curves to describe the effects of the length of the working day on the worker (see appendix). The first curve, labelled *I*, clearly indicates an opportunity-cost analysis of the value "of the leisure destroyed by the addition of [an] increment of time" (p. 364). The second curve, labelled *L*, retains the notion of absolute satisfaction or dissatisfaction involved in working. There doesn't seem to be a suggestion that this curve *L* directly determines the cost or value of labour, only that it affects the welfare of the worker. To paraphrase Chapman, what curve *L* addressed was not "the quantity of external wealth produced" but rather the "balance between internal and external wealth" (p. 373).

Conclusion

In his article on the canonical labour-supply model Derobert (2001) mentioned Chapman's theory in connection with Hicks's description of it as "the classical statement of the theory of 'hours' in a free market." Derobert dismissed Chapman's theory as "excessively complicated" and as "more of an amalgam than a synthesis" (p. 204). He also described it as lying "somewhere between Jevons's analysis and the canonical model" (p. 204). Chapman's theory lies between Jevons and the current canonical model only in a narrow chronological sense. Although Chapman's analysis did indeed develop Jevons's earlier discussion of the hours of labour, it bears little resemblance to the income-leisure choice model. Instead, it incorporates the opportunity-cost concept without at the same time abandoning the idea that work provides intrinsic satisfactions and dissatisfactions.

Perhaps Chapman's theory could indeed be considered "excessively complicated" in the non-pejorative sense that life itself is too complicated to describe in a mathematical model. The income-leisure choice model simply ignores Chapman's theory, it doesn't refute, refine, simplify, adapt or transcend it. In its ignorance of Chapman's theory, it tacitly assumes proportionality between hours worked and output produced. In the bargain, mainstream analysis implies an identity between market goods purchased and economic welfare. Leisure time disappears – *even as a commodity*. The hypothetical purchase of leisure time leaves behind no receipts to be reckoned in the calculation of national income. Thus Barone's book-keeping artifice involves writing entries in disappearing ink – a practice that might elsewhere be reckoned as fraudulent.

Sydney Chapman's theory of the hours of labour was both insightful and authoritative. It was widely accepted by eminent English economists of its day. It buttressed the novel conclusions that the ideal hours of work for maximizing social welfare would be shorter than those for maximizing profits and that the hours of work set in a competitive market may be too long even from the standpoint of maximizing output. Yet that acknowledged authoritative theory was displaced by what? A simplifying assumption? A semantic device? A book-keeping artifice? An absent-minded lapse of theory? In place of an established theory has sprung up a mathematical model of income-leisure choice in which the face of actual work is unrecognizable. With the centennial of its original presentation fast approaching, it is fitting that economists should re-examine what opportunities have been sacrificed and what – if anything – has been gained by this remarkable instance of theoretical substitution.

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