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## Sentiment and Prejudice: Francis Ysidro Edgeworth on Women's Wages

Cléo Chassonnery-Zaïgouche<sup>1</sup> and Annie L. Cot<sup>2</sup>

**Abstract:** This paper describes the evolution of Edgeworth's thought on women's wages and on the principle of "equal pay for equal work". We first document Edgeworth's early works on "exact utilitarianism" as an epistemic basis for his reflections upon women's wages. Second, we review his first writings on women's work and wages: early mentions in the 1870s, his book reviews published in the *Economic Journal*, and the substantial preface he wrote for the British Association for the Advancement of Science 1904 report on *Women in Printing Trades*. Third, we document his 1922 British Association presidential address in relation to the burgeoning literature on women's work and wages within political economy at the time. Finally, we show that his 1923 follow-up article on women's wages and economic welfare constitutes an update of his "aristocratical utilitarianism" in the post-World War I context.

**Keywords:** Edgeworth (Francis Ysidro), equal pay, wage theory, women's wages, exact utilitarianism, hedonimetry

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## Introduction

“Pending a scientific hedonimetry, the principle ‘Every man, and every woman, to count for one’ should be very cautiously applied.”

— Edgeworth, *The Hedonical Calculus*, *Mind* (1879)

In 1922, Francis Ysidro Edgeworth chose to devote his address as president of Section F (Statistics and Economic Science) of the British Association for the Advancement of Science (thereafter the British Association) to the thorny issue of equal pay between men and women. Press coverage of the lecture was mixed. While the *Sheffield Telegraph* reported Edgeworth “did not give any decisive answer” to the proposal of equal pay for equal work, the *Evening News* reads “Professor says equal pay unfair to men.” According to the *Aberdeen Free Press*, Edgeworth “contended in favor of equal pay,” whereas, for the *Times*, Edgeworth endorsed the view that “equal pay for equal work, when one party was subject to unequal deductions [...] no longer appeared quite equitable.” The *Daily Telegraph* was the only newspaper to emphasize Edgeworth’s opinion on the “degradation of labor” that the competition from women would inevitably bring to British industries. Edgeworth’s “masterly review of the question” (*The Daily Chronicle*) had, indeed, provoked various opposing interpretations.<sup>3</sup>

Contemporary readers have also been confused about where Edgeworth stood on the issue of equal pay, a confusion that may be related to Edgeworth’s difficult writing style.<sup>4</sup> The two papers devoted to equal pay (Edgeworth 1922a; 1923) give a brilliant illustration of Edgeworth’s peculiar style, characterized by “his inconclusiveness of aim, his restlessness of direction” (Keynes 1933: 276). Edgeworth’s attitude towards the “woman question” more generally has received a mixed reception. In his obituary, James Bonar described him as a champion of women’s rights, although he immediately nuanced this qualification by listing

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<sup>3</sup> Francis Ysidro Edgeworth Papers, Nuffield College, Oxford University. Box C4, files 9, 14, 10, 15, 18, 19 and 20. The entire series of 40 press cuttings dates from September, the 12<sup>th</sup>, 1922, and is one of the two series to have been kept in Edgeworth’s papers—the other series covers his appointment as Drummond Professor of Political Economy at Oxford.

<sup>4</sup> Edgeworth’s style is the subject of an important contribution by Henderson (1993). Henderson insists that attention has been given to Edgeworth’s self-training in mathematics, but that his “excellence” in the classics is key to understand both his work and his style, and the relation between the two. Familiarity with the classics was of course far more common at the time than now. It is also the first subject Edgeworth taught in his career, interestingly at the first higher education institution for women in the United Kingdom, Bedford College in London (Barbé 2006: 79). Edgeworth’s style is also commented by Keynes (1926), Creedy (1986: 20), Stigler (1978: 292–293), Pujol (1992: 110, note 1), Mirowski (1994), and Newman (2003).

some of Edgeworth “sly hits, of a contrary character” (Bonar 1926: 652).<sup>5</sup> Some late 20<sup>th</sup> century economists (Arrow 1971: 6; Arrow 1976: 234; Bergmann 1971: 295; Becker 1957: 62) also provided partial readings of Edgeworth’s work on the status of women. They emphasized Edgeworth’s intuitions on women’s crowding in specific occupation and his description of discrimination against women by trade unions—neither being original thoughts in his time. But none of them discussed Edgeworth’s main thesis: if free competition is always the higher desirable organizational principle of a market, it should be cautiously applied in the case of women (Edgeworth 1922: 437, 442). The present paper analyses what Edgeworth meant by “cautiously applied.”

Peter Newman speculates that Edgeworth’s lifelong concern for women’s work and wages “owed something of its persistence to a continuing interest in the work of ‘Mrs. Sidney Webb’” (Newman 2003, 512).<sup>6</sup> Our paper raises the issue beyond personal considerations: Edgeworth wrote on women’s wages because it was a central question of the time and the subject of many debates within the economic profession. In interwar Britain, the battle cry “equal pay for equal work” was at the heart of a burning controversy “which touche[d] not only the pocket but the home” (Edgeworth 1922a: 431). Descriptive as well as normative analyses of wage differences between men and women had been produced by economists since the 1890s (Pujol 1992; Henderson 1993; Folbre 2009; Chassonnery-Zaïgouche 2019). But the Great War precipitated the changes regarding women’s working life and intensified debates on the status of women’s labor. Edgeworth wrote on the “woman question” from the early 1870s to the 1920s. How his arguments evolved offers a window onto the continuity and breaks on how the “woman question” was framed in late 19th century and early 20th century political economy.

Two articles, one preface and six book reviews related to women’s wages, compared to the total of four books, 198 articles, and 204 reviews Edgeworth wrote in his life, do not exactly match the substantial energy he devoted to the question: the “problem of the inequality of men’s and women’s wages interested [Edgeworth] all his life” (Keynes 1926: 146). By contrast, it attracted relatively few analyses by historians of economic thought. The main exception is Michèle

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<sup>5</sup> “No one has described more fully and faithfully than [Edgeworth] the economic position of women [...] and he favored all their claims”, wrote Bonar in his *Obituary*. Edgeworth was in favor of women’s suffrage (Bonar 1926: 650). Bonar nevertheless added a few anecdotes. ‘Never ask a woman the way if you can find a man,’ was thrown out in a Yorkshire walk. Not once or twice he cited without displeasure, ‘He for God only, she for God in him,’ ‘Her husband the relater she preferred Before the angel.’ He much enjoyed the ‘queer answer’ given to him by a lady candidate at the College of Preceptors: ‘What are the objections to a paper currency?’ Answer: ‘It crumples so and dirties; it rustles so.’” (Bonar, 1926, 652-653). See Pujol (1989, 1992) for a complete analysis of Edgeworth’s sexism.

<sup>6</sup> On Edgeworth’s personal relations to women, especially Beatrice Webb and Sophie Bryant, see Barbé (2010, 133-145). For a harsh portrait of Edgeworth by Beatrice Potter Webb, see her diary (B. Webb 2000: 122, 124).

Pujol's chapter devoted entirely to Edgeworth's thought on women's wages (1992: 94-112). While she mentions (but does not analyse) the existence of two book reviews (1893b, 1917) concerned with the subject, her chapter is mainly a textual exegesis of the 1922 and 1923 articles aiming to expose "[Edgeworth's] definite bias against the equal pay for equal work principle" (Pujol 1992: 94), his "sexist myopia" and "pure apology of the status quo" (109). Although we agree with the feminist criticism of Edgeworth's thought, our perspective is historical.<sup>7</sup>

Secondary literature devoted to Edgeworth's writings has largely focused on his early theoretical contributions in isolation from what were perceived as "applied issues".<sup>8</sup> Edgeworth, as many economists at the time, also viewed theory as "a guide" to solve concrete issues (Creedy 1990: 22). Together with his analyses on the question of equal pay, he wrote throughout his life a significant number of reviews and reports that bared a strong link with practical policy debates of his days. According to him, equal pay was a "theoretical" matter as well as an exercise on how, and *how far* to apply theoretical principles in relation to ethics (Edgeworth 1904: v). Hence, beyond the image of "Edgeworth, the tool-maker, gloried in his tools" (Pigou, quoted in Newman 2003: xiii), our paper considers the equal pay question as an application of his fundamental ethical and analytical principles.

Between his first mention of women as specific "sentients" and his two papers of 1922 and 1923, Edgeworth read, reviewed, and edited the work of other economists on women wages. He also closely followed the "women's issues" activities of Section F, which funded two major series of works on this theme in 1901-1903 and in 1916-1918 (Howarth 1922: 272-273). By contrast with Pujol, we also analyze Edgeworth's early writings on the status of women in the 1870's, his six book reviews on the subject published in the *Economic Journal*, and the substantial preface he wrote for the British Association report *Women in Printing Trade* in 1904.

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<sup>7</sup> Pujol's is not interested in Edgeworth's thought *per se* but in a broader history of anti-feminist conceptions which she criticizes using contemporary feminist theory. She does not discuss Edgeworth early works nor the secondary literature on Edgeworth. Folbre also briefly mentions Edgeworth's analysis of women's wages (2009: 240, 271, 275)

<sup>8</sup> Alberto Baccini (2002) offers the most precise bibliography of Edgeworth's work to date. Crucial contributions by Stephen Stigler (1978, 1986) and by Baccini (2007, 2009) focus on Edgeworth's statistical thinking. John Creedy offers a history of Edgeworth's economic analysis (1986, 2016). Peter Newman (1990) was one of the first to analyse Edgeworth's reviews (see also Newman 2003). Mirowski (1994) edited majors works of Edgeworth, including some reviews and correspondence, with a substantial introduction to his thought. Lluís Barbé (2006) produced a much needed and complete biography. None of the afford mentioned authors, except briefly Barbé (2006: 232-233), analyse his work on women's wages. None cite Pujol's work.

In addition, and by contrast with the secondary literature, we think that studying ambivalence is much more interesting than reconstructing consistency. Edgeworth pointed to the “disturbing effect of sentiment and prejudice” on how the issue was framed in “masculine circles” as well as denouncing the feminists’ “exaggeration” (Edgeworth 1922a: 432, 442). Edgeworth both referred to “authority” and to hard facts, to statistical data and to “sentiments”. Our paper traces the evolution of the “naturalization” process regarding women and Edgeworth’s ambivalent reverence to scientific endeavor. Lorraine Daston has emphasized how “despite protests of neutrality” and the use of “new scientific language”, many nineteenth century scientists “who studied gender differences often decked out the age-old platitudes, and the social attitudes that went with them” (Daston 1992: 225). In what follows, we analyze how Edgeworth’s discourse on women’s wages evolved in between “age-old platitudes” and new knowledge in the making. We trace his naturalization of inequalities from abstract principles to concrete anti-egalitarian positions.

## **Section 1: Exact utilitarianism or woman as “the lesser man”**

Key to Edgeworth’s analysis of the economic position of women is his “application of mathematics to the moral science” (Keynes 1926: 147), *i.e.* his work on “exact utilitarianism” first presented forty years before his presidential address to Section F of the British Association.<sup>9</sup> His comments on the status of women can first be found in 1877, in *New and Old Methods of Ethics*, then in the 1879 article, “The Hedonical Calculus”, and finally, in his 1881 book, *Mathematical Psychics. An Essay on the Application of Mathematics to the Moral Science*.

### *1. 1. “Not everybody to count for one”*

In these early writings, Edgeworth’s epistemological and ethical positions rely on two central hypotheses. First, comparisons and addition between personal “satisfactions” are possible: in other words, utility is directly measurable.<sup>10</sup> The second assumption forms the theoretical core

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<sup>9</sup> The “second great application of mathematics to the Moral Sciences” being its application “to Belief, the Calculus of Probabilities” (Keynes 1926: 147).

<sup>10</sup> Edgeworth believed “new developments in ‘physio-psychology’ would make it possible to develop a ‘hedonimeter’ that would allow economists to develop a firm physiological underpinning of utility” (Colander 2007: 216). On Edgeworth’s measurement of utility, see Mueller (2020). On the history of the measurement of

of Edgeworth's "aristocratical contract". It assumes that, neither as pleasure machines, nor as working bodies, are individuals equal. They differ in their capacity for happiness, in their threshold of sensitivity to pleasure and in their capacity to endure fatigue. Hence the role assigned to "hedonimetry": to measure and prove that individuals who are more apt to enjoy higher pleasures (affection and virtues) tend to have a greater capacity for happiness. As a logical consequence, Edgeworth insisted that this principle dismisses the idea that each individual count for one and replaced it by each increment of marginal utility counting for one (Edgeworth 1881: 122).

Symmetrically, individuals who can perform the same amount of labor, while suffering less fatigue, enjoy an increasing marginal disutility of labor when the work increases:<sup>11</sup>

An individual has more capacity for work than another, when for the same amount whatsoever of work done he incurs a less amount of fatigue, *and also* for the same increment (to the same amount) whatsoever of work a less increment of fatigue. (Edgeworth 1881: 59)

As an analytical consequence, utilitarian egalitarianism cannot be soundly defended: "Not 'everybody to count for one' " (1881:122), be it from the perspective of aggregate utilities or from the perspective of social welfare:

For, if sentients differ in *Capacity for happiness* – under similar circumstances some classes of sentients experiencing on an average more pleasure (*e.g.* of imagination and sympathy) and less pain (*e.g.* of fatigue) than others – there is no presumption that equality of circumstances is the most felicitous arrangement [...]. (Edgeworth 1881: vii, emphasis in the original)

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utility more generally, see Moscati (2019), especially part one and two. On the history of psycho-physiology, see Daston (1978) and Chaigneau (2002). Interestingly, Daston insists on the tension between scientific (and determinist) mindset and traditional values within the debates on the "new psychology": the same tensions are present in Edgeworth's work.

<sup>11</sup> A "fact" proven, according to Edgeworth, by the works of the Belgian mathematician and psychologist Joseph Delbœuf's experimental work in *Etude psycho-physique* (Edgeworth 1879: 399).



As a result of “mathematical reasonings”<sup>12</sup>, Edgeworth negates the assumption that “*Equality* is necessarily implied in Utilitarianism” (Edgeworth 1881: vii), thus breaking with the tradition of classical utilitarianism (Peart and Levy 2005).<sup>13</sup>

Equality is not the whole of distributive justice. There may be needed an *ἀξία* [worth or value, our translation] for unequal distribution. [...] in the minds of many good men among the moderns and the wisest of the ancients, there appears a deeper sentiment in favour of aristocratical privilege – the privilege of man above brute, of civilised above savage, of birth, of talent, and of the male sex. This sentiment of right has a ground of utilitarianism in supposed differences of *capacity*. (Edgeworth 1881: 77)

With regard to the normative definition of the rules of distribution of resources, the consequence would be that “*the distribution of means as between the equally capable of pleasure is equality; and generally is such that the more capable of pleasure shall have more means*” (Edgeworth 1879: 398; 1881: 64, emphasis in the original). The same holds for the distribution of work, which should be first attributed to those who possess the higher “capacity for work” (Edgeworth 1879: 399).

Finally, added one to another, these two postulates, of unequal capacity for happiness and of unequal capacity for work (or for feeling fatigue), give a simple answer to the question of the maximization of social welfare:

In fact, the happiness of some of the lower classes may be sacrificed to that of the higher classes. (Edgeworth 1881: 74).

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<sup>12</sup> This first criticism of egalitarianism is indeed depicted by Edgeworth as a result of “mathematical reasonings”: “Mathematical reasonings are employed partly to confirm Mr. Sidgwick’s proof that Greatest Happiness is the *end* of right action; partly to deduce middle axioms, *means* conducive to that end. This deduction is of a very abstract, perhaps only negative, character; negating the assumption that *Equality* is necessarily implied in Utilitarianism”. (Edgeworth 1881: vii, emphasis in the original)

<sup>13</sup> In his review of Leslie Stephen’s book on utilitarianism, Edgeworth reiterates this criticism of the egalitarian conception of classical utilitarianism: “But it is no part of the utilitarian first principle that the happiness of each sentient shall ‘count for one’, irrespective of that tendency to be reproduced and multiplied and spread which is the attribute of ‘refined’ pleasures. The feeling of the brute, like the opinion of the fool, should count indeed, but count for little” (Edgeworth 1882: 446-447).

## 1.2. “*The aristocracy of sex*”

For Edgeworth, these differences in capacities—for pleasure and for work—characterize both “the difference” and “the privilege” of men over animals, of some ages or “races” over the others, and of men over women:

First, then, it may be admitted that there is a difference with respect to the capacity for happiness between man and the more lowly evolved animals; and that therefore [...] the privilege of man is justified. [...] Again, it may be admitted that there are differences of capacity for work, corresponding, for example, to differences of age, *of sex*, and, as statistics about wages prove, of race. (Edgeworth 1881: 130-131, our emphasis)

Why admit these differences? Because they coincide with a “deeper sentiment in favor of [the] aristocratical privilege [...] of the male sex” (1881: 77). The argument is restated in this often-quoted section of *Mathematical Psychics* on the “aristocracy of sex”<sup>14</sup>

Capacity for pleasure is a property of evolution, an essential attribute of civilization. The grace of life, the charm of courtesy and courage, which once at least distinguished rank, rank not unreasonably received the means to enjoy and to transmit. To lower classes was assigned the work of which they seemed most capable; the work of the higher classes being different in kind was not to be equated in severity. If we suppose that capacity for pleasure is an attribute of skill and talent; if we consider that production is an *unsymmetrical function* of manual and scientific labor; we may see a reason deeper than Economics may afford for the larger pay, though often more agreeable work, of the aristocracy of skill and talent. The aristocracy of sex is similarly grounded upon the supposed superior capacity of the

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<sup>14</sup> This passage was chosen by Keynes in his *Obituary*, as an illustration of the idea that “the problem of the inequality between men’s and women’s wages interested [Edgeworth] all his life”, together with this comment: “but who in space and time but Edgeworth in the eighties, whose sly chuckles one can almost hear as one reads would treat it thus” (Keynes 1926: 146).

man for happiness, for the ἐνέργεια [*energeia*, force] of action and contemplation;  
upon the sentiment -

Woman is the lesser man, and her passion unto mine

Are as moonlight unto sunlight and as water unto wine.”

(Edgeworth 1881: 78, emphasis in the original, our translation from ancient Greek)<sup>15</sup>

Such are the analytical and ontological basis of Edgeworth’s later contributions to the “equal pay for equal work” debate.

## Section 2. “Why is women’s wage less than that of a man?”

Twelve years after the exposition of these anti-egalitarian principles, Edgeworth would seize upon the more precise question of women’s wages: “Why is women’s wage less than that of a man?” (Edgeworth, 1893b: 118). The discussion had started in the *Economic Journal* in the early 1890’s with the publication of several journal articles on the status of women (Groenewegen 1994: 18-19; Chassonnery-Zaïgouche 2019). But it is in Edgeworth’s reviews of these works in the 1890’s and early 1900’s that his views can be traced.<sup>16</sup>

### 2.1. Reviewing “the alleged differences” between men’s and women’s work

Late 19th century debates on the economic and social position of women were mainly related to the status of the family, property issues, and political rights—essentially suffrage. With the important exceptions of Harriet Taylor Mill, John Stuart Mill, or Millicent Fawcett, discussions

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<sup>15</sup> The insetf lines are from *Locksley Hall*, a poem written by Alfred Tennyson in 1835 and published in his 1842 volume of *Poems*: V, 149-152.

<sup>16</sup> Reviews have not been the object of intensive research in the history of economics. Restrepo Forero (2003: 37-39) provides examples of how “purification strategies” made historians of sciences ignore scholarly journals’ contributions that are not viewed as original research articles. Various types of reviews were, in fact, the bulk of journals before the Second World War (Csiszar 2018): reporting on published books, summary of scientific research or commission’s reports, information coming from different sources and different languages, reporting on past events, etc. In *The Economic Journal*, “[u]ntil the 1920’s, many items of interest are concealed in the ‘Book Reviews’ and ‘Notes,’ and thus tend to be overlooked by a reader used to looking to articles for significant contributions” (Tribe 1992: 36). Thus, some of Edgeworth’s major contributions have been published in the “Reviews” section of the journal (see Newman 1990).

among economists over “the woman question” often dealt with an intellectual quest for “differences” between men and women (Vaid 1985), while the more specific theme of women’s work was systematically discussed in relation to the existing family norms and, crucially, to divorce laws.<sup>17</sup>

Edgeworth’s first concrete incursion in the debate is a review of Walter F. Wilcox’s Ph.D. dissertation entitled “The Divorce Problem”.<sup>18</sup> According to Edgeworth, Wilcox convincingly underscored the main cause of the spectacular increase of divorces in America: the education of women (Edgeworth 1892: 342). Indeed, in so far as the “economic emancipation of women” had taken the form of “an assimilation of the work of wage-earning women to that of men”, working women “ability to make and keep a home happy is diminished” as marriage “is fundamentally grounded on the differences, physical, intellectual, and moral, between the sexes” (Wilcox, quoted by Edgeworth 1892: 342).

Apart from moral considerations on family relations, the debate became more and more concerned with women’s work. In one of the first papers that covered both theoretical arguments and statistical data, read before Section F of the British Association in 1891, Sidney Webb presented the diversity of arguments surrounding the wage question. For him, wage gaps might be caused by various factors—although it was impossible to weigh them properly: differences in physical strength, differential capacity to react in emergency situations, customs or discrimination. On a theoretical level, Webb emphasized that women’s lower pay can be explained by a general inferiority of women’s work: in terms of quality and quantity of output, as well as in terms of advantages to the employer. This inferiority determined inferior wage levels, even within occupations for which women had superior skills (S. Webb 1891: 657). Hence, even if men and women rarely performed the same work, women undercut men’s wages as “the Chinese men have superseded American women in laundry work” in another context (658). In a word, women “blacklegged” men on the labor market.<sup>19</sup>

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<sup>17</sup> On Bentham, see Cot (2003); on Harriet Taylor and John Stuart Mill, see Pujol and Seiz (2000); on John Stuart Mill, see Ball (2001), Sigot and Beaurain (2009) and Gouverneur (2019); on Beatrice Webb, see Caine (1982) and Beilharz and Nyland (1998). On Victorian feminism, see Caine (1992). On Fawcett, Rathebone and B. Webb views, see Chassonnery-Zaïgouche (2019). For general accounts of the woman question in 19th century debates among economists, see Pujol (1992), Dimand, Forget and Nyland (2004), Folbre (2009), Charles and Le Bouteillec (2007), Madden and Dimand (2019) and Becchio (2020, chapter 1).

<sup>18</sup> Wilcox was a statistician and institutionalist economist who completed his dissertation in Columbia in 1891. He is unfamous for his conception of “low-wage races”. On his statistical works and racism, see Darity (1994).

<sup>19</sup> The term blacklegging (*i.e.* smuggling), with its implied strong moral judgement, was also used by Beatrice Webb: “The first necessity is the exclusion of illegitimate competitors [...] the unskilled and half-hearted female ‘amateur’ who simultaneously blacklegs both the workshop and the home” (B. Webb 1896: 12).

Sidney Webb's presentation prompted several responses. In a conference given at the Royal Philosophical Society of Glasgow in December 1891, William Smart challenged Webb's thesis by offering an explanation to unequal pay exclusively based on conventions.<sup>20</sup> The initial question was rather simple: "[i]f a man-worker is supposed to get a high wage when he produces much, a low wage when he produces little, [...] should a woman's wage be determined by another principle?" (Smart 1892: 13). Smart describes the double standard in treatment received by men and women on the labor market: women cannot access all occupations, and women's occupation are paid less as "the wage level of skilled female labor is lower than that of unskilled male labor" (20). The existence of two different modes of wages' determination is thus unfair to women: "[...] while men's wages [...] are determined ultimately by the value of product which is economically 'attributable' to their work, women's wages are determined by the older and harsher law [of custom]" (Smart 1892: 26).

Reviewing Smart's conference for the *Economic Journal*, Edgeworth insisted that the principle of 'equal pay for equal work' was in accordance with the results of competitive price theory, since "two equally efficient agents of production" are not "expected to sell at different prices" (Edgeworth 1893b: 118). He added that "[t]he labor-market is not free, it is clogged by custom" (118). Smart's solution to these unfair customs relied both on "the enlightenment of the public conscience" and on unionization (Smart, quoted by Edgeworth 1893b: 119).

Throughout the same decade, Edgeworth reviewed a substantial number of other works on wage theory, praising the "applied" aspect of the authors' claims, their "wide experiences" in practical matters (Edgeworth 1893a, 1894, 1896, 1899), and contributing to produce a consensus that more data were needed, especially regarding the issue of the effects of labor legislation on women's employment. Following the series of *Factory Laws* that had imposed reductions on the daily hours and night work for women, the British Association devoted, in 1900, a £15 grant to the study of "the economic effect of legislation regulating women's work".<sup>21</sup> Sir Edward W. Brabook, a prominent civil servant and president of the Anthropological Society, was nominated chairman of the committee, consisting of Arthur L.

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<sup>20</sup> A Scottish businessman and economist, Smart would become president of Section F in 1905.

<sup>21</sup> Report of the British Association for the Advancement of Science (1900: xci). This was the first of two grants devoted to the question by Section F of the British Association, the second being launched during the First World War (see Howarth 1922, 272-273). To have an idea of what this amount meant, one should keep in mind that the British Association's "seismological observation" project got a £75 grant, while a project "to conduct exploration in Crete" received a £145 grant, the biggest amount of money that year. As a matter of further comparison, while the University of Cambridge chair yielded Alfred Marshall £700 per annum, the Marshalls spent £80 a year on books (Marshall 1947). In 1901, "a policeman earned £68 per annum, and a general laborer about the same" (Mitchell and Deane 1962: 153). We thank Keith Tribe for pointing us to this information.

Bowley, Charles Booth, Sydney J. Chapman, Alfred William Flux, Clara E. Collet, Margaret Gladstone MacDonald and Langford Lovell (L.L.) Price.<sup>22</sup> The committee also included William Smart and Francis Y. Edgeworth.<sup>23</sup> Four years later, this same group conducted the research entitled *Women in the Printing Trades*, published with a preface written by Edgeworth.

## 2.2. *Equal pay as a question “of the highest practical importance” and “of considerable theoretical interest”*

Initiated by the Women’s Industrial Council, *Women in the Printing Trades: A Sociological Study* was intended as the first of a series of reports on women’s work.<sup>24</sup> Printing trades were chosen as they illustrated “in an especially normal way the main problems of women’s labor under ordinary modern conditions” (MacDonald 1904: xvi).<sup>25</sup> As “representative from the Royal Economic Society” to the committee, Edgeworth wrote the preface, Clementina Black was responsible for the description of the Trades, Arthur L. Bowley, representative of the Hutchinson Trustees, coordinated the chapter on wages and James Ramsey MacDonald edited the book.<sup>26</sup>

Edgeworth considered the report as “[a] solid contribution to a department of political economy which has perhaps not received as much attention as it deserves” (Edgeworth, 1904: v). More importantly, he framed the issue of equal pay for equal work as a question not only “of the highest practical importance”, but also, and for the first time, “of considerable theoretical

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<sup>22</sup> MacDonald was designated as “Mrs J.R. MacDonald”.

<sup>23</sup> The committee received reports from all over the UK, concerned with many different industries, but also from Switzerland (Federal as well as cantonal legislation), Holland, Grand Duchy of Luxembourg, Hungary, Finland, Russia, Sweden, Norway and Denmark.

<sup>24</sup> As a pressure group, the Women’s Industrial Council’s primary objective was to improve the fate of working women. It was active from 1894 until 1917. The work of the report was mainly funded by the Hutchinson trust, which also supported financially the Fabian Society and the creation of the London School of Economics.

<sup>25</sup> A booming and innovating industry, and a large employer of women, printing trades had also been central to the history of the feminist movement in Britain (see Tusan, 2004). The famous Langham Place group work as an employment bureau for women, and organized training of women’s compositors, the most prestigious occupation in printing at the time. In the 1870s, Emma Paterson funded the Women’s Printing Society Ltd, a cooperative that exclusively employed women as compositors and printers and help to organize a number of women unions and sent the first women’s delegate to the TUC congress.

<sup>26</sup> Margaret Gladstone MacDonald, a socialist and feminist activist, former student in political economy under Millicent Fawcett at Kings College and secretary of the Women’s Industrial Council’s legal and statistical committee, worked together with Arthur Bowley in gathering wages data. After the phases of inquiry and data gathering, she was active in producing the last version of the report, finally edited by her husband, James Ramsay MacDonald, member of the Labour Party and future Prime Minister. Clementina Black also was a renowned member of the Women’s Industrial Council’s.

interest, so far as it seems to present the paradox of *entrepreneurs* paying at very different rates for factors of production which are not so different in efficiency” (v).

In his preface, Edgeworth first offered a list of the situations to distinguish from the equal pay for equal work question. The first situation relates to unequal pay when the work is “nominally” the same. Referring to evidence given in the 1890’s before the Royal Commissions on Labor, Edgeworth considered that, in that case, men were, nevertheless, more “advantageous” to employers because they did not leave the workforce after marriage. Bluntly put, “[i]t does not pay to train women” as they would leave their jobs, thus yielding “[n]ot the same return for the same trouble” (Edgeworth 1904: vi). Yet, he recognized that “in many of these cases [...] though the work of women is less efficient, it is not so inferior as their pay” (vi). Hence, women’s wages were not set in *proportion* to their efficiency.

The second situation concerns men and women employed in different occupations. One of the reasons why unequal pay for equal work was difficult to detect related to the fact that men and women did not usually work in the same occupations: hence, “[s]uch data [on gender specific occupations] afford no direct and exact comparison” (Edgeworth 1904: vi). In relation to these differences in occupations, Edgeworth considered that another cause of wage differential was the crowding of women in “less remunerative” occupations (vii)—while immediately adding that this crowding *may* be caused by a lower interest of women in their trade because of “the prospect of domestic life” (vii).

Yet, the most convincing explanation of unequal wages for him was “to be found chiefly not in compensation produced by the levelling action of competition [...] but in the absence of competition between men and women—in the existence of monopoly whether natural or artificial [...] together with custom and what Mill calls ‘the unintended effect of general social regulations’” (vii). A discussion of each of these monopolies, natural or artificial, follows. First, the natural monopoly of the “superior strength of man”—not expected to “vanish” anytime soon (vii-viii).<sup>27</sup> Second, “custom and the somewhat capricious sense of decorum counts for more than might have been expected in restricting women to certain industries” (viii). Edgeworth argued that the capacity to impose conventions also lies in the power of monopoly, quoting directly the report’s findings:

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<sup>27</sup> Note that differences in physical strength are framed as a monopoly and not as differences in productivity. We thank Roger Backhouse for this remark.

Conservative notions about women's sphere, and chivalrous prejudices about protecting them, influence certain employers in determining what work they ought to do. (MacDonald 1904: 52, quoted by Edgeworth 1904: xi)

Legislation produces a third type of monopoly, as the series of *Factory Acts* imposed specific restrictions to women's work.<sup>28</sup> Male trade unions constitute the fourth monopoly power. Pointing once more at the supposed lack of interest of women in organizing, due to their anticipating marriage, Edgeworth noted that "women's unions have not flourished" (ix). He mentioned both the limited success of the Society of Women Employed in Bookbinding, organized by Emma Paterson, and the relative bad treatment women received in mixed unions (e.g. the Society of Compositors), who did have such "equal terms", but where "it [was] practically impossible for any woman to join the society" (x).

Finally, Edgeworth briefly discussed "the relation between the use of machinery and the competition of women against men" (Edgeworth 1904: xi). On the one hand, he considered that "the cheapness of women's work averts the introduction of machinery" (e.g. linotypes). On the other hand, he noted that "in the case of bookbinding, the employment of machinery makes it possible for the less skilled and lower-paid women to do work formerly done by men" (xi). As a conclusion, Edgeworth pointed to no simple effect of new machinery, but rather to a subsequent rearrangement of the division of labor and a displacement of men and women workers.

The report itself was criticized by feminists, especially by Millicent Fawcett.<sup>29</sup> Published by Edgeworth in the *Economic Journal*, her review described the book as biased towards trade unions, summing-up the "whole theory of Trade Unionism" by its willingness "to shut women out of the employment all together" (Fawcett 1904: 296):

[T]he women must either be paid at the same rate of the men or got rid of altogether'. [... It] explains in one sentence its influence in throwing out or keeping out of work all workers, male or female, whose industrial efficiency is not equal to creating the value needed to reproduce the Trades' Union rate of wages. (Fawcett 1904: 296)

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<sup>28</sup> Although the committee conducted a survey whose results conveyed the sense that the majority of employers and employees in the printing trades were in favor of these *Acts*.

<sup>29</sup> See also the book review by the American economist Edith Abbott, who concluded her review with these words: "in short, [we are told in the report] that the woman wage-earner 'has preferred to remain incompetent'" (Abbott 1905: 301).



The negative effect of minimum wages on employment was usually assumed rather than substantiated by empirical analysis. The argument did not follow from rigidities imposed to employers in a labor market that needed flexible prices to adjust, but rather from the impossibility for certain groups of workers to be productive enough.<sup>30</sup>

Three ideas, which were common knowledge among political economists in the 1890s and early 1900s, can be emphasized from the positions discussed in this section. Although a complete history of the crowding hypothesis is still lacking, it was repeatedly cited as the main cause of women's lower wages. The idea that prejudices, perceptions or customs could influence supply as well as demand for women's work was also common but never central to economic analysis. The effects of legislation on the status of women was highly debated. Edgeworth's originality was to insist on the conditions which would allow prejudices to translate into material effects via the existence of monopoly powers. But while being rather articulate on the debates concerning women's wages, Edgeworth did not express his own position on the question before his two 1920s papers, published right after the second major study sponsored by the British Association on women's work during the Great War.

### **Section 3. “Equal pay unfair to men’, says Professor”**

Between the 1900s and the First World War, the women's movement came to the forefront of British politics. Street actions by the newly created Women's Social and Political Union, the window-smashing *suffragettes*, hit the headlines, while the more law-abiding *suffragists* were sending bills to the Parliament. When Edgeworth decided to take equal pay as the subject of his presidential address to the British Association, partial equal civil rights had been granted to propertied women over 30, who would vote for the first time in the 1918 general election.

That same year, in August, female tramway and bus conductors in London led a successful strike against unequal war bonuses. The multiplication of equal pay strikes that followed led the War Cabinet to set up a committee to examine the “problem” of “women in industry”. Appointed in September 1918, this War cabinet Committee on women in industry was tasked

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<sup>30</sup> See Leonard (2005) for a similar analysis in the American context.

to determine whether women had received a man's rate when occupying a "man's job," following a previous agreement with trade unions.<sup>31</sup>

During the war, debates on women's work had been reframed as an issue of national survival in exceptional times. Right after the war, women's work was recast as a national danger in relation to the renewed maternalist policies aiming at increasing the British population which declined after the armed conflict. Indeed, the interwar period is generally viewed by historians as an ambiguous moment for women's employment (Thom, 2017).<sup>32</sup> On the one hand, the 1919 *Sex Disqualification Removal Act* opened the professions of solicitors, barristers and magistrates to women. But that same year 1919, the *Restoration of Pre-War Practices Bill* urged women engaged in the war effort through employment to now "return" to their homes (Rubin 1989).

In this context, Edgeworth reviewed Dawson's 1917 *After War Problems* and devoted a large part of his review on "the solid content" of Millicent Fawcett's chapter on "The position of women in economic life" (Edgeworth 1917: 404). According to Fawcett, temporary equal pay arrangements should be extended and the opening of all professions and training to women should prevail after the war—as a matter of justice and economic efficiency (quoted by Edgeworth 1917: 404-406). Fawcett's main arguments were empirical. First, the inferiority of women's work had been disproved by the work they performed in war industries and when replacing men in other industries. Second, women worked to support themselves and dependent, as shown by the recent statistical survey of the Fabian Women's group.

While he confessed "not feel[ing] competent to comment", Edgeworth opposed Fawcett's arguments by referring to "high authorities on the subject": Beatrice Webb's thoughts against "the abstract doctrine of the modern middle-class Feminist", Eleanor Rathbone's preference for family allowance as a priority over equal pay, and Frank Taussig's 1916 analysis of women's minimum wage as an alternative to equal pay (Edgeworth 1917: 406). In 1922, Edgeworth would elaborate on his own position, starting with a major departure from Fawcett's

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<sup>31</sup> The "Treasury agreement" circulated as a *Memorandum on Acceleration of Output on Government Work*, dated March 19, 1915. See Beatrice Webb (1919, 202). The agreement endorsed equal pay for women when they entered "men's trades" as a way to maintain wage rates. The majority report recommended equal pay for equal work in the civil services, but did not endorse the principle for all industries, or as a general principle. Beatrice Webb's minority report advocated for occupational wages, regardless of sexes, set up by wage boards composed of both employers and employees in each industry.

<sup>32</sup> The historiography of the interwar period is divided between this idea of a general gender backlash and on the ambiguity of a renewed "conservative modernity" (Light, 1991). See also Delap (2012).

demonstration: what if trade unions' discrimination was actually useful to prevent the "degradation of labor"?

### *3.1. Preventing the "débâcle of industry"?*

Ingrained in these interwar debates, Edgeworth's 1922 presidential address at the British Association meeting in Hull denotes a somewhat more theoretical enterprise. The paper begins with the definition of equal pay given by the War cabinet Committee on women in industry in its majority report: equal pay refers to "[p]ay in proportion to efficient output" (Edgeworth 1922a: 432). Edgeworth also mentions Bowley's definition, found in the appendixes of the Committee's report: equal pay means "equal utility to the employer" or "equal 'productivity' or 'productive value'" (1922a: 432).<sup>33</sup> Only concerned with the first definition, Edgeworth reframes the question in terms of competition theory:

In short, we must understand with the term "equal work" some clause importing equal freedom in the choice of work. This condition should include equal freedom to prepare for work by acquiring skill. There are thus presented two attributes: equality of the utility to the employer as tested by the pecuniary value of the result, and equality of disutility to the employee as tested by his freedom to choose his employment. These two attributes will concur in a régime of perfect competition. (Edgeworth 1922a: 433)

The question splits into two parts: "Should there be perfect competition between the sexes?" and "What sort or amount of competition between the sexes is advisable?" (Edgeworth 1922a: 433). On the first question, Edgeworth reaffirms his commitment to "the system of natural liberty," asserting that it seems "sufficient to reply that competition between all classes should be unrestricted" (Edgeworth 1922a: 435). But, discussing the second question, he lists the various exceptions to the principle of free competition that should be enforced in the case of women's work.

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<sup>33</sup> In addition to the War Committee Report, Edgeworth credited Fawcett and Rathbone for the first definition. For an analysis of both Beatrice Webb's and Millicent Fawcett's change of mind on equal pay, see Chassonnery-Zaïgouche (2019). While he quotes the majority report of the War Committee on Women in Industry, Edgeworth does not refer to B. Webb's minority report which had been republished by the Fabian society.

In the first part of the address, Edgeworth explicitly excluded family circumstances from the analysis and focused on the idea that free competition between men and women essentially creates the risk of a “degradation of labor”, leading both to a generalized “industrial parasitism”, and “a depression or *debâcle* of industry” (1922a: 435, 436).<sup>34</sup> Why would free competition lead to a “degradation of labor” solely in the case of the presence of women, and not in general? First, argues Edgeworth, “the minimum of requirements for efficiency, of actual as distinct from conventional necessities, is less for a woman than a man”. Second, “wives and daughters are apt to be subsidized” and they can thus receive an income from other sources than their own work. And, “[l]ast, and not least, the woman worker has not acquired by custom and tradition the same unwillingness to work for less than will support a family, the same determination to stand out against a reduction of wages below the standard” (436).<sup>35</sup> These “degradations”, which concern both work and wages, would hence require regulations of the labor market to prevent competition within the same occupation—that is positive regulations, based on “purely economic grounds” and not on “humanitarian sentiment or Socialist bias” (436).

Despite being “a flagrant violation of [...] free competition”, discrimination by trades unions could limit these degradations (Edgeworth 1922a: 439). In line with many contemporary economists, including Millicent Fawcett and Beatrice Webb, Edgeworth considered that the “pressure of male trade unions” was the primary cause of the crowding of women in some occupations and of their exclusion from the “better-paid branches of industry” (439). A pressure exerted by “[w]ithholding facilities for the acquisition of skilled trades”, rather than by the former “direct veto, such as ‘No female allowed’ in the rules of archaic society” (439). Such pressure could be counteracted if women organized themselves in specific trade unions, although indeterminacy in wage bargaining would still not imply equal pay between men and women (441).

At the end of the 19<sup>th</sup> century, this idea of women’s work leading to a “degradation of labor” was shared by many authors: Alfred Marshall, the Webbs, or, later, Arthur C. Pigou.<sup>36</sup> Arguments—women’s standards of living are lower, they have a lower bargaining power, and they are doing inferior work—were usually listed as separate and specific to women. The

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<sup>34</sup> The expression “industrial parasitism” is usually attributed to the Webbs. In the context of the discussion on women’s work, it conceptually refers to the idea that some workers would not be “real” workers, as they receive “aid and payment from extraneous source” (Taussig 1916: 415). For Edgeworth, “degradation” refers to labor (and wages) while “parasitism” and “*debâcle*” refer to the industry concerned.

<sup>35</sup> Our interpretation is that the two last points are related for Edgeworth: women are subsidized, therefore they accept lower wages.

<sup>36</sup> This last argument is similar in logic to the notion of “low wage race”, developed in United States by Walter Willcox, based on the “natural” predisposition of some groups to accept low wages (see Darity 1994).

necessity to exclude women from trades, because of this general “degradation”, implied that pure competition theory could not apply to the issue of women’s wages. While women being inferior was not the only argument to justify unequal pay, it was still the foundational one.

### 3.2. “*The cab-horse and the thoroughbred*”: back to foundational differences

After carefully specifying “two opposite misconceptions”—“the one exaggerating the comparative efficiency of men, the other that of women” (Edgeworth 1922a: 442), Edgeworth developed several reasons why equal pay would not prevail because of essential differences between men and women.

The first set of differences was already discussed in the preface to *Women in the Printing Trades*. It concerns differentials in physical strength and differences in demand for physically-intensive jobs. While unlikely in his opinion, Edgeworth nevertheless considered the possibility of a change in this regard:

If in the course of evolution, the female sex became as strong as the male, if in the progress of practical science muscular strength became less and less in demand, the average [weekly earnings of women] might no longer be less than the average of [men]. [...] for instance, if typewriting, telephoning and the like became more in demand than coal-mining and ironworks. (Edgeworth 1922a: 444)

The same readjustment would occur “if the vast amount of household work that is now unpaid could only be obtained by paying for it”, the demand for women’s labor and “its price might be considerably raised”—although , adding that these “changes, however, do not appear very imminent” (444).

The second set of differences concerns the alleged “changeable” character of women’s work, broadly related to “the present state of things” (444). A woman is of less value for an employer because a woman is “‘liable to go off and get married just as she is beginning to be of some use’, as a candid champion of equal pay [Eleanor Rathbone] has observed” (444). In consequence of that “changeability”, a reduction of women’s wage in proportion would not be in contradiction with the equal pay principle—a point Edgeworth credited to Beatrice Webb (445). These secondary differences also relate to the lesser value of women, related, writes Edgeworth, to the idea that they are not multi-skilled and “generally less useful in an

emergency” (444).<sup>37</sup> In the absence of these secondary differences, Edgeworth would favor Beatrice Webb’s conception of an “occupational wage”, irrespective of sex (445-446).

The third set of differences refers to the types of work respectively performed by men and women.

If teaching were an art as mechanical as turning a prayer-wheel, then (apart from secondary differences) it would be unreasonable that men should be paid more than women for the same operation. But supposing that the presence and influence of a master, say in dealing with the bigger boys, is something different from that of a mistress, and that it is considered indispensable it is not unreasonable (in a régime of pure economics) that the desired article should be purchased at the market price. (Edgeworth 1922a: 446)

As different commodities, gendered skills should receive different prices, according to the laws of supply and demand. Edgeworth then concluded: “in the absence of tertiary (and presumably also secondary) differences, the differentiation of price [is] certainly contrary to the principle of equal pay for equal work” (Edgeworth 1922a: 447). Yet, in the majority of cases, primary, secondary and tertiary differences remained the main justifications of unequal wages. Using analogies between, on the one hand, women and men, and, on the other hand, a “steel knife” and a “silver blade”, or a “good cab-horse” and a “high-stepping thoroughbred”, Edgeworth concluded this section by assimilating the advocacy of equal pay with the defense of a “presumably noxious monopoly” (447), as unequal pay is, in fact, justified by natural differences between men and women.

### *3.3. Pocket money or bread money? A quarrel over statistics*

In the last part of the paper, Edgeworth “restore[s] the abstracted circumstances of family life”. He mobilizes his arguments on the basis of an unquestioned assumption: the necessity for working men to maintain a family, “a very general belief and sentiment”, “a norm accepted throughout the civilised world” (Edgeworth 1922a: 448). Thus, one need to consider the

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<sup>37</sup> Edgeworth does not supply any evidence for this argument on women’s behavior during emergencies. Beatrice Webb is mocking this argument in her Minority report by referring to situations where women were prevented, by some factory “written rules”, to intervene in an emergency situation (1919).

deductions suffered by working men from supporting their families. Edgeworth's conclusion is logically deduced from this notion of compensation:

If the bulk of working men support families, and the bulk of working women do not, it seems not unreasonable that the men should have some advantage in the labor market. Equal pay for equal work, when one party is subject to unequal deductions from his pay, no longer appears quite equitable. (Edgeworth 1922a, 449)

At the time however, this very fact was, for the first time, the subject of empirical inquiries and tense debates. Part of the disagreement shifted toward the availability and reliability of statistics on dependents. Fabian surveys, quoted by Edgeworth, concluded that about two-third of British working women had dependents to support (1922a: 449).

The Fabian Women's Group conducted its own survey of 2, 830 working women. Of these, 1,405 or slightly less than 50 per cent were found to partially or wholly support others besides themselves, a further 1,005 (35 per cent) were 'exactly self-supporting.' (Smith 1915: 34)

Relying upon these statistics, Millicent Fawcett rejected the idea that only men had dependents. As a consequence, unequal pay for women cannot be justified by the fact that men would have to maintain their dependents, whereas women's wages would consist in "pocket money":

The extraordinarily low level of women's wages before the war cannot therefore be explained either on the "pocket money" theory or by the fiction that they have no one dependent upon them. (Fawcett 1917: 196).

Edgeworth's contribution to this debate is two-fold. First, he claimed that "[g]rave doubts are thrown upon these figures [the Fabian survey edited by Smith] by the more elaborate investigation which Mr. Seebohm Rowntree has recently conducted" (Edgeworth 1922a: 449). Rowntree found that "only 12·06 per cent" of women have dependents. Second, when women have dependents, these are either old or infirm—and hence "cannot be compared, as regards at least economic importance, with the support of the young, the cost of which normally falls on the male breadwinner." (Edgeworth 1922a: 449).<sup>38</sup>

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<sup>38</sup> Pujol raises the idea that Rowntree's study was done with the explicit purpose of countering the Fabian society's results (Pujol 1992: 101, 110 note 9). She does not provide evidence to support this assertion, but offers a methodological criticism of Rowntree's data on the status of women's dependents: while women reported their dependents in the Fabian survey, Rowntree assigned dependents to them according to their wage level.

With respect to the question of dependents, Edgeworth's demonstration switches abruptly here from a discussion on theoretical (or "abstract") aspects of competition to inferences based on "general impressions and ordinary experience" (Edgeworth 1922a: 442) and "authoritative expression of belief" (448).<sup>39</sup> His analytical framework also switches abruptly "from one based on marginal productivity wages to one based on subsistence wages" (Pujol 1992: 101). His argumentation undermined the individualistic core of the "system of liberty": why should the majority of women's family situation determined the situation of all women, when bachelors did not earn reduced wages as a consequence of being childless?<sup>40</sup>

The second thesis Edgeworth had to confront in his presidential address was Eleanore Rathbone's advocacy in favor of an "endowment of motherhood"—or an "endowment for children maintenance" (Rathbone 1917). The "purpose of the scheme" was summarized in the report of the Family Endowment Committee, formed in 1917. The objective was to secure "that within each class of income the man with a family should not be in a worse position financially because he has a family than the single man in that class" (Edgeworth 1922a: 450).

Edgeworth advocated against this form of compensation under four headings. The main advantage—no more "excuse for the under-payment of women (Edgeworth 1922a: 450-451)—would not be prevent the "danger" of the "tendency to the degradation of labor" that he already expressed (451). The reason why this danger would remain lies in the "transitory and episodic character of female labor" (451). The third heading concerns incentives to work for husbands. Edgeworth's terse formula summarizes a causal link he makes between an "endowment of motherhood" and husbands' potential laziness: "when wives earn, husbands idle" (451).<sup>41</sup> Finally, such a measure would threaten both the quantity and the quality of the population, by marshalling increases of "lower type" families—and thus threatening the quality of the "race". On these bases, Edgeworth rejected the "endowment of motherhood on a large scale by the State", and favored private funds solutions, distributed proportionally to the size of the families (Edgeworth 1922a: 457).<sup>42</sup>

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<sup>39</sup> The "authorities" quoted are an Australian Judge, the economist Frank Taussig, and the statistician Benjamin Seebohm Rowntree (Edgeworth 1922a, p.448). He also referred to the socialist Elizabeth Leigh (also known as B. L.) Hutchins and John Stuart Mill. See also note 48, this paper.

<sup>40</sup> Ironically Pujol notes that, a bachelor himself, "the economic situation of bachelors and their existence, which presents a problem for his argument, are not addressed in his two articles" (Pujol 1992: 112 note 22). This argument is also pointed by Fawcett, Rathbone and B. Webb (see Chassonnery-Zaïgouche 2019).

<sup>41</sup> Fawcett generalises this argument—family wage as incentive to work—to women, and vehemently argue against family endowment by the State as a "socialist nightmare" (Fawcett 1907: 377).

<sup>42</sup> On Edgeworth's eugenics and racist tropes, see Peart and Levy (2005, chapter 10); Guidi (2008, section 2).



Edgeworth concludes his address on the idea that “the case for unrestricted competition, without any provision for the endowment of families, is not so strong as it has been represented by advocates of equal pay” (494).<sup>43</sup> He justifies the existence of differences on economic grounds, and already mentioned higher ideals for restricting competition, such national welfare, which are precisely the object of his second article on the question of women’s wages.

#### **Section 4. The higher aim of economic welfare**

In his 1922 presidential address, Edgeworth had cautiously introduced perspectives that could be interpreted as favoring equal pay: ruling out of blatant and unjustified discrimination when equal output can be certified, creating women’s trade unions to increase women’s bargaining power, and experimenting case-by-case family allowances. One year later, at the Liverpool meeting of the British Association, Edgeworth re-examined the same themes from a different viewpoint: not with the perspective of the “production of wealth in the narrower sense”, but with the “higher aim” of “economic welfare” (Edgeworth 1923: 487).

This line of argumentation echoed the renewal of the “population problem” after the war. Neo-Malthusianism and eugenics had put women at the center of debates regarding the decline in population and birth control, both as “mother of the race” and as “dependents” to men. Wage theories were invariably tested along the practical aspect of the maintenance of a family and the recovery from the war. Indeterminacy in theory would be curbed by applying higher principles, whether it be the indeterminacy of exchange or the indeterminacy of wage bargaining (Creedy 1984, p.614-615; Creedy 1990; Chaigneau 1997). Edgeworth’s exact utilitarianism was such principle of arbitration. We explore in this section how Edgeworth “updated” what was already a characteristic of his “exact utilitarianism” since his early texts—unequal capacities for pleasure and pain—into a post-war context regarding women’s work, national welfare and the population issue.

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<sup>43</sup> Hence a severe criticism of the “idealist” view of State intervention on welfare supported by “the Swedish sentimentalist, Ellen Key”, who “expects that when a ‘profounder culture’ becomes prevalent ‘it will seem as natural for society to maintain its women as it was natural to maintain its army and navy’. They will receive a ‘subsidy from the community for the bringing up of children’, ‘the economic appreciation of her (their) domestic work’. They will thus be free to cultivate a ‘soulful sensuousness or sensuous soulfulness’; in accordance with ‘a new morality’.” (Edgeworth 1922a: 495).

#### 4.1. “Slight modifications” to competition

As opposed to morals, ethics or politics, Edgeworth considered that the objective of economic welfare should be a subject of general consensus among economists:

As a property of this essential difference it seems that propositions respecting economic welfare possess one characteristic of positive science, general consent, in a greater degree than beliefs concerning higher kinds of well-being. There is more agreement about the conditions of material prosperity than about the first principles of ethics and politics. (Edgeworth 1923: 487) <sup>44</sup>

This positive science of welfare was opposed to any form of “sentimentalist” plea in favor of justice (Edgeworth 1923: 495). Some “wrong” such as “infractions of *laissez-faire*” should be compensated by the correction of “another sort of wrong”—the deductions men suffer from supporting their families (493). At the level of economic welfare, such calculus is possible and relies on the possibility to compare and aggregate satisfactions:

A distinctive feature of welfare which especially concerns us here is the postulate that the satisfactions felt by different persons admit of comparison. It thus becomes possible to consider the aggregate economic welfare of a community as the sum of satisfactions enjoyed by the individual members. By the law of diminishing utility the addition of wealth to those who have already abundance tends to increase the aggregate welfare less than if the same amount of means were applied to the relief of pressing wants. (Edgeworth 1923: 487)

Maximizing economic welfare was then compatible with differences both in the quantity of work supplied by men and women and in its remuneration:

It would seem [...] that if one class is less capable of work than another, but equally capable of enjoyment, the former class shall do less work, but enjoy equal remuneration. (Edgeworth 1923: 488)

The citation is almost verbatim from his earlier works. Edgeworth relied on an analogy with principles of taxation, and distribution in general: “more would be expected from the more

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<sup>44</sup> The reference here is to Arthur Cecil Pigou: “Welfare is related to wealth as inward feeling to outward means. Economic welfare is distinguished from other kinds of happiness in that it depends more on external means, enters easily into relation with the measuring rod of money, as Professor Pigou defines.” (Edgeworth 1923: 487)

powerful man” (Edgeworth 1923: 488).<sup>45</sup> This principle—which would be “impracticable” for all classes of labor—could be applied to the differences between men and women:

The numbers of the less capable class would increase to the detriment of production. The survival of the inefficient would be encouraged. These results would not equally follow if the privileged class consisted of the weaker sex. (Edgeworth 1923: 488)

Rejecting the “socialistic” solutions which consist in distributing the work according to a comparison of fatigue between men and women, Edgeworth refers to the possibility of introducing “slight modifications” to the “forces of competition” without altering total economic welfare. In Edgeworth’s peculiar wording, it reads “[t]here would not be an appreciable loss in *globo*, but a transference conducive to economic welfare” (Edgeworth 1923: 490).

On this new ground, Edgeworth mentions the possibility of some “concessions” to women workers. Among these concessions, Edgeworth advocates in favor of “increased facilities” for women’s work allowed by the new types of post-war labor organization: “processes which by some reorganization, or the introduction of labor-saving appliances, could be made suitable for them [women].” (Edgeworth 1923: 490). This “jostle of competition” (Edgeworth 1923: 492) would indeed constitute some form of discrimination. But a discrimination which could be legitimized in terms of global economic welfare:

If this discrimination [in law] is generally approved, there may be presumed a predisposition to admit a similar discrimination with respect to the laws of political economy. [...] some discrimination of the slight yet appreciable degree which is admitted in the sphere of law is possible in the sphere of industry. (Edgeworth 1923: 492)<sup>46</sup>

#### 4.2. *When calculus replaces chivalry*

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<sup>45</sup> On the relation between diminishing marginal utility and progressive income tax, see Colander (2007: 219).

<sup>46</sup> Edgeworth does not refer to precise laws, but it was well-known at the time that many laws, e.g. hours of works, concerned only women or only men.

Edgeworth's position illustrates some breaches in the epistemic status of the debate over equal pay.<sup>47</sup> Is equal pay a matter of "sentiments" and "chivalry" or a matter of economic theory? Edgeworth, here, seems caught in the crossfire. On the one hand, he insists upon the necessity to demonstrate his analytical position on the status of women in the workforce in strict analytical terms—"such as the laws of diminishing utility and increasing fatigue, the fact of unequal capacities-differences in the relation between work done and fatigue felt" (Edgeworth 1923: 491)—without:

indulging the fantastic sentiments of Don Quixote, without accepting Michelet's old objection to the employment of women in industry: '*L'ouvrière mot impie et sordide.*' ['The unholy and sordid word of worker when applied to a woman,' our translation] (Edgeworth 1923: 490)

Discussing Walker's appeal "to the well-known chivalry of American men", Edgeworth similarly insists that chivalry, "in the special sense of knightly virtues [...] which was the crown and glory of the knightly character" (490) should be excluded from economic reasoning:<sup>48</sup>

For economic welfare is considered as depending on characteristics of human nature that are very general, almost as universal—and so nearly as amenable to scientific treatment as the motives commonly ascribed to the 'economic man'. [...] To secure the validity of our conclusions there is not postulated any particular code of manners and customs. [...] The premises of our argument are more general, containing more of the *quod semper, quod ubique*. ['What is everywhere, always' our translation]" (Edgeworth 1923: 491)

On the other hand, his analysis of unequal pay is deeply rooted, both as a positive and as a negative heuristic, in the sentiments and prejudices of his time. As a positive heuristic, Edgeworth's lists prejudices, such as male trade-unions anti-women sentiments, among the various "monopolies" responsible for inequalities on the labor market—or when he harshly criticizes E. Belfort Bax's "unpleasant" book, *Frauds of Feminism*, as tainted by biases and prejudices (1923: 491-492). And as a negative heuristic, his own prejudices lead him to relate

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<sup>47</sup> On the "scientification" of the debates in the interwar period, see Chassonnery-Zaïgouche (2019).

<sup>48</sup> Francis A. Walker explicitly framed his argument in favor of women's work as economic chivalry. By contrast, Alfred Marshall's plea for "economic chivalry" developed in the speech he delivered at the final dinner of the 1907 Congress of the Royal Economic Society was a plea in favor of social reform, in the line of Owen, Carlyle, Ruskin and John Stuart Mill—hence very different from what Walker or Edgeworth meant by chivalry (see Marshall, 1907). On Marshall, see Pujol (1992: 121-143).

the economic position of women to unquestioned family circumstances, or to list “authoritative” statements on women based on no specific evidence.<sup>49</sup>

While refusing to root his analysis of women’s wages in a “sentiment” of gallantry, Edgeworth’s economic calculus seems ultimately compatible with “chivalry” as a strong argument in favor of a differential treatment of women in economic theory. Strict economic reasoning could in fact be in accordance with some of “species of chivalry”:

Altogether, under the favorable conditions supposed—the action of reason quickened by a predisposing sentiment—the pursuit of economic welfare may avert the reproach conveyed in Burke’s tremendous words: ‘The age of chivalry is gone. That of sophisters, economists, and calculators has succeeded; and the glory of Europe is extinguished for ever.’ Rather, the economists, if aiming at economic welfare, the sophisters and calculators, if so named because, in accordance with the utilitarian philosophy, they seek to calculate the course that is conducive to the greatest quantity of happiness, will cultivate a certain species of chivalry, wanting, it may be, the glory of the older virtue, but still a precious element of civilisation. (Edgeworth 1923: 492)

It is in those paragraphs that the “naturalizations” regarding women are the more visible. “Age-old platitudes [...] and the social attitudes that went with them” are reframed in a new language (Daston 1992: 225): here, Edgeworth reframed differences as foundations of an unequal order using the language of welfare economics, while feeling compelled to justify differential treatments on other grounds than the sole “aristocracy of sex”: a sign that some of the *status quo* was challenged. This was particularly true regarding debates on the population issue, the central application of the economic welfare principles in his 1923 article.

#### 4. 3. “Rooting up wheat along with tares”

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<sup>49</sup> “Authority” was an important argument for Edgeworth, as some *a priori* assumptions could not be tested. See Creedy (1984: 611, note 9). The theme of a breadwinner wage was integral to the interwar cultural atmosphere, and the idea was especially reactivated after the world conflict had shaken gender social identities, and especially masculinities. Yet, as an idea and as a claim, it has a very convoluted history, from an ideal and a responsibility to a claim and a right, it reflects the specific way gender and class interests intertwined in the 19<sup>th</sup> century (Clark 2000).

The post-World War I context led concerns for economic welfare to be subordinated to the “population problem”. Debating over the possibility of family endowment in relation with the “quality of population”, Edgeworth noted that an increase in population, if not of “the higher types” of families, would be detrimental to economic welfare (Edgeworth 1922a: 454) and warns against the consequences of a family allowance scheme on this aspect:

The increase of population might be welcomed if it consisted of the higher types. But in the current proposals one sees no security for the improvement of the race. [...] Rather it is to be apprehended that the least desirable class [...] will be encouraged to increase and multiply. [...] the undesirable class are already so improvident that no stimulus could add to their recklessness. (454)

The same year, in the conclusion of his review of McDougall’s book, *National Welfare and National Decay*, Edgeworth reiterated the same plea on “the encouragement of births among the classes that are superior in natural endowments, ‘intrinsically better’” (Edgeworth 1922b: 84), and endorsed the project of McDougall’s ideal eugenic society, *Eugenia*:<sup>50</sup>

What shall we do to avert the decline with which civilization is threatened by the increase of a low-grade population? [...] There is foreshadowed a community, *Eugenia*, in which the qualities required to promote national welfare and to avert national decay will be selected and transmitted by heredity. The supply of first-rate caliber can only be maintained by the fruitful mating of persons of superior strains. At present, in all highly civilised societies, such persons tend to be absolutely or relatively infertile. *Eugenia* is a scheme for bringing persons of such strains together in fertile union which will give to the world an increasing number of persons of similar calibre. (Edgeworth 1922b: 85-86)

This eugenic *credo* was already explicit in *Mathematical Psychics* (Edgeworth 1881: 132). One year after his article on economic welfare, in one of the last pieces he wrote for the *Economic Journal*—a review of Lettice Ilbert Fisher’s *The Economic Position of the Married Women*—Edgeworth reiterated his fear that family endowment would constitute “a danger of rooting up wheat along with tares” (Edgeworth 1924: 448).<sup>51</sup> The last paragraph of Edgeworth review of

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<sup>50</sup> McDougall’s “evidences” relied upon the newly invented “intelligence-tests”: first by Francis Galton, then, in 1905, by the French psychologists Alfred Binet and Théodore Simon.

<sup>51</sup> A social worker and a suffragist, Lettice Ilbert Fisher graduated from Sommerville College, Oxford. After doing research at the London School of Economics, she taught modern history at St Hugh’s College and economics for the Association for the Higher Education of Women in Oxford. She is known for the creation of the charity

Fisher's book however opened with the possibility of caution experimentation with family allowance, on a voluntary basis, and ends with a warning:

Experiment as well as reasoning must be interpreted with caution. (Edgeworth 1924: 449).

The inconclusiveness of Edgeworth's arguments can be interpreted as an illustration of his difficulties to navigate between his sentiments and his prejudices at a time knowledge on women's work and wages was not established on solid grounds.

## Conclusion

In his *Obituary*, Keynes recalled that “[d]uring the last months of his life he [Edgeworth] nursed the intention of reprinting a portion of [*Mathematical Psychics*] and several times consulted [him] in the matter” (Keynes 1926: 145). At the end of his life, Edgeworth returned to some of the ideas of his early works and made them fit to the new post-WWI context in the case of women's wages. If the argumentation differs, some sentiments in favor of inequality remained unchanged.

Between Edgeworth's early description of the “aristocracy of sex” and his argumentation against equal pay in the 1920s, the “deeper sentiment in favor of aristocratic privilege” was replaced by references to “economic welfare”, and “chivalry” was reframed in terms of economic efficiency. Edgeworth wrote many “statements of belief” (Pujol 1992: 98) and his analysis framed many aspects of the *status quo* as optimal by assumption (Pujol 1992: 107-108). However, his convoluted arguments in favor of some “arrangements” together with his discussion of equal pay and family allowance in specific cases provide some space for alternative paths.

These contributions to the analysis of women's wages could be considered as a good example of Edgeworth's “strange but charming amalgam of poetry and pedantry, science and art, wit and learning of which he had the secret” (Keynes 1926: 146). But the issue is deeper. Edgeworth attempted to produce an analysis consistent with his general economic system. Unlike Pareto, he did not dismiss feminism as a mere prejudice (“a disease that can only affect

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National Council for the Unmarried Mother and her Child in 1918 (later renamed Gingerbread). She wrote many popular books on economics and history (Moyse 2004).

a rich people”—Pareto 1906, quoted in Mosca 2018: 130). Edgeworth rather took feminists seriously and devoted a large amount of time to the question of equal pay.

If there is no particular historical interest in the arguments of an old bachelor if only to list his mere prejudices, Edgeworth is interesting for his effort to build a rational moral conservatism at an important moment in the history of welfare economics. By articulating both a descriptive and a normative account of facts about women's work, he provided one of the first account of the importance of prejudices and sentiments, both in economic theory and in economic life.

## References

Abbot, Edith. 1905. Review of *Women in the Printing Trades: A Sociological Study* by J. Ramsay MacDonald. *Journal of Political Economy*, 13(2): 229-303.

Arrow, Kenneth J. 1971. *Some Models of Racial Discrimination in the Labor Market*. Santa Monica: RAND Corporation.

Arrow, Kenneth J. 1976. "Comments I, Women and the Workplace: The Implications of Occupational Segregation." *Signs*, 1, no. 3: 233–37.

Baccini, Alberto. 2002. "Toward a Bibliography of Edgeworth's Writings." *Research in the History of Economic Thought and Methodology*, 21C, 271–301.

Baccini, Alberto. 2007. "Edgeworth on the foundations of ethics and probability." *European Journal of the History of Economic Thought*, 14, no. 1: 79–96.

Baccini, Alberto. 2009. "F. Y. Edgeworth's *Treatise on Probabilities*." *History of Political Economy*, 41, no. 1: 143–62.

Ball, Jennifer. 2001. "J. S. Mill on Wages and Women: A Feminist Critique." *Review of Social Economy*, 59, no. 4: 509–27.

Barbé, Lluís. 2006. *Francis Ysidro Edgeworth. A Portrait with family and Friends*, translated by Mary C. Black. Cheltenham: Edward Elgar.

Bax, E. Belfort. 1913. *The Fraud of Feminism*. London: Grant Richards Ltd.

Becchio, Giandomenica. 2020. *A History of Feminist and Gender Economics*. London, New York: Routledge.



Becker, Gary S. 1957. *The Economics of Discrimination*, Chicago: University of Chicago Press.

Beilharz, Peter and Chris Nyland. 1998. *The Webbs, Fabianism and Feminism*. London: Routledge.

Bergmann, Barbara R. 1971. "The Effect on Whites Incomes of Discrimination in Employment." *Journal of Political Economy*, 79, no. 2: 294–313.

Bonar, James. 1926. "Memories of F. Y. Edgeworth." *Economic Journal*, 36, no. 141: 647–53.

British Association. 1900. Report of the seventieth meeting of the British Association for the Advancement of Science held at Bradford in September 1900. London: John Murray.

Caine, Barbara. 1982. "Beatrice Webb and the 'Women Question.'" *History Workshop Journal*, 14, no. 14: 23–43.

Caine, Barbara. 1992. *Victorian Feminists*. Oxford: Oxford University Press.

Chaigneau, Nicolas. 1997. *Contrat et Utilité : origines et fondements de la théorie de l'échange de Francis Y. Edgeworth*. Ph.D. Diss., University Paris 1 Panthéon-Sorbonne.

Chaigneau, Nicolas. 2002. "Jevons, Edgeworth et les 'sensations subtiles du cœur humain': l'influence de la psychophysiologie sur l'économie marginaliste." *Revue d'histoire des sciences humaines*, 2, no. 7: 13–39.

Charles, Loïc and Le Bouteillec, Nathalie. 2007. "Les économistes et 'la cité des femmes': le débat théorique sur l'accès des femmes au marché du travail (1850-1914)." *Working Paper 2007-06*, Economix, University Paris X Nanterre, 1–28.

Chassonnery-Zaïgouche, Cléo. 2019. Is Equal Pay Worth It? Beatrice Potter Webb, Millicent Garrett Fawcett and Eleanor Rathbone's Changing Arguments. In K. Madden and R. Dimand (eds.), *Handbook of Women's Economic Thought*, London: Routledge, 129–149.

Clark, Anna. 2000. The New Poor Law and the Breadwinner Wage: Contrasting Assumptions. *Journal of Social History*, 34(2): 261–281.

Colander, David. 2007. "Edgeworth's Hedimonometer and the Quest to Measure Utility." *Journal of Economic Perspectives*, 31, no. 2: 215–25.

Cot, Annie L. 2003. 'Let There be no Distinction Between the Sexes': Jeremy Bentham on the Status of Women. In R. Dimand and Chris Nyland (eds.), *The Status of Women in Classical Economic Thought*, Cheltenham UK: Edward Elgar, 165-193.

Creedy, John. 1984. "Edgeworth: utilitarianism and arbitration." *History of Political Economy*, 16, no. 4: 609–18.

Creedy, John. 1986. *Edgeworth and the development of neoclassical economics*. New York: Basil Blackwell.

Creedy, John. 1990. "Marshall and Edgeworth." *Scottish Journal of Political Economy*, 37, no.1: 18-39.

Creedy, John. 2016. "Francis Ysidro Edgeworth." In *Handbook of the History of Economic Thought: Volume 1 Great Economists Since Petty and Boisguilbert*, edited by Gilbert Faccarello and Heinz D. Kurz, 315–19. Cheltenham: Edward Elgar.

Csiszar, Alex (2018) *The Scientific Journal. Authorship and the Politics of Knowledge in the Nineteenth Century*. Chicago: The University of Chicago Press.

Darity, William J. 1994. Many roads to extinction, early AEA economists and the black disappearance hypothesis. *History of Economics Review*, 21, 47–64.

Daston, Lorraine. 1978. British Responses to Psycho-Physiology, 1860-1900. *Isis*, 69, no. 2: 192–208.

Daston, Lorraine. 1992. The Naturalized Female Intellect. *Science in Context*, 5, no. 2: 209–35.

Dawson, Willian H. 1917. *After-War Problems*. London: Allen & Unwin.

Delap, Lucy. 2012. "Conservative values, Anglicans, and the gender order in interwar Britain." In *Brave New World: Imperial and Democratic Nation Building in Britain Between the Wars*, edited by Laura Beers and Geraint Thomas, 149–68. London: Institute of Historical Research Publications.

Dimand, Robert W., Evelyn L. Forget, and Chris Nyland. 2004. "Retrospective: Gender and Classical Economics." *Journal of Economic Perspectives*, 18, no. 1: 229–40.

Edgeworth, Francis Ysidro. 1877. *New and Old Methods of Ethics, or 'Physical Ethics' and 'Methods of Ethics'*. Oxford: James Parker & Co.

Edgeworth, Francis Ysidro. 1879. "The Hedonical Calculus." *Mind*, 394–408.

Edgeworth, Francis Ysidro. 1881. *Mathematical Psychics. An Essay on the Application of Mathematics to the Moral Science*. London: C. Kegan Paul & Co.

Edgeworth, Francis Ysidro. 1882. Review of *The State in Relation to Labor*, by W. Stanley Jevons. *The Academy*, Reproduced in Newman 2003, 533–34.

Edgeworth, Francis Ysidro. 1893a. Review of *The Theory of Wages and its Application to the Eight Hours Questions and other Labour Problems* by Herbert Thompson. *Economic Journal*, 3, no. 9: 113–115.

Edgeworth, Francis Ysidro. 1893b. Review of *Women's Wages* by William Smart. *Economic Journal*, 3, no. 13: 118–19.

Edgeworth, Francis Ysidro. 1894. Review of *The History of Trade Unionism* by Sydney and Beatrice Webb. *Economic Journal*, 4, no. 15: 497–500.

Edgeworth, Francis Ysidro. 1896. Review of *Strikes and Social Problems* by J. Shield Nicholson. *Economic Journal*, 6, no. 22: 245–248.

Edgeworth, Francis Ysidro. 1899. Review of *The Bargain Theory of Wages* by John Davidson. *Economic Journal*, 9, no. 34: 229–232.

Edgeworth, Francis Ysidro. 1904. Preface. In *Women in Printing Trades: A Sociological Study*, edited by J. Ramsay MacDonald, v–xii. London: P.S. King & Son.

Edgeworth, Francis Ysidro. 1917. Review-Article: *After War Problems*, by the Earl of Cromer, Viscount Haldane, the Bishop of Exeter, Professor Alfred Marshall, and others, edited by William Harbutt Dawson. *Economic Journal*, 27, no. 107: 402–10.

Edgeworth, Francis Ysidro. 1922a. “Equal Pay to Men and Women for Equal Work.” *Economic Journal*, 32, no. 128: 431–57.

Edgeworth, Francis Ysidro. 1922b. Review of *National Welfare and National Decay* by McDougall, William. *Economic Journal*, 32, no. 125: 84.

Edgeworth, Francis Ysidro. 1923. “Women's Wages in Relation to Economic Welfare.” *Economic Journal*, 33, no. 132: 487–95.

Edgeworth, Francis Ysidro. 1924. Review of *The Economic Position of the Married Women*, by Mrs H.A.L. Fisher. *Economic Journal*, 34, no. 135: 446–49.

Edgeworth, Francis Ysidro. 1925. *Papers Relating to Political Economy*. London: Royal Economic Society/Macmillan.

Fawcett, Millicent Garrett. 1904. Review of *Women in the Printing Trades: A Sociological Study* edited by J. Ramsay MacDonald. *Economic Journal*, 14, no. 54: 295–99.

Fawcett, Millicent Garrett. 1907. Review of *The Woman Socialist* by Ethel Snowden. *Economic Journal*, 17, no. 67: 376–78.

Fawcett, Millicent Garrett. 1917. “The Position of Women in Economic Life.” In *After-War Problems* edited by W. H. Dawson. London: Allen & Unwin.

Fawcett, Millicent Garrett. 1918. “Equal Pay for Equal Work.” *Economic Journal*, 28, no. 109: 1–6.

Folbre, Nancy. 2009. *Greed, Lust & Gender. A History of Economic Ideas*. Oxford: Oxford University Press.

Gouverneur, Virginie. 2019. John Stuart Mill on wage inequalities between men and women. *The European Journal of the History of Economic Thought*, 26, no 6: 1212–1251.

Groenewegen, Peter. 1994. “Women in Political Economy and Women as Political Economists.” In *Feminism and political economy in Victorian England*, edited by Peter Groenewegen. London: Edward Elgar.

Guidi, Marco E.L. 2008. “Everybody to count for one, nobody for more than one.” *Revue d'études benthamiennes*, 4. <http://journals.openedition.org/etudes-benthamiennes/182>

Henderson, Willie. 1993. “The Problem of Edgeworth’s Style.” In *Economics and Language*, edited by Roger Backhouse, Tony Dudley-Evans, and Willie Henderson, 200–22. London: Routledge.

Howarth, O. J. R. 1922. *The British Association for the Advancement of Science: A Retrospect 1831-1921*. London: British Association for the Advancement of Science.

Keynes, John Maynard. 1926. “Obituary, Francis Ysidro Edgeworth, 1845-1926.” *Economic Journal*, 36, no. 141: 140–53.

Keynes, John Maynard. 1933. *Essays in Biography*. London: MacMillan.

Leonard, Thomas C. 2005. “Protecting Family and Race: The Progressive Case for Regulating Women's Work.” *American Journal of Economics and Sociology*, 64, no.3: 757–91.

Light, Alisson. 1991. *Forever England: Femininity, Litterature and Conservatism between the Wars*. London, New York: Routledge.

MacDonald, James Ramsay (ed.). 1904. *Women in Printing Trades: a Sociological Study*. London: P. S. King and Son.

Madden, Kirsten and Robert Dimand. 2019. *Handbook of Women's Economic Thought*, London: Routledge.

Marshall, Alfred. 1907. The Social Possibility of Economic Chivalry. *Economic Journal*, 17, no. 65: 7-29.

Marshall, Mary Palley. 1947. *What I Remember*. Cambridge: Cambridge University Press.

Mirowski, Philip. 1994. "Marshalling the Unruly Atoms: Understanding Edgeworth's Career." In *Edgeworth on Chance, Economic Hazard, and Statistics*, edited by Philip Mirowski, 1–79. Boston: Rowman & Littlefield.

Mitchell, Brian R. and Phyllis Deane. 1962. *Abstract of British Historical Statistics*. Cambridge: Cambridge University Press.

Mosca, Manuela. 2018. *Monopoly power and competition: The Italian marginalist perspective*. Cheltenham: Edward Elgar.

Moscatti, Ivan. 2019. *Measuring Utility. From the Marginal Revolution to Behavioral Economics*. Oxford: Oxford University Press.

Moyse, Cordelia. 2004. "Fisher [née Ilbert], Lettice." *Oxford Dictionary of National Biography*. Oxford: Oxford University Press.

Mueller, Thomas Michael. 2020. The Temperature of the Brain: Edgeworth's Thermodynamic Analogies of Utility Measurement. *History of Political Economy*, 52 (4): 709–740.

Newman, Peter. 1987. "Edgeworth, Francis Ysidro." In *The New Palgrave: A Dictionary of Economics*, edited by J. Eatwell, M. Milgate and P. Newman. London: McMillan.

Newman, Peter. 1990. "Reviews by Edgeworth." In *A Century of Economics: 100 Years of the Royal Economic Society and the Economic Journal*, edited by John D. Hey and Donald Winch, 108–41. Oxford: Basil Blackwell.

Newman, Peter (ed.). 2003. *F.Y. Edgeworth's Mathematical Psychics and Further Papers on Political Economy*. Oxford: Oxford University Press.

Peart, Sandra J. and Levy, David M. 2005. *The "Vanity of the Philosopher": From Equality to Hierarchy in Postclassical Economics*. Ann Arbor: University of Michigan Press.

Pujol, Michèle A. 1989. Economic Efficiency or Economic Chivalry? Women's Status and Women's Work in Early Neo-Classical Economics. Ph.D. Thesis, Simon Fraser University.

Pujol, Michèle A. 1992. *Feminism and Anti-Feminism in Early Economic Thought*. 2<sup>nd</sup> ed. Cheltenham: Edward Elgar.

Pujol, Michèle A. and Judith Seiz. 2000. "Harriet Taylor Mill », *American Economic Review*, 90 (2): 476-479.

Rathbone, Eleanor. 1917. The Remuneration of Women's Services. *Economic Journal*, 27, no. 195: 55–68.

Restrepo Forero, Olga. 2003. "On Writing Review Articles and Constructing Fields of Study." PhD Diss., University of York.

Rubin, Gerry R. 1989. Law as Bargaining Weapon: British Labour and the Restoration of Pre-War Practices Act 1919. *The Historical Journal*, 32(4): 925-945.

Schreiner, Olive. 1911. *Woman and Labour*. London: T. Fisher Unwin.

Sigot, Nathalie and Christophe Beaurain. 2009. John Stuart Mill and the Employment of Married Women: Reconciling Utility and Justice. *Journal of the History of Economic Thought*, 31(3): 281-304.

Smart, William. 1892. "Women's Wages." *Proceedings of The Philosophical Society of Glasgow, 1891-1892*, 23: 87–105. Glasgow: John Smith & Son.

Smith, Ellen. 1915. *Wage-earning Women and their Dependents*. London: Fabian Society.

Stigler, Stephen M. 1978. Francis Ysidro Edgeworth, Statistician. *Journal of the Royal Statistical Society. Series A (General)*, 141(3): 287-322.

Stigler, Stephen M. 1986. *A History of Statistics: The Measurement of Uncertainty Before 1900*. Cambridge, MA: Harvard University Press.

Taussig, Frank W. 1916. "Minimum Wage for Women." *Quarterly Journal of Economics*, 30, no.3: 411–42.

Thom, Deborah. 2017. Gender and Work. In Susan R. Grayzel and Tammy M. Proctor (eds.), *Gender and the Great War*. Oxford: Oxford University Press.

Tribe, Keith. 1992. "The Economic Journal and British economics, 1891-1940." *History of the Human Sciences*, 5, no. 4: 33–58.

Tusan, Michelle E. 2004. "Performing Work: Gender, Class, and the Printing Trade in Victorian Britain." *Journal of Women's History*, 16, no.1: 103–26.

Vaid, Sudesh. 1985. "Ideologies on women in nineteenth century Britain, 1850s-70s." *Economic and Political Weekly*, 20, no.43: WS63–WS67.

Webb, Beatrice Potter. 1896. *Women and the Factory Acts. Fabian Tract Number 67*, London: The Fabian Society.

Webb, Beatrice Potter. 1919 [2011]. "The Wages of Men and Women: Should They Be Equal?", *Historical Studies in Industrial Relations*, 31-32: 201–82.

Webb, Beatrice Potter. 2000. *The Diaries of Beatrice Webb*. Edited by Norman and Jeanne Mackenzie. Abridged by Lynn Knight. Preface by Hermione Lee. London : The Virago Press.

Webb, Beatrice and Sidney Webb. 1897. *Industrial Democracy*. London: Longmans, Green.

Webb, Sidney. 1891. "The Alleged Differences in the Wages Paid to Men and Women for Similar Work." *Economic Journal*, 1, no. 4: 639–58.