A retrospective history of the new economic theories of justice *

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Abstract

This paper establishes a retrospective history of the new economic theories of justice, which include contemporary utilitarianism, equality, equity or capability theories. Focusing on the historical influences between the diverse branches of normative economics, it presents an restricted yet articulated historical overview of the evolution of welfare economics through the XXth century. The paper confirms the distinction between three periods – the old welfare economics, the new welfare economics, the post-arrovian period – corresponding to the three successive news of the death of welfare economics. The new welfare economics is shown to be divided into the British approach, and the American approach. Post-arrovian developments are rich, yet maintained seperate. The paper claims that they however constitute the heritages of three distinct branches of the historical welfare economics. It is standard to say that the British school of the New Welfare Economics is at the origin of cost-benefit analysis, but (a) the new cost-benefit analysis also inherited from equity theory. (b) The Old Welfare economics is shown to be the closest to Sen's influences on the rehabilitation of interpersonal comparisons of utility and the development of non-welfaristic approaches. (c) The American school of the New Welfare Economics is the main inspiration of Fleurbaey's proposals in which normative issues and ordinal preferences are taken seriously.
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The phrase "theory of justice" appeared massively in the philosophical literature since the 1970, in conjunction with the importance of John Rawls'

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Theory of justice (1971)[1]. It has soon been used within economics, where the phrase "new economic theories of justice" were to designate explictly normative approaches to welfare economics (e.g. Roemer 1996, Fleurbaey 1996). The self-appointed new economic theories of justice notably ranges from the equity or egalitarian theories, contemporary utilitarianism, to the capability framework. They also corresponds to a switch of vocabularly: what now belongs to the domain of economic theories of justice would have otherwise been considered as part of the wider welfare economics, insofar as welfare economics is the economic study of the definition and the measure of social welfare. Welfare economics assesses the consequences of individual actions and public decisions on social states.; it offers the theoretical framework on the basis of the formulation of prescriptions in the real world, consisting in social evaluations, design of public policies, and help to collective decision making. The specificity of the so-called new theories of justice within welfare economics, except for its relative novelty, consists in its explicit association with some philosophical theories of justice, i.e. their attention devoted to the philosophical justification of public intervention.

Not much has been written about where this new field of research come from a historical perspective. The economic theories of justice nevertheless do not start from scratch, they are embedded in the long history of welfare theories in economic sciences. A first try would be to investigate within the history of welfare economics. The latter is unfortunately still an under-developed field of research. Very few textbooks on history of economic thought develop a chapter on welfare economics (Blaug 1962, Backhouse 1985). There exist surveys (Mishan 1960, Chipman and Moore 1978) that are now old, and most wider studies concern the most ancient parts of welfare economics (Myint 1965, Backhouse 2009, Medema 2009, Backhouse and Nishizawa 2010, Nishizawa, Caldari and Dardi 2014). And welfare economics is hardly presented anywhere as a whole (a notable exception is Mongin 2006, who addresses the issue of the evolution and progress of welfare economics; see also Backhouse 1985, Baujard). The fact that robust knowledge is more likely to emerge from historically and disciplinary limited fields may explain why very few studies consider the wide picture of welfare economics. But obviously this limited focus is retrospectively becoming a problem. The new economic theories of justice developed today are explicitely inspired by social choice theory, theoretical foundations of microeconomics, public economics, cost-benefit analysis, theory of fair allocation, cooperative game theory among others. This diversity linked to the absence of reflexion on their unity is one of the causes of the low number of interconnexions and poor knowledge on how some of the disciplines have fed ou could feed the others. Understanding the new theories of justice requires

[1]A research on "theory of justice" in Ngram viewer provides a quite compelling illustration of the 1970's inflexion.

analyses about the historical links between all the fields that are moved by common questions or solutions, whose divergences come from different solutions to similar questions in certain parts of the history of welfare economics. What we need is to picture a tree.

In a famous metaphor, Leijonhufvud (2006) compared history of economic thought with a decision tree. Economics is a trunk with many branches, some of which grow vigorously while others atrophy and die; history of economic thought studies on what historical branch grows today's research, and identifies what branches have been given up. Marc Blaug (2001) for instance considers history of economic thought is relevant because informing this situation is essential to deeply understand what today's scientific assertions mean.This paper aims at providing an historical retrospective of the XXth history of welfare economics, explaining how the new economic theories of justice have emerged and are now structured. It identifies the decisive events explaining how welfare economics has evolved, including the reasons for the successive news of the death of welfare economics. It establishes the historical tree of influences that results on the theories of justice, among the wide scope of trends in normative economics. This storyboard shall be especially useful to understand whether or how close the different economics theories of justice are, and to identify some fundamental characteristics able to distinguish them.

I here focus on three successive steps[2]. The first described period is the old welfare economics (Section 1) and I discuss its utilitarian influences – among others–, and how ethical content is fully hold by the authors, unlike what will come after it. After discussing the stakes of Robbins's point on the banishment of interpersonal comparisons of utility (Ssection 2), I claim that welfare economics evolved towards two distinct approaches (Section 3). The English school of the new welfare economics introduces the principle of hypotetical compensations in order to guarantee axiological neutrality and the possibility of formulating prescriptions; it provides theoretical groundings for cost-benefit analysis, which is standardly used in evaluations of public policies. Besides, the American school of economics introduces social welfare functions, including certain transparent value judgments. After discussing the relevance of Arrow's result for welfare issues, I show how welfare economics adapted to new knowldege provided by the emergence of social choice theory and equity theories (Section 4). On the one hand, the reintegration of interpersonal comparisons is made possible by substantial discussions over utility in the non-welfaristic trends, mainly driven under the influence of Amartya Sen. This avenue of research uses arguments typical of the old welfare economics. On the other hand, the reintegration of clear normative

[2]Although presented differently, the division in successive periods I here retain is more or less present in Mongin 2002, Baujard 2010, 2011, 2015. See also, yet only partial presentations, Samuelson 1947, Hicks 1975, Cooter and Rappoport 1984.

criteria with few interpersonal comparisons of utility is made possible with a renewal of the Bergson-Samuelson social welfare functions.

1 The old welfare economics

The story starts with Samuelson's famous distinction between the old and the new welfare economics (Samuelson 1947: 249), corresponding more or less to the distinction between the Pigovian and the Paretian Welfare economics (Blaug 1962, Backhouse 2005). He described the old welfare economics by contrast with the new welfare economics. The former makes all decisions on the basis of interpersonal comparisons of utility while the latter strives not to do any.

Welfare economics is about deciding which social state should be favored –e.g. with or without a public policy– when there might be some conflicts between individual benefits. In the old times, the compromise was made on the basis of a sum of different individuals' utilities (or weighted utilities). Summing utilities require inter-personal comparisons of utility, which were then made without questions.

Firstly, ethical criteria are accepted as a proper ingredient of the old welfare economics. The aim of the old welfare economists was optimality, as already discussed by Marshall and Wicksell – so did Samuelson think –, and well explicated by Pigou. The growth of national dividend or wealth may go along with a dramatic increase of inequalities: there is no reason to consider this is necessarily beneficial at the end. So what counts is not just the amount of ressources or utility, but also its distribution among the parties. Hence the optimality of distribution becomes an important element to evaluate social states. One device to take into account optimal distribution is the principe of Pigou-Dalton transfers (Pigou 1920: 87-97). Let us say you want to compare two income distributions. Consider individual p is poorer in x than in y of the amount δ; individual r is richer in x than in y of the amount δ; individual r is richer than p in state x, and at least as much richer than p in state y; all other individuals remain unaffected between x and y. This change from x to y may result of a regressive transfer from the rich guy of the amount δ to the poor guy. After such a transfer, called a Pigou-Dalton transfer, distribution y shall be judged less unequal than x. Pigou considers that the economic welfare of the society is higher after transfers than before transfers if nobody's welfare is decreased. Of course, this judgement implies interpersonal comparisons of utilities between p and r. Beside distributive issues, there is another important reason to distinguish maximum and optimum: the existence of social cost or external effects. Marshall and Pigou are again good representers of such a concern.

Secondly, old welfare economists have a positive inclination towards interpersonal comparisons. The need, the computation and the intellectual origin of comparisons of utilities is well illustrated by the consumer's surplus. The notion of surplus, which goes back to the similar but not totally equivalent notion of 'total relative utility' of J. Dupuit (1844), became a higly discussed theoretical device after A. Marshall (1890). It was meant to provide cardinal measures of how desirable policy changes are. Dupuit needed to answer this question to be able to assess whether it was worth spending money on building new public infrastructures, *e.g.* concert hall, roads or navigation channels. Marshall devised the surplus notably to study the impact of a modification of prices, for instance due to consumption taxes or subsidies, on each individual's utility, and from then on, on the society's welfare. As we all know, consumer's surplus is the area between the demand curve, and the price line; the producer's surplus is the area between the price line and the supply curve. At the individual level, utility is objectified by a monetary measure [3]. By summing the willingness to pay at different quantities, it provides a metric of intensity of utilities, assesses cardinal individual utilities. At the collective level, when used to sum or weigh different individuals surpluses – as necessary to consider social welfare –, it assumes the possibility of interpersonal comparisons. Adding cardinal utilities to provide a collective criterion of welfare ressembles very much to utilitarianism. There is indeed a retrospective reconstruction by many, which proves that, after scrutiny, surplus is merely utilitarian (e.g. Schumpeter 1954: 415). Nevertheless, it is not contextually clear that the authors would recognize some utilitarian influences explicating the normative stakes of their technical choices. At least Marshall was aware that aggregating surpluses of different persons had possibly serious consequences. Such aggregation may be justified only to the proviso that certain assumptions hold: he mentions the importance of homogeneity of agents, he becomes aware of the absence of income effects and, after debates with Walras among others, the role of constant marginal utility of money. Each time the tool is used when the assumptions do not hold, the use of surpluses is questionable. Marshall therefore suggests to respect the conditions of use, but does not elaborate much about what it would mean otherwise.

Thirdly, the fact that this approach is value-laden has been progressively less and less accepted by the authors: from 1870 to the 1920s, a wind of discussion towards more scientificity and less normativity blew. Marshall did take seriously the utilitarian principle of raising the utility of the greatest number: pieces of evidence can be notably found in the unpublished

[3]" The excess of the price which he would be willing to pay rather than go without the thing, over that which he actually does pay, is the economic measure of this surplus satisfaction. It may be called *consumer's surplus*." It should be noted that this is a quote of the 9th edition. In the original text of 1890, Marshall speaks not of 'consumer surplus' but the 'consumer's rent'. (Marshall 1890: 124)

manuscripts he wrote in 1880, 1884 and 1907 (See complete references and analysis in Martinoia 1999: 372). Nevertheless assuming the importance of utilitarianism or any substantive political philosophy theory in his economic contribution started to be an issue. Edition after edition, he rewrote certain passages of *the Principles* to rule out any utilitarian traces. In particular, he substitued to hedonistic vocabulary some more neutral vocabulary (See the list of textual evidences in Martinoia 1999: 140-141), e.g., satisfaction rather than pain and pleasures. At the end, he even pretended his framework was free from any utilitarian traces. At the end of the day, utilitarianism did appear as a silent and uninentional influence of Marshall's economics, although it was less and less accepted by the author himself.

2 The Paretian Watershed

While making economics a science was clearly Marshall or Pigou's ambition, the project took a different turn with Pareto. In the *Traité de Sociologie Générale*, V. Pareto says clearly his aims to build a social science with guenuine scientific ambition, just as other sciences elaborating on the basis of experimental data and logical deductions (Pareto 1917: 20). This position led him to the (significant although not much influential) distinction between utility and ophelimity. Utility is a general concept of welfare, which may be interpersonnally compared as in the current old welfare economists, and that is able to cope with ethical stakes. On the converse, ophelimity is the economic concept of welfare that captures the observable expression of individual preferences, i.e. choice behaviors; ophelimities are not interpersonnally comparable since comparisons of ordinal representation of behaviors are meaningless. Pareto proposed the unique ethical criteria that could be used with ophelimity. What we now call the Pareto principle can do without distributive concern nor any interpersonal comparisons of utility. This was drawing a drastically new line for economics: Economics should now be clearly separated from ethics. Economic assertions are based on the analysis of individual ophelimity, restricted to a behavioral interpretation. No comparisons of ophelimity are meaningful. Such evolution at least imposed severe restrictions to the possibility of tackling ethical criteria. This novelty was likely to announce the passage to the new welfare economics. Yet, this line became an actual "Paretian watershed" much later on.

We need to wait for 1932, when Lionel Robbins' famous essay was published to mark a genuine watershed for economic science, and thereby for welfare economics. The little book was not the foundation stone of the novel standard view. It instead succeded in embedding important ideas that were in the air since the beginning of the century and, as we just suggested, already explicit in Pareto's works. But its success entailed that it soon became difficult to think about welfare economics without seriously considering such arguments.

An essay on the nature and significance of economic science aimed to establish the scientificity of economic study. This notably required the separation of economics from ethics (see e.g., the special issue of *Econcomica* in 2009). The view he defends on the epistemic requirements of economic science entails essential implications for welfare economics: individual utility should be interpreted on a strictly positive perspective, and any aggregation should be neutral. Concretely, not only utilities should be ordinal only, interpersonal comparisons of utilities should also be banned because they would involve "an element of conventional valuation. Hence it is essentially normative. It has no place in pure science" (Robbins 1932: 139). At the end, welfare economics should contend with finding the optimal means to achieve a consistent end (Robbins 1932: 134), hence avoid inconsistent policies. The only acceptable normative criterion that welfare economics is left with is the less debatable Pareto principle: the social preference should at least never contradict the unanimity of preferences. This criterion can be translated as a condition of effectiveness: a state is Pareto efficient if it is impossible to improve the status of any individual in the society without damaging the situation of at least one of them. Using the Pareto criterion enables to exclude all unefficient options and focus on Pareto optima. A problem is that paretian optima are numerous and that we cannot discriminate among them.

It is even more worrying to be constrained by the focus on the Pareto efficiency principle only when comparisons are also impossible. Evaluating and selecting good policies become a difficult task. When assessing policies, unanimous cases are indeed an exception, while the rule holds when policies generate winners and loosers. The Pareto criterion alone does not allow to decide when there is a conflict of interest. A ranking of social situation just based on the Pareto criterion in this case is incomplete: it merely cannot decide. Most of the time though, policies do entail winners and losers. A criterion which just concern improvements that may not affect negatively anybody is most likely mute to assess most policies. The fundamental purpose, the raison d'être of welfare economics, was precisely to provide the theoretical foundations for evaluating public policies or helping decision making. The impossibility of prescriptions entailed by Robbins's argument has been a first reason to declare the death of welfare economics (Hicks 1939: 697).

3 Two approaches to the new welfare economics

The commonalities of all developments of economics that followed, is the value attributed to science, the acceptance of the Pareto criterion, and the focus on ordinal utilities. These elements characterized the turn from the Old to the New Welfare economics, following Samuelson (1947: 203-2018, 249). But this milestone is not uniform. Faithfull to the retrospective aim of the paper, I keep the plurality of schools that emerged at the time into silence, i.e. as branches that did not grow until today (on the Cambridge and Oxford schools of Welfare economics see Backhouse and Nishizawa 2010b). I focus and sharply distinguish two answers to the aggregation puzzle, corresponding to different readings of Robbins' argument. I call one of them the British approach to the New Welfare economics, and I call the other the American approach to the New Welfare economics[4].

I first describe the British approach to the new Welfare economics, called this way because it was notably popularized by Hicks. This branch developed on the basis of a standard reading of Robbins' essay, that Mongin (2006) calls the "strong neutrality view": economics should be neutral.[5] That economics should be positive only raises a serious issue when prescriptions are at stake. As Hume's guillotine says, it is not possible to derive any normative assertions from positive premises only. A consequence is that no prescriptions can be rationally derived from the positive premises established by economic science. This would be the death of welfare economics, unless we use some minimal normative criterion. It is fair to say that the Pareto criterion was consensually accepted, hence was used as the only acceptable normative criterion in welfare economics. Even though, we explained above that the use of this principle cannot decide among situations with conflicts of interests, hence it still does not allow for prescriptions in most relevant cases.

The contribution of the British approach to the New welfare economics was to provide a convincing argument to make do with this conundrum. Astute criteria were introduced by Kaldor in 1939 and subsequently by Hicks and Scitovsky. To achieve a more complete ranking of social situations and be able to make policy recommendation, a trick consists in sticking to situations that are *potentially* better in the sense of the Pareto criterion, rather than just better in the sense of the Pareto criterion. Considering potential improvements shall considerably extend the scope of this criterion: potential transfers permit to transform incomparable situations into comparable situ-

[4] Let me say clearly at this stage that these are mere denominations, and that they do not imply any geographical exclusivity for these approaches.

[5] Notice this is a voluntary retrospective view of Robbins' role, which does not mean to be based on the observation of actual influences or archives evidences of their specific reading.

ations in the sense of Pareto. Going from a first situation x to y may create winners and losers, so that the two situations are not Pareto-comparable. Yet, in the case where transfers from the winners to the losers would increase the situation of the latter until a point where they do not strictly prefer the status quo to the new situation. At the end, loosers are compensated for what they've lost, while winners are winning from the change from x to y, hence the new situation is better than x in the sense of Pareto.[6] The actual decision as to whether making transfers or not is fundamentally a distributive issue, involving normative questions: it does not belong to the scope of economic science. This decision is not the role of an economist, and instead belongs to the decision-maker. The distributive decision is hence not included in the economic analysis, but externalized to the political side. This separation of tasks guarantees that no normative issues are involved in the economist' assessment of the situations. With such potential transfers, the situations are ordered according to the Pareto criterion, yet still considering strictly ordinal considerations, and a priori no interpersonal comparisons of utility.

Potential transfers have been both widely used and strongly contested (e.g. a survey by Blackorby and Donaldson 1990). The logical consistency of these transfers has been questioned. A main target of the critical wave concerned the distributive stakes of the criterion: while it pretends to be neutral, not only is it unsupportive for redistributive justice, it is in many cases favorable to the most well-off, whose willingness to pay is mechanically higher. Last but not least, it has been shown to silently reincorporate interpersonal comparisons. This was a second reason for proclaiming the death of welfare economics, or rather the death of the project of providing value neutral bases for welfare economics. Chipman and Moore (1978: 581, 584) conclude: "When all is said and done, the New Welfare Economics has succeeded in replacing the utilitarian smoke-screen by a still thicker and more terrifying smoke-screen of its own.' [...] After 35 years of technical discussions, we are forced to come back to Robbins' 1932 position. We cannot make policy recommendations except on the basis of value judgments, and these value judgments should be made explicit. [...] Judged in relation to its basic objective of enabling economists to make welfare prescriptions without having to make value judgments and, in particular, interpersonal comparisons of utility, the New Welfare Economics must be considered a failure." Beyond this quiet failure, this branch of welfare economics provided the foundations of cost-benefit analysis, which was uncontroversially

[6] Let x, y, z be social states. According to Kaldor's criterion (1939), x is preferred to y, if, from x, it is possible to get to state z by transfers, and such that the potential state z is better than y, Pareto-wise. According to Hicks's criterion (1939), x is preferred to y if, from y, it is not possible that, by transfers, to obtain a state z that would be preferred Pareto-wise to x. According to Scitovsky's criterion (1941), x is preferred to y if both Kaldor and Hicks's criteria are satisfied.

a real and unprecedented success, both for academic research and real life policies.

The American approach to the new welfare economics emerged in Cambridge (MA) and Boston in the US. It is based on social welfare functions, as they were suggested by Samuelson and introduced by Bergson (1938; see Backhouse 2013). It corresponds to a nuanced reading of Robbins' essay —I would personally consider this reading as more faithfull to Robbins' intention (Robbins 1981, Mongin 2008). Samuelson accepts the Robbins' fashionable view that ethics and science belong to different domains of inquiry. Ethics cannot be proved in the same terms than scientific assertions indeed, but observing the disputable statements of the British appraoch lead Samuelson to think the stakes of it twice: "It is not valid to conclude from this that there is no room in economics for what goes under the name of "welfare economics". It is a legitimate exercise of economics analysis to examine the consequences of various value judgments, whether or not they are shared by the theorists, just as the study of comparative ethics is itself a science like any other branch of anthropology." (Samuelson 1947: 219) Accepting Hume's law, prescriptions suppose some normative premises. Within welfare economics, value judgements may well be introduced as an explicitly transparent ingredient, and the economic reasoning is still scientific.

Social welfare should there be interpreted as the view of the whole society (Bergson 1954: 242; Arrow 1963: 107). A problem is hence raised to identify which view should be retained by welfare economists. At least should it respect three distinct conditions. First, social welfare is based on individual preferences only —this condition corresponds to what Samuelson calls individualism in his 1947 book and Sen later called 'welfarism'. Second, welfare economics contends with a minimum number of normative criteria —Mongin (2006) qualifies this approach 'the containment claim'. They include the Pareto criterion (strictly speaking, i.e. not considering any possible compensations), and a restricted number of redistributive criteria (typically the Pigou-Dalton principle of transfers). Third, such normative criteria are transparently captured through a social welfare function.

4 Welfare economics after Arrow's theorem

The history of welfare economics has been disrupted by the Arrovian impossibility result at the very beginning of the fifties (1951). Wondering whether a social welfare function could be derived from information on individuals' welfare, Arrow explored whether a rational social preference relation can be derived from the ordinal rational individual preferences. Four conditions should hold[7]. The condition of universal domain allowing for any profiles of individual preferences captures the sovereignty of individuals, who may have any preference without any restriction. Pareto condition guarantees that the society should not contend with an option that would be Pareto dominated by another; and if everyone prefers one option to another, then the society prefers the former option to the latter. The condition of independence to irrelevant alternatives requires that, if everything keeps the same except the ranking between two alternatives for two individuals, the social ranking of these two alternatives does not depend on other alternative, neither on the preference of the others, neither of the names of these two individuals. Finally, a non-dictatorship condition requires that there does not exist any decisive individual on every options, *i.e.*, an individual whose preference on any pairs of options always replicates into the social preference. Arrow's possibility theorem establishes that the only rational social preference relation that satisfies the three first conditions is dictatorial. Impossibility occurs when you require the four conditions to be held simultaneously.

A main issue is to decide whether this result is or is not relevant for welfare economics as such. The self-reconstructed story is that this relevance for welfare economics was Arrow's proper intention (Arrow 1991). In 1949 when they both were working for the Rand Corporation, the logician Olaf Helmer asked him whether the concept of a nation's utility was at all meaningful. Arrow answered at once the problem was just solved a few years before by Bergson when he introduced social welfare functions: a social welfare function can be derived from individual utilities, using ordinal information only. As Helmer was not entirely convinced, Arrow tried to show this assertion formally, and the result of his enquiry turned out to be the famous "Possibility theorem". According to this interpretation, it proves that it is not possible to justify rationally a social welfare function, i.e. exclusively on the basis of individual preferences. This threat to the"respectability of social welfare functions" was the third reason to sound the death knell of welfare economics (Mongin 2006).

Another story was written by Samuelson, Bergson, Little and many others (See, e.g., Samuelson 1977, Suzumura 2005). They seriously doubted that the theorem was able to undermine the foundations of a social welfare function. They considered Arrow tackled a totally different problem. On the one hand, they questioned the relevance of preferences to legitimize the choice of a social welfare function (Bergson 1954, Little 1952, Samuelson 1967), hence the debate about tastes vs. values. On the other hand, there is an important distinction between the project of welfare economics, for which preferences are given, and Arrow's project, for which all possible individual preferences should be considered (Little 1952, Parks 1976). Ar-

[7]We here just briefly recall the theorem. See, *e.g.*, Arrow 1963 or Gaertner 2006 for a more detailed presentation and some proofs.

row's multi-profile environment requires a link between all rankings when individual preferences vary, and Arrow's proof is based on this multi-profile argument. On the contrary, mono-profile social welfare functions adapt to the variation of individual preferences, such that the arrovian impossibility does not apply to issues relevant for welfare economics. At the end, Arrow questions how to determine which social welfare function should be elected by individuals only under rational premises. This identifies a political aggregation problem. But proving this is difficult does not prove a social welfare function is not meaningful nor useful. Benevolent planners are those who choose some normative criteria, hence a function —e.g. as the French school of public economics would take for granted (Kolm 1999, 2010); alternatively, public deliberation may come up with some collectively chosen normative criteria, hence a function (Pattanaik 2005). In other words, although it is impossible to provide rational foundations to social welfare functions, it is still possible to collectively agree —whatever this means— on its normative criteria.

These historical arguments as to whether Arrow's result was directly relevant or not relevant for welfare economics are nevertheless not the end of the story. I claim that the importance of Arrow's contribution lays elsewhere. It indirectly, yet strongly, influenced the fate of nowadays welfare economics because it generated the development of social choice theory, a new branch of studies that will soon prove to be essential. It generated three major moves.

Social choice theory developed first and foremost as a technical quest to understand and to go beyond the arrovian impossibility, by designing and analyzing the properties of collective aggregation procedures. It has achieved this goal by developing the use of axiomatics following the lead of Arrow's theorem. This specific sort of axiomatics – Mongin called theorematic axiomatics (Mongin 2003)– enabled normative issues to be rigourously studied within economics[8]. Thanks to this novel normative conscience, it paved the way to a wide scope of studies of social welfare and justice issues, which are fiercely assuming explicit value judgments.

Secondly, social choice theory gradually opened to the Rawls-Harsanyi debate. Harsanyi (1953,1955) developed the fiction of a thin veil of ignorance to capture a certain idea of impartiality and axiomatized utilitarianism from von Neumann and Morgenstern[9]. Rawls (1971) developed a thiner version of the veil of ignorance to capture impartiality, and derived a defence of maximin/leximin criteria. Their opposite views met in a long and influential debate on the rational bases of impartiality (e.g. Harsanyi 1975a,b, 1982),

[8]It is fair to say that John Nash could potentially have had the same influence than Arrow, although it is quite clear today that most philosophical scrutinies on normative issues have been mainly derived after social choice theory.

[9]Here it is fair to say that von Neuman and Morgenstern have been primarily influential.

and using the now well-established social choice framework. This debate started to take place during the famous Sen-Arrow-Rawls seminar in Harvard where the social choice framework was used to think about this kind of issues. This debate enlightened the issue of impartiality and rationality, but not only. It was putting economic science and political philosophy on a similar ground. It became technically possible and legitimate to tackling such issues within the economic framework. This was not welfare economics as such – as these discussions were not intented for operational public action — but the existence of the axiomatic method typical of social choice theory did create the conditions for analytical normative studies.

Last but not least, another driving force of welfare economics introduced by Arrow's impossibility is the evolution of the debate on interpersonal comparisons of utility. Because Arrow pretended to exclude interpersonal comparisons with the independance axiom, an important debate started to be undertaken as to whether interpersonal comparisons were only responsible for the impossibility or not. This debate, as we shall recall, will soon become prominent for the emergence of the new theories of justice.

From then on, I distinguish three distinct lines of evolution within the contemporary welfare economics.

The first evolution is based on the considerable influence of Amartya K. Sen (1979) in social choice theory and in normative economics in general. He considers that the problem of social choice can be overcome by allowing comparisons interpersonal utility, and by enriching the information contained in the utility that is to say, using post-welfarist evaluations of social states. An assessment is welfarist if it is based exclusively on information on individual subjective utilities; it is post-welfarist if it takes into account information of other kinds (See, e.g., Sen 1970, 1979, 1985, 1991, 1999, Pattanaik 1994 or Sugden 1993). The possibility of comparisons critically depends on a renewal of interpretation of utilities: possible if considered objective, impossible otherwise (See Baujard 2011, 2014). The focus on objective utilities shall imply multidimensional accounts for the quality of life. The process of identification of the relevant dimensions may be best conducted by a team of multidisciplinary researchers, but also including the participation of all stake-holders (Baujard and Gilardone 2014). Artificially yet usefully, we could establish a retrospective link between this branch and former pieces of welfare economics. The inhibited focus on interpersonal utilities may appear as an heritage from the old welfare economics. It thoroughly answered to the Robbins' arguments supporting the irrelevance of normativity for economic science. Robbins did not suppose the irrelevance of ethics as a premise, but as a deduction from the fact that ethical assertions could not be scientifically proven. In particular, interpersonal comparisons of utilities taken as mental states would necessarily induce value judgments from the scientists. But as soon as interpersonal comparisons do not apply to mental states but to objective measurable elements, there is no reason to reject them. That is why Sen can, without complex, call again economic science "a moral science".

The second evolution under the main influence of Marc Fleurbaey is directly inspired by 'the American approach' to welfare economics since Samuelson and Bergson. Let us go back a little bit on the debate over the relevance of arrovian result for welfare economics and about interpersonal comparisons. Certain theorists defended the view that it is impossible to find a "reasonable Bergson-Samuelson [function] based on individual orderings" (Kemp and Ng 1976: 59), because "the Bergson function must make interpersonal comparisons [of utility] or be dictatorial" (Parks 1976: 450). The equivalence of interpersonal comparisons and value judgements and the equivalence of the exclusion of interpersonal comparisons with the independance condition have been put more recently into question (e.g. Fleurbaey and Mongin 2005). Firstly, value judgements may be expressed even without interpersonal comparisons of utilities. Secondly, the independance condition is shown to be more demanding than just the exclusion of interpersonal comparisons, as it also excludes any but binary information on preferences. While restoring a possibility of social choice does not in itself require to reintroduce interpersonal comparisons of utility, the reintroduction of normative criteria could not be avoided for this purpose. Authors propose clear and transparent normative criteria in their use of utilities in welfare models, which makes use of all advances of social choice theory (e.g. Fleurbaey and Maniquet 2011). As a result, they propose an microeconomic solution to welfare economics, in which comparisons of utilities are not required per se, utilities are subjective, and embedded in a normative framework (e.g. Fleurbaey and Blanchet 2013). The project of building microeconomics with ordinal utilities and clear normative criteria, typical of the American approach to welfare economics is being taken forward by this promising branch.

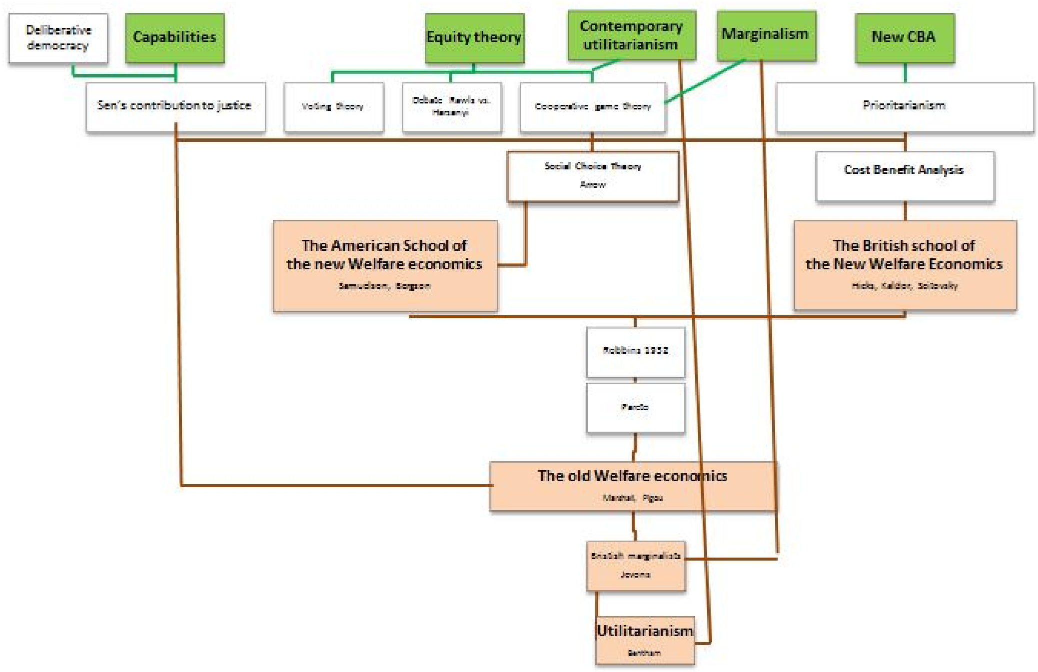
We can identify another branch in the canopy of the theories of justice: the new cost-benefit analysis, well-represented by Matthew Adler (Adler 2012). Its main premise is cost-benefit analysis, and its main innovative inspiration is equity theory, including thorough philosophical discussions. That is where the newest branches are nourishing from two distinct scaffold branches, corresponding to the two different approaches to the new welfare economics.

Interesting is the case of contemporary utilitarianism, which have been renewed by Harsanyi and considerably developed ever since. This historical origin is less linked to welfare economics as the other branches: it is difficult to establish direct connexions with Bentham's utilitarianism, but more essentially from vNM axiomatics that did not belong to welfare economics.

5 Conclusion

Welfare economics is a keypoint of economic science, because it provides the theoretical foundations for actual public policies. Public policies not only are pratical matters, they are also invaded with criteria of efficiency and equity. These three elements require the combination of most advances of economic science, including public finance, cost-benefit analyses, social choice theory, cooperative game theory and equity theories. This diversity of origins makes the whole picture difficult to grab, and the interlinks among disciplines or through time hardly identified.

Figure 1 New theories of justice in a partial historical tree of welfare economics



I have here proposed a story to explain where the new economic theories of justice come from, and this story is pictured on the tree of welfare economics in Figure 1. The paper confirms the distinction between successive periods: after the utilitarian legacy; the old welfare economics; the new welfare economics is shown to be divided into the British approach, and the American approach; the post-arrovian period in which diverse developments are maintained seperate, among which cost-benefit analysis, social choice theory and equity theory. The paper claims that the new theories of justice constitute heritages of three distinct branches of the historical welfare economics. (a) It is standard to say that the British school of the

New Welfare Economics is at the origin of cost-benefit analysis, although the new cost-benefit analysis also inherited from equity theory. (b) The Old Welfare economics is shown to be the closest to Sen's influences on the rehabilitation of interpersonal comparisons of utility and the development of non-welfaristic approaches. (c) The American school of the New Welfare Economics is the main inspiration of Fleurbaey's proposals in which normative issues and ordinal preferences are taken seriously.

Taken as a picture of welfare economics, this tree is naked. It shall be dressed after many new branches and leafs are added to it. The aim of the paper was just to focuse on some branches likely to explain certain elements of today's canopy. But once this is established, it provides a primary device to work on the representation of the denser houppier of the wide scope of contributions to welfare economics. I believe such device is necessary to tell a meaningful story. This storyboard is already able to highlight the relevance of value judgements in the evolution of this partial view of welfare economics: the observed evolution is mainly driven by the operational and formal stakes of the authors' positions towards normativity. This device can, in further steps, helps to understand how this evolution was embedded in the evolution of the concept of utility through the XXth century (Baujard 2014), and its epistemological stakes (Baujard 2015). Considering the status of value judgements are an essential vector of evolution of the discipline makes a difference with the standard stories describing welfare economics –and economics. In this wider perspective, a day-dreaming ambition of this paper is to lay the first stone that any historical studies of welfare economics should require to take value judgements seriously.

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