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Economic sciences: A philosophy of economics approach

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Throughout history, different concepts of economic science have reflected the different notions of economy. In other writings (see Crespo 2013a: Chapter 2) I have investigated the meaning of "the economy", or of what is "economic", that that Uskali Mäki calls "the economic realm" (2001: 4).

A philosophy of economics must begin by determining what "the economic" means. In that previous works I have distinguished between various meanings of this term. First of all, I identified an improper or metaphorical meaning that refers to the root of "the economic": the fact that the human person is limited implies that he requires resources that are also limited, and he uses his reason to distribute them in the best way possible. This situation relates also to realities that go beyond "the economic". That is why both the human person and human reason are only economic in a metaphorical sense.

The proper meaning of "the economic" could have two sub-meanings: proper in the broad sense and in the precise or strict sense. "The economic" in the broad sense is the subject-matter of, in Karl Polanyi's (1977) words, "substantive economics", all that which is related to the use of resources for the satisfaction of human needs.

In the strict proper sense, "the economic" is the best way of using this matter, an efficient allocation of the resources for human necessities. It is not necessary for all of "the economic" to respond to this precise definition. Economics can simply be action, most often not maximizing, for the satisfaction of needs. The broad meaning deals with "the economic" and the precise meaning, in addition, does so "economically". I consider that Frank Knight reflections on these issues are very sensible. He notices that from a "scientific" point of view all practical problems, "the problem of life" is to use the resources "economically". However, he goes on, the scientific view of life is limited and partial and he assigns priority to find out "our real wants", our ends or values (1935: 105; and see also 1956. 128-9). The economic problem in its broad sense comes first and only then the strict sense.

The conclusion is that the economy is an analogical or polysemic concept. Its "focal meaning" is the proper broad meaning, a human action aimed at using material resources for satisfying needs. The strict proper sense of economic is a particular way of performing this action, a secondary or derived (but not less important) meaning of the economic.

Having analyzed what "the economic" is, the next step is determining what type of human rationality is adequate for its study and consequently, what kind of science is adequate to this task. John Stuart Mill starts his Essay "On the Definition of Political Economy" complaining that it has remained deprived of "a definition exactly co-extensive with the thing defined" ([1874] 1974: 123). Now that we have a definition of the thing to be studied, I will try to provide the definition of its science. Mill himself, Carl Menger and John Neville Keynes will contribute to it.

Economics was originally conceived as the study of "the economic" in its broad proper sense. Next, it became the study of "the economic" in its specific strict sense. Finally, it began conveying the maximizing logic of its latter meaning to the entire human reality. This is the process called "economic imperialism" that is gradually changing in the opposite direction (on this process, see my book 2017).

In fact, the definition of economics has not been of particular concern to economists, and it is not a closed case. The motivation of some Nineteenth century works of Mill, Menger and Neville Keynes was to establish a definition of economics.

However, one may wonder whether this was not an ancient problem that has been today already surpassed. The answer is "no": the confusion about the definition, and also about the nature and method of economic science still remains. Robbins began his work on the definition of economics by stating that it still remains unclear (1935: 1): "We all talk about the

same things, but we have not yet agreed what it is we are talking about. However, his definition is also unsatisfactory (see Crespo 2013b). Not knowing what you are talking about is not a good thing. Yet, Robbins wrote on the last century. However, in the 21st century, Mäki (2002: 8) has still argued that the notion of economics constitutes a dangerous *mélange* of notions: "there is no one homogeneous economics". This is why the title of this paper put economic science in plural "economic sciences", a point that will be progressively made clearer in the paper. Roger Backhouse and Steve Medema claim that "economists are far from unanimous about the definition of their subject" (2009: 223). After discussing several dissimilar definitions they assert that:

> One possible conclusion to draw from this lack of agreement is that the definition of economics does not really matter (…) Another possible conclusion is that the subject of economics is too broad to be usefully pinned down in a short definition (…) Jacob Viner reflected this spirit in his oft-quoted statement: "Economics is what economists do".

At present, as they claim, "economists are generally guided by pragmatic considerations of what works (…) not by formal definitions" (2009: 231). This paper is aimed at sorting out this matter. We cannot refuse to reach at one (or a few) definition(s) of economics. This is another fundamental task of any philosophy of economics that cannot be ignored.

Though for some ears might sound paradoxical, after a wide exploration, I concluded that the wisest analysis on the definition and classification of economic sciences have been developed in the Nineteenth century by Mill, Menger and Neville Keynes, who are "methodological precursors" of economic science. After them, the notion of economic science has tended to be reduced to economics, a part of it, a discipline focused on the economy in its strict conception. It leaves aside ample dimensions of the economy, with negative consequences for the accuracy of the roles of economic sciences: description, explanation and prediction of economic phenomena, prescription of ends, and policy in order to achieve satisfactory economic results. The ample view of these precursors has been progressively shortened during the Twentieth century. This process has to do with the concentration on the most "scientific" branch of economic sciences (according to a narrow conception of science). This narrow vision of science is committed to a specific notion of rationality: instrumental maximizing rationality. The paper will begin analyzing the thought of those methodological precursors, concluding with a proposal of classification of economic sciences combining their ideas. Then, it will sketch what have happened after them, during the Twentieth century. Third, it will show how a combination of different notions of rationality wider than the narrow already mentioned leaves room for the plurality of economic sciences stemming from the precursors' ideas. Finally, the paper will derive from the different economic sciences the tasks that they should perform.

Mill, Menger and Neville Keynes on the notion and classification of economic sciences

Mill's ideas on the nature of "Political Economy" (as he calls economic science) are probably the best known within economists concerned with this topic. They are specially developed in his essay "On the Definition of Political Economy; and on the Method of Investigation Proper to It" (Essay V of his *Essays on Some Unsettled Questions of Political Economy* (London: Parker, 1844), 1836 in the *London and Westminster Review*, second edition, 1874 with minor changes), and in book VI "On the Logic of Moral Sciences" (particularly, Chapter IX, 3) of his 1843 *System of Logic* (8th edition from 1872)[1]. Mill states:

[1] I used the 1844 version of the Essay published in the Volume 4 of the *Collected Works of John Stuart Mill*, University of Toronto Press, 1967 (reprinted by Liberty Fund, 2006), and the 1882 publication by Harper & Brothers of the 8th edition of the *System of Logic* (Longmans, 1872) which is the generally used because it is the last corrected by Mill. I took the information about the previous publication of the Essay from the introduction to it in the, p. 309.

> What is now commonly understood by the term "Political Economy" is not the science of speculative politics, but a branch of that science. It does not treat of the whole of man's nature as modified by the social state, nor of the whole conduct of man in society. It is concerned with him solely as a being who desires to possess wealth, and who is capable of judging of the comparative efficacy of means for obtaining that end ([1844] 2006: 321).

Note first that he considers Political Economy as a branch of politics, in a very similar way than Adam Smith, who considers it as "a branch of the science of a statesman or legislator" ([1776] 1828: 189). Second, the last part of Mill's last sentence anticipates the prevailing current definition of economics: the allocation of scarce means in order to satisfy given ends: "the scarcity definition" of economics promoted by Robbins (1935: Chapter 2). This definition fits with the strict proper sense of the economy mentioned in the introduction. However, Mill is also aware that this description of political economy involves a simplifying abstraction:

> All these operations, though many of them are really the result of a plurality of motives, are considered by Political Economy as flowing solely from the desire of wealth [ ] Not that any political economist was ever so absurd as to suppose that mankind are really thus constituted ([1844] 2006: 322).

And consequently, he finally emphasizes the need to consider additional motives for these "operations" in order to reach a correct explanation and prediction a de-idealization process[2]:

> So far as it is known, or may be presumed, that the conduct of mankind in the pursuit of wealth is under the collateral influence of any other of the properties of our nature than the desire of obtaining the greatest quantity of wealth with the least labor and self-denial, the conclusions of Political Economy will so far fail of being applicable to the explanation or prediction of real events, until they are modified by a correct allowance for the degree of influence exercised by the other causes ([1844] 2006: 323, see also 326-327).

According to Mill, this is the work of "practical men" who argue inductively, "a posteriori", while theorists do it mostly deductively, "a priori". Theory and experience are present in both inquiries, though with difference in emphasis. Political economy uses the method a priori and it is an "abstract" science with abstract conclusions, true only under certain suppositions (that only specific economic motives prevail, and there are no "disturbing causes"). The method a posteriori is "an indispensable supplement to it" (327), a supplementary chapter or appendix (331), because, according to Mill it is not a science, but an art. However, he emphasizes the need of the combination of the two disciplines, science and art, "for the guidance of mankind" (333), and complains about their separation (334):

> One of the peculiarities of modern times, the separation of theory from practice of the studies of the closet from outward business of the world has given a wrong bias to the ideas and feelings both of the student and of the man of business.

However, for Mill the art has not only to do with the application of theory and the practice of economic affairs, but also with the definition of the ends. There is a three steps process in practical questions. He affirms in the *System of Logic* (1882: 653; VI, XXI, 2):

> The relation in which rules of art stand to doctrines of science may be thus characterized. The art proposes to itself an end to be attained, defines the end, and hands it over to the science. The science receives it, considers it as a phenomenon or effect to be studied, and having investigated its causes and conditions, sends it back to art with a theorem of the combination of circumstances by which it could be produced. Art then examines these combination [sic] of circumstances, and according as any of them are or are not in human power, pronounces the end attainable or not.

[2] On "idealization" see Ernan McMullin 1985.

That is, there are two kinds of arts: the art of definition of ends (which is morality) and the art of performing the actions directed to these ends, enlightened by science. He states (1882: 657):

> Every art is thus a joint result of laws of nature disclosed by science, and of the general principles of what has been called Teleology, or the Doctrine of Ends; which borrowing the language of the German metaphysicians, may also be termed, not improperly, the principles of Practical Reason ( ) There is, then, a *Philosophia prima* peculiar to Art, as there is one which belongs to Science. There are not only first principles of Knowledge, but first principles of Conduct. There must be some standard by which to determine the goodness or badness, absolute or comparative, of ends, of objects of desire[3].

In conclusion, though for Mill the science of Political Economy is only the abstract science which subject-matter fits with the economy in strict sense, there are three disciplines dealing with economic matters:

- The Teleological art of definition of the ends of economic actions, a normative discipline;

- Political Economy, the abstract science using the a priori method, a positive discipline, considering only economic motives;

- The art of economic practice, an applied discipline, considering all motives influencing actual economic phenomena.

It is interesting to remark the sequence Teleological art, Political Economy, art of economic practice. As in classical philosophy, the ends are the first step in any process. Let us pass to Menger.

Menger's ideas on the nature and classification of economic science are mainly contained in his methodological book, *Investigation into the Method of the Social Sciences with Special Reference to Economics* (*Untersuchungen über die Methode der Socialwissenschaften und der Politischen Oekonomie insbesondere* [1883] 1985), originally published in English as *Problems of Economics and Sociology* (Urbana: University of Illinois Press, 1963), and in his article "Toward a Systematic Classification of the Economic Sciences" (1960), English translation of "Grundzüge einer Klassifikation der Wirtschaftswissenschaften" (*Jahrbücher für Nationalökonomie und Statistik*, ed. J. Conrad, New Series, Jena: Gustav Fisher, 1889, XIX, 465-496). In this last also chronologically writing Menger uses the plural, "economic sciences". This plural ("sciences") fits with the analogical character of the subject-matter: the economy. A plurality of subject-matters (plural but related) calls for a plurality of sciences (also plural but related). In fact, the aim of his article is to ascertain "*the position of economic theory [Wirtschaftstheorie] within the entire dominion of the economic sciences [Wirtschaftswissenschaften] in general*" (1960: 3), roughly dealing the former with the economy in the strict sense and the latter with the economy in the broad sense.

In a practically unknown work of Menger (the 1923 re-edition of his *Principles* prepared by him during 40 years and posthumously published by his son Karl, only translated to Italian and Spanish) Menger introduces new ideas about the meaning of "the economic". He distinguishes two orientations of the economy: one "technical-economic" ("die technisch-ökonomische Disposition" 1923: 73) and the other "economizing" ("die spandere" 1923: 74; "die ökonomisierende" 1923: 76). The first orientation aims at providing the goods that we need, and the second, when the insufficiency of means prevails, aims at doing it "economizing", in the best possible way. We cannot identify, Menger states, the concept of "economy" ("Wirtschaft") with the concept of "economical" ("Wirtschaftlichkeit", 1923: 61). Thus, he affirms, it is not paradoxical to speak of an "economic economy" ("einer wirtschaflichen

[3] That is, in contemporary terms, he is "externalist" in relation to the definition of the objects of desire. There are reasons that are independent and previous to desires. See for example John Searle 2001.

(ökonomischen) [ ] Wirtschaft) and of a non-economic economy (unwirtschaftlichen (unökonomischen) Wirtschaft, 1923: 61). He characterizes both directions in this way:

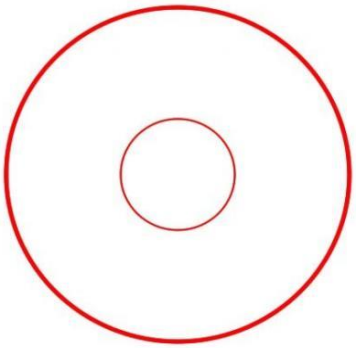
> (1) On the one hand, an economy would be fully determined by the technical direction (the objective aspect) if the resources at hand, suitably arranged, would suffice for completely satisfying all human needs. In such a situation of affluence the economy would be characterized only by its technical aspect, the task would consist in putting the existing resources to alternative uses in such a way that affluence can indeed be accomplished. (2) On the other hand, if the resources of an economy were rigidly given (and neither production nor the transfer of resources to alternative uses possible), then only the economizing direction (the subjective aspect) would be relevant for this economy. In this sense, economizing is the response to scarcity (Menger 1923: 78; translation Becchio 2014 footnote 19).

Menger conceives both orientations as independent:

> I shall designate the two directions in which the human economy may point the technical and the economizing as elemental, for this reason. Although in the actual economy these two directions as presented in the two previous sections occur as a rule together, and indeed almost never found separately, they nevertheless spring from *essentially different and mutually independent sources* [Menger's italics in all his quotations]. In some fields of economic activity the two occur, in fact, separately, and in some not inconceivable types of economies either of them may in fact regularly appear without the other [ ] The two directions in which the human economy may point are not mutually dependent upon one another; both are primary and elemental. Their regular joint occurrence in the actual economy results merely from the circumstance that the causative factors that give rise to each of them without exception happen to coincide (1923: 77; Polanyi's translation 1977: 23).

Though independent, one may interpret Menger's economic directions as complementary, as Becchio considers them. She states that Menger clarified that these two basic directions of human economy spring from *causes that are different and independent from one another* and they are actually independent from one other, but they are connected and their connection determines the most complete meaning of the nature of the human economy (2010: 17). Instead, Polanyi (1977), though recognizing the comprehensive character of Menger's conception of the economic, stresses the differences emphasizing the existence of no market economies, and the possibility of no utilitarian motivations for economic actions. My proposal closer to Becchio's is illustrated by Figure 1.

Figure 1



The larger circle represents the broad proper notion of the economy, decisions and actions in order to satisfy human needs through material means or services. It includes the small circle representing the strict proper notion, a specific way of performing the economic task: optimizing the use of means given their scarcity. Their logics are different but – except in some "not unconceivable situations" (Menger 1923: 77) – they actually coincide in real life. The motivations implied in the large circle are of all types: psychological, sociological, ethical, aesthetical, and can additionally be to look for an efficient use of means (the small circle). In the small circle the maximizing motivation is always present, but other motivations might go with the former. I do not always make my decisions related to the use of resources trying to get the most possible out of them, but also for other reasons: taste, whim, habit, etc., especially in certain sociological settings.

I will not discuss here the difficult topic of the "purity" (or not) of Menger's Aristotelianism, but it is clear that he had read and incorporated a lot of Aristotle's and classical philosophy teachings[4]. Sciences have what philosophers call a *material* object, or a subject-matter, the "about what" the science deals with, and a *formal object*, the specific perspective from which the subject-matter is approached[5]. For example, the human being (a material object) can be studied from different perspectives (a formal object) such as medicine, psychology or sociology; and the same approach (a formal object) can be applied to different subject-matters, as in the different philosophical disciplines, or different fields of human reality studied under the perspective of economic logic: economic analysis of law, of crime, of family, and so on. This is a criterion clearly adopted by Menger in order to distinguish the different economic sciences. For example, when referring to two forms of what he calls "theoretical economics" – the exact and the realistic – he clarifies that both has the same field of research, "all the economy", while they possess "formal differences". He states: "both the exact and the realistic orientation of theoretical research have the aim of making us understand theoretically *all* phenomena of economy, each in *its* way" ([1883] 1985: 68, cursive by Menger). More generally, in his 1889 article he speaks about two "essentially distinct principles of classification [of sciences]: on the one hand, according to the nature of the objects of inquiry, i.e., the different *fields* [*Gebieten*] of reality which constitute the subject of scientific cognition; and on the other hand, according to the different lines of scientific inquiry, i.e., the different *methods of approaching* reality" (1960: 4, if not explicitly said, all cursives are by Menger; see also [1883] 1985: Appendix II, 198).

Another classical philosophical notion is the analogy of science. Sciences for Aristotle are theoretical, practical or poietical (technical). At the beginning of the *Politics* (I, 2), Aristotle describes the human person as a *zoon echon logon* – "man alone is furnished with the faculty of language [*logos* also means reason and order]". Aristotle there sustains that human beings can know what is good and evil, morally just and unjust, technically expedient and inexpedient. He distinguished between three uses of reason: theoretical, practical and *poietic* (technical or instrumental), paving the way for the three types of corresponding sciences. Each of these distinctions corresponds to a respective subject of study (*Metaphysics* VI, 1, 1025b 20-21 and XI, 7, 1063b 36-1064a):

1. For Aristotle, metaphysics, physics and mathematics comprise the theoretical sciences.

2. Practical sciences study objects stemming from human choices and have a practical end (*Nicomachean Ethics* I, 2, 1095a 6 and II, 2, 1103b 27-28).

3. Technical sciences are concerned with artifacts and rules for their production.

[4] For a summarily appraisal of this point, see for example the note of Gilles Campagnolo in Menger 2011: 138.

[5] Though defined as such – formal and material objects – during Scholasticism, these notions had originated in Aristotle: see, e.g., Ryan Douglas Madison (2011: 400-1). For an explanation of these notions, see Henry van Laer (1956: 43-49).

The theoretical use of reason points at understanding the essence and cause underlying anything that can be observed empirically or through experiments. Following in the footsteps of his predecessors, Aristotle asserted, "Plainly we are seeking the cause. And this is the essence, which in some cases is the end [ ], and in some cases is the first mover" (*Metaphysics* VII, 17 1041a 27-30; see also 1041b 10ss). He made a distinction among real causes (efficient, formal, material and final) (*Metaphysics* I, 3-10; *Physics,* II, 3), leading to four different types of explanations known as "a doctrine of four 'becauses'", that answer the following questions: Who made it? Why this object and not another? What is it made of? And to what end was it made? (Ackrill 1981: 36) Theoretical knowledge is the path to these causes.

According to Aristotle's *Nicomachean Ethics* and *Politics*, on the other hand, the use of practical reason deals with the choice of ends of human actions and the best way to achieve them in order for the agent to strive for moral fulfillment. Finally, technical or instrumental reason explores the way to allocate means to achieve a given set of predetermined ends. Though not necessarily, it could also strive for "maximization" – that is, the best way to achieve this allocation. This shows the difference between pure technical thinking (allocation only) and economic thinking (the best allocation). In sum, practical sciences deal through practical reason with ends and consequently have a strong moral character, and technical sciences deal with means, given ends. The common characteristic of sciences is that sciences are discursive – it is "a state or capacity to demonstrate" – and provides certainty (*Nicomachean Ethics* VI, 3).

Human sciences, can have theoretical, practical and technical aspects. Aquinas completes Aristotle on this point: for him, "some knowledge is speculative [theoretical] only; some is practical only; and some is partly speculative and partly practical" (*Summa Theologiae* I, q. 14, a. 16). This is the case of social sciences. When Aquinas speaks about practical, he includes the practical and the technical. He distinguishes three principles to decide whether a science is theoretical or practical. These are the subject-matter (*ex parte rerum*), the end (*quantum ad finem*) and the method (*quantum ad modum sciendi*). This threefold classification leaves room for "mixed" cases, as theoretical studies of practical subjects just mentioned above. Aquinas asserts in *De Veritate*:

> Knowledge is said to be practical by its order to act. This can happen in two ways. Sometimes *in actu*, i. e., when it is actually ordered to perform something (...) Other times, when knowledge can be ordered to act but it is not now ordered to act (...); in this way knowledge is virtually practical, but not *in actu* (q. 3, a. 3).

This is an important point because current social sciences, although they may try to be only theoretical, are virtually ordered towards action. This balance between the relevance of theory and practice seems sensible. Thus, a particular science about a practical subject-matter may be theoretical or practical *quantum ad finem*, and consequently *quantum ad modum sciendi*.

These distinctions leave room for a plenty of combinations of sciences and corresponding methods from which Menger takes advantage. He explicitly argues against "epistemologists" (*Erkenntnistheoretikern*) that have a narrow notion of science and he considers that history and applied economics are sciences because they help us to understand (*Verständnis*) human ends. In the mentioned article he presents a "survey of the system of economic sciences", comprising (1960: 14):

1. The "historical sciences of economics [*Volkswirtschaft*]": economic statistics and economic history. He had previously clarified that historical sciences are sciences of the individual. Thus, they investigate concrete economic phenomena. They provide useful information for economic theory.

2. "*The morphology of economic phenomena,* whose function consists in the classification of economic facts in accordance with their general species, and subspecies, as well as the

demonstration of their generic form (1960: 14), what today we would call stylized facts. He thinks that this science does not have independent significance (1960: 12).

3. *Economic theory*, which has the task of investigating and establishing the laws of economic phenomena, i.e., the regularities in their coexistence and succession, as well as their intrinsic causation (1960: 14).

4. *Practical or applied economics*, with its specific method (1960: 16, 21-22).

All these sciences deal with the same object, economic phenomena, though from different formal perspectives (1960: 5). Though in the rest of the paper I will come back to these notions, I will here clarify some points.

Concerning morphological knowledge Menger states that, unless it were performed as a systematization of the statistical or historical descriptions, it is an integral part of economic theory (1960: 13) because it serves to the understanding (*Verständnis*) of economic phenomena.

In respect to economic theory, in addition, it has the role of demonstrating (*Darstellung*) and understanding (*Verständnis*) (1889: 6; 1960: 7). The German verb and the noun to understand and understanding (*Verstehen* and *Verständnis)*, especially when Menger were writing (they continuously appear), had a specific meaning related to the special way of explaining in the human sciences, which has to capture the intentional aspect of human actions: a comprehension, or appreciation (from the *Langenscheidts* Deutsch-English Dictionary, Berlin, 1960). To understand is also a role of applied science (1960: 20). In a note in his article (1889: 18, footnote note 1, 1960: 35, endnote 14) he clarifies that he uses the term practical sciences (*praktische Wissenschaften*) as equivalent to applied science pointing at the meaning in the old philosophy of *anthropina philosophia* (an expression of Aristotle, *all* the sciences of man [*alle Menschheitswissenschaften*], Menger explains) which *reasonably* (*verständig,* again in cursive) apply general principles to specific cases. As mentioned earlier practical sciences deals with the ends of human action, i.e., with their final causes or the teleology of it. Referring to theoretical sciences, Menger states ([1883] 1985: 43):

> The goal of scholarly research is not only the *cognition* [*Erkenntnis*], but also the *understanding* [*Verständniss- sic*] of phenomena. We have *gained cognition* of a phenomenon when we have attained a mental image of it. We understand it when we have recognized the reason [*Grund*] for its existence and for its characteristic quality (the reason [*Grund*] for its *being* [*Seins*] and for its *being as it is* [*So-Seins*].

He goes on differentiating a historical way of understanding a phenomenon – investigating its individual process of development ([1883] 1985: 43) – from the theoretical way – recognizing that is a case of a generic theoretical law ([1883] 1985: 45). In addition, there are two orientations of theoretical knowledge, the realistic-empirical [*realistisch-empirische*] and the exact [*exacte*]. The former uses the Baconian induction that cannot reach at universal truths or laws, but general tendencies. It leads to real types and empirical laws ([1883] 1985: 57). The later uses what would be called according to Menger's description an essential induction, an abstraction [*abstrahit*] seeking to ascertain the simplest elements of everything real arriving at forms *qualitatively* [*qualitativ*] strictly typical ([1883] 1985: 60). However, as result of his recognition of the inexact character of the economic stuff, Menger acknowledges that these conclusions are not realistic and directly applicable to design an economic policy. He states that ([1883] 1985: 72-73):

> exact economics by nature has to make us aware of *the laws holding for an analytically or abstractly conceived economic world*, whereas empirical-realistic economics has to make us aware of the regularities in the succession and coexistence of the *real* phenomena of human economy (which, indeed, in their full empirical reality also contain numerous elements *not emergent from an abstract economic world!*).

He thinks that the exact orientation strive for understanding elementary economic phenomena and the empirical-realistic more complex phenomena. Coming back to the notions of material and formal objects of science, both orientations have the same material object, i.e., economic phenomena, but different formal objects: while the exact orientation analyze these phenomena taking into account only an abstract economic perspective corresponding to his notion of "economic economy" (the economic side of human life: [1883] 1985: 87), the empirical-realistic deals with the "non-economic economy", also abstracting because it concentrates on economic phenomena, but implicitly leaving place for non-economic motives of them. For example, real prices of goods already incorporate other motivations than economic, but we are analyzing real prices, an economic phenomenon ([1883] 1985: 80). Though different in perspective of analysis (formal object) both orientations usually work together: "In scientific *presentation*, however, exact and realistic knowledge are seldom treated separately" ([1883] 1985: 67).

Summing up, we have ([1883] 1985: 97):

- The historical sciences of economy, including economic history and statistics.

- The theoretical sciences of economy, with the empirical-realistic and the exact orientations, including the economic morphology.

- The practical sciences of economy, including economic policy and the science of finance.

All with different goals, methods and laws (empirical or normative), but concerning the same realm of human life, the economy in its broadest sense.

It can be realized that there are similitudes between Mill's and Menger's proposals. The exact orientation of Menger approximately fits with Mill's notion of *a priori* economic science and the empirical-realistic orientation of theoretical economics and economic practical sciences with Mill's *a posteriori* analysis of the economy. For Menger, practical sciences of the economy need to take into account the particular conditions and institutions of each country and age ([1883] 1985: 123-125), as also Mill thinks. The difference is that while for Mill only political economy is a science and economic policy is an art, for Menger all are "economic sciences" (1889, 1960), or "political economy in general" ([1883] 1985: 197) or "economic science" in the "broadest sense of the word" ([1883] 1985: 208). That is, Menger's notion of science is broader than Mill's. Let us pass to Neville Keynes.

Neville Keynes published his *The Scope and Method of Political Economy* in 1890. He knew and quoted Mill and Menger's ideas. He was also familiar with his friends Alfred Marshall and Henry Sidgwick's ideas. In fact, Marshall's *Principles* are also from 1890. Apart from Mill and Menger, relevant antecedents for the topic of the classification of economic sciences taken into account by Neville Keynes are elements coming from the *Principles of Political Economy* of Sidgwick (first edition 1883, second edition, 1887), and from the German economist Adolph Wagner (1886). Wagner had published a *Grundlegung der politischen Ökonomie* in 1883 and an article in the *Jahrbücher für National-Oekonomie und Statistik* (xlvi/3, 1886) under the title of "Systematische Nationalökonomie". A reduced version of it was translated and published in the first issue of the *Quarterly Journal of Economics* (1/1, 1886) as an Appendix under the title of "Wagner on the Present State of Political Economy". Marshall, Sidgwick and Neville Keynes knew Wagner's work. Wagner puts himself in a balanced position between Menger, and Gustav von Schmoller, who unjustly is blamed for a supposed tendency to reduce economic science to economic history[6]. This is also the position of Marshall ([1890-1920] 1962: 24; see also 32), however, quoting a balanced passage of Schmoller.

[6] I will not delve here with the difficult topic of the position of the "German Historical School". I think that Schumpeter's vision about the *Methodenstreit* ([1954] 2006: Part 4, Chapter 4) was balanced, and that Dimitris Milonakis and Ben Fine (2009: Chapter 5, 6.3 and 13.2) do a good work in their analysis of the Historical School.

Wagner's ideas are indeed enlightening. Concerning motives he considers five different possible types, including 1) the typical economic, self-interest, which is "the basis of the deductive reasoning of the abstract theory" (1886: 118), 2) fear of punishment and hope of approval, 3) sense of honor, 4) power, and 5) sense of duty and fear of conscience. However, he thinks that all motives have to be considered in the different steps of the economic work and that the inductive method is also necessary in all those steps. These steps are 1) the description of phenomena, 2) discovering of their causes, 3) the determination of a standard of their social merit, 4) the setting up of an ideal to be attained, and 5) the search of the way of effectively attain them. For him, "the first four are too closely connected to permit a separation" and he calls them "the general or theoretic part of a system of "social economy", while "the fifth would belong to the special or practical part" (1886: 128). We can see the parallelism with Menger's proposal. He adds that the two last steps of the theoretic part are the discussion of fundamental principles (Grundlegung), "and would place it at the beginning of the treatise, combining with it the psychological analysis of instincts and motives, some consideration of fundamental concepts, and a history of the literature of the subject". That is, the part considering the ideals and aims should come first. This part can be compared with Mill's Teleology. Marshall also considers a plurality of motives for economic actions, including "ethical forces" ([1890-1920] 1962: v, 22). In fact, he assertively quotes the five motives of Wagner ([1890-1920] 1962: Appendix D, 645-646)[7].

Sidgwick (1887: vi) acknowledges "assistance" from the work of Wagner, probably from his *Grundlegung der politischen Ökonomie* (Leipzig: C.F. Winter'sche verlagshandlung, 1883). On methodological grounds he maintains two main theses. First, that in fact political economy uses complementarily inductive and deductive methods, because the abstract deductive arguments are hypothetical and are to be tested. The utility of these hypothetical arguments "incontrovertibly" (1887: 41) depends on their closeness to real facts and on our ability – "insight and skill" (1887: 35) – to detect the modifying causes, or motives of our economic actions: "needs, appetites, passions, tastes, aims and ideas" (1887: 36). Second, that we must distinguish the abstract science and the art, which are "different inquiries" (1887: 28) of Political economy. Though, he states this passing through, I think that is relevant his affirmation that "we require for the comprehension of economic facts some interpretation of the motives of human agents" (1887: 30-31). I think that this idea can be compared with Menger's on understanding (*Verständnis*) the intentions or final causes of economic activities.

Neville Keynes goes on following the thread of the previous mentioned economists. He also maintains that the premises of political economy are hypothetical because a plurality of motives acts besides the purely economic and, consequently it is a science of tendencies ([1890] 1955: 16). To leave room for that plurality of motives he speaks about "political economy" or "economic inquiry" in the widest sense" ([1890] 1955: 36 and 61). It comprises different "departments", "enquiries", or "subdivisions" ([1890] 1955: 30, 34, 35, 61) with different methods according to the nature of the aspect dealt with. He proposes a threefold distinction between "positive science", "normative or regulative science" and "an art" ([1890] 1955: 34-35), respectively dealing with "*economic uniformities, economic ideals and economic precepts*" (([1890] 1955: 31, 35). He states that

> a *positive science* may be defined as a body of systematized knowledge concerning what is; a *normative or regulative science* as a body of systematized knowledge relating to criteria of what ought to be, and concerned therefore with the ideal as distinguished from the actual; and *art* as a system of rules for the attainment of a given end ([1890] 1955: 34-35, all cursive by Keynes).

He clarifies that Adam Smith and his contemporaries use the term science referring to a systematic body of knowledge of theoretical propositions or practical rules ([1890] 1955: 35,

[7] Maynard Keynes tells in his Memoir of Marshall that he has met Wagner in Marshall's house (Keynes 1934: 357).

nt 2). For Neville Keynes, the modifications of which Mill speaks, that is, the art, should have a place within the science ([1890] 1955: 118), not outside it as Mill thinks.

Putting together all the previous contributions, the following branches of "political economy in its widest sense" (Neville Keynes) or "economic sciences in general" (Menger) can be distinguished:

- The historical sciences of economy, including economic history and statistics: Wagner's description of phenomena.

- The theoretical sciences of economy, with the empirical-realistic and the exact orientations. This means that economic theory would include the exact, abstract investigation of the nature and causes of strict economic phenomena (Aristotle's theoretical, Mill's apriori, Menger's exact, Neville Keynes' positive science); the actual operating causes including economic and non-economic causes (Wagner's discovering the causes); and finally, the understanding (Menger's *Verständnis*) of the ends, or Sidgwick's understanding of motives. Following Aquinas, it is a science practical ex parte rerum, but theoretical in relation to the end and method. It has to be noted that while for Menger the conclusions of the exact science are not hypothetical, for Wagner, Sidgwick and Neville Keynes they are hypothetical.

- Normative economics, which is Aristotle's practical science dealing with the economic, Mill's Teleology or Doctrine of Ends concerning economic goals, Wagner's setting up of an ideal to be attained, Neville Keynes normative economics.

- The practical sciences of economy, including economic policy and the science of finance according to Menger, Mill's art of economic practice, or Wagner's search of the way of effectively attain economic ideals, Sidgwick and Neville Keynes applied economics (Aristotle's technical science applied to the field of the economic, Aquinas practical *ex parte rerum*, *quantum ad finem* and *quantum ad modum sciendi*).

Only Menger's exact orientation of theoretical research and Neville Keynes' positive economics deal with the economy in the strict sense.

These four economic disciplines have different aims:

- The aim of the historical sciences is *to describe* past and current economic facts and to provide sources of evidence for the work of economic theory.

- The aim of the theoretical science is *to explain* economic phenomena. It can do it abstracting the strict economic motives at a wide level of abstraction or analyzing very simple economic phenomena in which non-economic motives are not present, and it can do it considering all the motives in more specific or complex situations. It has to consider the so-called "efficient causes" and also the final causes. That is, it should not only deal with means given ends, but also with the ends, which are the causes (or reasons) of the causes.

- The aim of normative economics is *to define the desirable ends of economic actions*, *to prescribe*, including ethical considerations.

- The aim of the practical sciences of economics is *to achieve the defined ends*, taking into account all the means that may cause the desired effects and, consequently, all the motives influencing economic phenomena.

The four disciplines consequently deal with economic phenomena in different ways. The need of considering all motives and consequently induction is present in all them. All them deal with the economy in the broad sense, but theoretical science has a part specifically dealing with the economy in the strict sense: this part is today's positive economics. However, each one uses the methods in different forms.

Two central conceptions of economic science[8]

The former proposed classification of economic sciences has been based on philosophers and economists before the Twentieth Century. What has been the thinking on this subject after the Nineteenth century? Those who have been concerned with this topic claim that, among the many paradigms of economic science proposed throughout history, two have been predominant. One refers to human concerns related to material conditions. Another refers to human actions as analyzed from a particular perspective. The first has a restricted material object, economic phenomena, and an ample formal object, considering all possible motives influencing them. The second, instead, has an ample material object, beginning with economic phenomena in Mill, but finally encompassing all human intentional actions, and a restricted formal object, the analysis of human reality from the perspective of a decision of optimization of the allocation of means given ends, an instrumental maximizing rationality perspective. Economic science has progressively travelled towards this second vision during the Nineteenth and Twentieth centuries.

Besides, economists from the Twentieth century have considered the main division between positive and normative economics. At the same time, the art of economics has been almost completely forgotten or subsumed under positive or normative economics. This last fact has been noted by David Colander (1992). It has also been the subject of Luis Mireles Flores Dissertation (2016).

As pointed out by Ronald Coase (1978: 206ff.), there are two ways to define economic science: as the study of certain types of human activities or the study of a particular approach to human choice. Israel Kirzner (1976: 17), following the work of Lindley M. Fraser (1937), calls them type A and type B definitions: the first designates a particular *department* or sector of human matters and the second, a concrete aspect of human actions. Robbins (1935: Chapter 1) calls them material and scarcity definitions respectively, and characterizes them as "classificatory" and "analytical". Phelps Brown, as mentioned, calls these definitions "field-determined" and "discipline-determined" (1972: 7). Ioannides and Nielsen (2007: 7-12) have offered two alternative answers to the question about what economics is: the study of the economy and the study of a specific method and framework to this purpose. These different visions of economic science roughly correspond to Karl Polanyi's distinction between substantive and formal meanings of economic science. Polanyi (1971: 139-140) describes both meanings in the following passage:

> The substantive meaning of economics derives from man's dependence for his living upon nature and his fellows. It refers to the interchange with his natural and social environment insofar as this results in supplying him with the means of material want-satisfaction. The formal meaning of economics derives from the logical character of the means-ends relationship (…) It refers to a definite situation of choice, namely, that between the different uses of means induced by an insufficiency of those means (…) The latter derives from logic, the former from fact.

The substantive definition of economics deals with the "economy" in its broad proper sense, whereas the formal definition corresponds to its specific or strict proper sense. Historically, as explained, the former was the first to be adopted, followed by the latter.

As highlighted by Phelps Brown (1972: 7), the substantive definition, "field-determined", presents a twofold problem: it makes room for both rational and irrational behavior (understanding "rationality" reductively as in accordance with the "economic principle") and it is concerned with allocation of means and decision about ends. The substantive definition is concerned with all realities falling under the ordinary name of "economy", including rational, unpredictable, and uncertain behaviors and decisions related with means or ends, with facts or values: they should all be considered part of economic science.

[8] This section partially draws on Crespo 2013b.

This is indeed a subject hard to define and to manage. To facilitate knowledge of the economy, economic science has evolved into a formal science and has been reduced nearly entirely to positive economics. Thus, it has attempted to create a specific, objective, preferably observable subject, because the "positive science" category to which it aspires to belong focuses on this type of subject. To this purpose, it tries to avoid introspection and value judgments. Consequently, the emergence of this second paradigm, the formal vision of economics, stems from epistemological requirements.

Thus, we arrive at the definition formulated by Robbins (1935: 15): "Economics is the science which studies human behavior as a relationship between ends and scarce means which have various applications". That is to say, economics is the science of a specific vision of choice. In this way, economic science is turned into a formal science. It is formal because its subject of study is not a field related to material human needs or to production and distribution. It becomes a choice, any choice, to the extent that it requires adaptation of means to certain ends: it is an approach to human action. It considers ends as given. As Robbins (1935: 29) maintains, "economics is not concerned at all with any ends, *as such*. It is concerned with ends in so far as they affect the disposition of means. It takes the ends as given in scales of relative valuation". In fact, it was initially concerned only with economic phenomena viewed as efficient distribution of resources, but it quickly applied its logic to the analysis of other human realities.

While the subject matter of economics has been enlarged, its method has been narrowed: instrumental maximizing rationality attempts to be a formal logic without psychological, sociological and moral elements. Though Robbins (1935: 83ff) tried to leave psychology aside, he recognized that it was "half of the equation". The very word "utility" carries a psychological resonance. Samuelson (1938: 62; 1948: 243-253) subsequently developed his theory of revealed preference, "dropping the last vestiges of the utility analysis". However, the word preference itself refers to psychology. Finally, John von Neumann and Oskar Morgenstern (1944), as well as Leonard Savage ([1954] 1972) have come up with a completely formal theory of rational choice: the expected utility theory (EUT). An axiomatic theory, it states that if people are rational – in the specific sense they have been defined as such – they will behave as if they were maximizing utility. The order of "well-behaved" (consistent) preferences and probabilities are given and the solution is exact. However, the theory contains very strict assumptions that make it even narrower than Robbins". It assumes an over-simplification of the problem of uncertainty.

In regard to the classification of the economy presented in the introduction, while substantive economics is concerned with economy in its broad proper sense, formal economics is concerned with economy in its specific proper sense. However, the latter applies this analysis perspective, the "economic principle", both to economic and non-economic realities. Gary Becker's (1976) framework and research agenda follow this trend.

Coase (1978: 207) appropriately describes this process in which substantive economic science undergoes a transformation into a formal type of economics that applies to all human action. He notes that there are currently two trends at play:

> The first consists of an enlargement of the scope of economists' interests so far as subject matter is concerned. The second is a narrowing of a professional interest to a more formal, technical, mathematical analysis. This more formal analysis tends to have a greater generality. It may say less, or leave much unsaid, about the economic system, but, because of its generality, (…) economics becomes the study of all purposive human behavior and its scope is, therefore, coterminous with all of the social sciences.

Thus, economics has attempted to include all human actions from a specific perspective. Since this perspective is narrow, its knowledge is incomplete, and economics applies this incompleteness to the analysis of all intentional conduct. In this way, the logic of economics takes the place of the logic of the social sciences. As a consequence, sciences reduce their

vision of rationality and this reflects in lacking analyses. Faced with this situation, we may ask ourselves whether this tendency really enhances economic science (or other sciences) or if this version of economic science is yet another type of science. Coase (1978: 211) believes that this dualistic tendency is erroneous. He maintains that economic science should study the other social sciences to better understand the functioning of the economic system, instead of trying to impose its logic onto these sciences. Phelps Brown (1972: 7) agrees: "the economist's studies should be field-determined, not discipline-determined". It seems inadequate to transform the logics of law and politics into efficiency, for example, when they should be justice and the common good. Paradoxically, epistemological restrains sometimes mislead sciences. In this sense, Robert Scoon's (1943, p. 311) reflections on Robbins' definition seem far-sighted:

> I contend that, if you define economics in this way, it would include political, military, legal, medical, and all moral morals, on a utilitarian basis that is; and thus the usefulness of the definition in enabling us to distinguish economics from other disciplines disappears. Choosing is not a specifically economic activity, and the introduction of scarcity does not alter the situation.

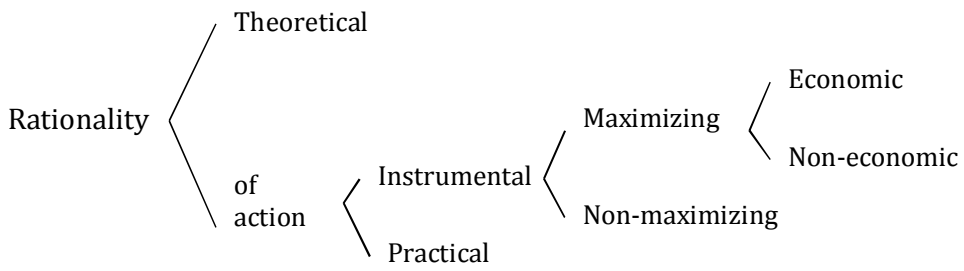
Both conceptions of economics are connected with different forms of human rationality. Therefore, an adequate evaluation must take into account the notion of rationality as an instrument for analysis. This will be the subject of the next section.

Economics and rationalities

In this section I will present another way of reaching at the classifications of economic sciences: by analyzing the different forms of rationality that can be applied to economic phenomena. Aristotle, as already introduced, distinguished between different forms taken on by human reason according to the subject of knowledge with which it is presented. On the one hand, the human person uses his/her reason theoretically (or speculatively). Through theoretical reason (from the Greek verb *theorein*, to contemplate), the human person knows the nature of the causes of entities.

With regard to knowledge governing proper human action, Aristotle distinguished between practical and poietical (or technical) rationality. Practical rationality is related to the immanent aspect of human actions, that is, to the impact of actions on the agent who decides and does. Even if an action is directed to an external result, it also impacts the agent himself/herself. Poietical or technical is that form of rationality implied in achieving results through actions. The first, the practical, asks how one should act in seeking one's own fulfillment. The second, the technical or poietical, asks what means should I contribute and how I should do so to achieve the desired external result. Aristotle (*Metaphysics*, VIII, 8, 1050a) believes that while there are some rational actions which are purely practical like seeing and theorizing, purely technical actions cannot exist because all human action assumes volition and, thus, the exercise itself leaves a mark within the person. That is, the immanent and transient are not different actions but different aspects of the same action. While practical rationality is ends and means rationality to the extent that it impacts ends, technical rationality is exclusively means rationality. The latter may be efficient or maximizing means rationality, or it can be indifferent to efficiency or maximization. Both rationalities appear in Table 2.

Table 2



Twenty-four centuries later, Weber ([1922] 1978: 24-45) distinguished four types of motives that guide social actions: instrumentally rational, value-rational, affective and traditional. According to Weber, an action is instrumentally rational when it seeks the adequate distribution of means to obtain the actor's ends. It is value-rational when it is determined by conscious belief in the intrinsic value of some form of behavior. Affective actions are guided by the actor's affects and feelings. They are traditional when they are determined by adopted habit. Weber believed that, though a particular type of action may prevail in some specific kind of rationality, almost all human action stems from several of these types. Social phenomena are complex and we can analyze them from various rationality perspectives. Weber's instrumental rationality can be compared to Aristotle's poietic or technical rationality. The others can also be roughly compared with practical Aristotelian rationality.

Milan Zafirovski (2003: 11-3) presents a list of scientific models of behavior that follow forms of rationality different from instrumental rationality. He connects them with authors that develop such forms of rationality (indicated in brackets):

1. Models of behavior guided by values (Weber, Pareto).

2. Models of behavior governed by rules (Weber, Hayek, Veblen, Durkheim).

3. Models of affective behavior (Weber, Schumpeter, and Keynes).

4. Models of power-oriented behavior (Marx).

5. Models of behavior oriented towards social prestige or approval (Weber, Veblen).

6. Historical-institutional models of behavior (Durkheim, Weber, and Parsons).

The economy understood in its broad proper sense is concerned with economic realities, whether the motives implied by decisions and actions are practical or instrumental, value-driven, affective or traditional. However, the rationality of the strict notion of the economy is instrumental rationality (as a concrete type: maximizing). As John Davis (2003: 27) explained in relation to the economy,

> Instrumental rationality is defined by a choice of actions that best satisfy an individual's ends or objectives however those ends or objectives may happen to be characterized. Instrumental rationality is a rationality of efficient means, and per se is completely agnostic regarding the ends those means serve.

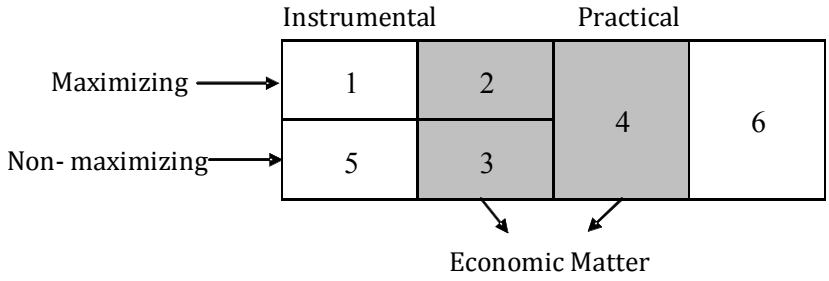
Its essence resides in being a calculable and algorithmic way of getting from one fixed point to another.

From the point of view of the previous classification of rationality, we can also propose a typology of economic sciences coincidental with the proposed in the first section of the paper. Table 3 helps better explain the distinctions between them. Where respective fields of

instrumental rationality, practical rationality (comprising all the other motivations) and economic matter intersect, the following areas emerge:

1. Maximizing instrumental rationality applied to non-economic realities: Though profusely present in economic journals, this is not properly economics but a reductive analysis of human realities, because the subject-matter is more than economic matter.
2. Maximizing instrumental rationality applied to economic realities: it deals with the economy in its specific proper sense. It is Mill's a priori political economy and Menger's exact orientation of economic theory plus inductive sources of evidence, or Neville Keynes positive economics.
3. Non-maximizing instrumental rationality applied to economic realities: It is part of Mill allowing considering no economic motivations, or Menger's empirical realist orientation of economic theory.
4. Practical rationality applied to economic realities: it deals with the economy in its broad proper sense. It is also part of Mill allowing considering no economic motivations, or Menger's empirical realist orientation of economic theory. It is also normative economics.
5. Non-maximizing instrumental rationality applied to non-economic realities: technique.
6. Practical rationality applied to non-economic realities: ethics, politics and other practical sciences.

Table 3



Given these areas, we can also analyze the distinction of economic sciences:

1. Maximizing instrumental rationality applied to economic realities (area 2) deals with the *economy in its specific proper sense*. It is *positive economics* or part of *economic theory*: its abstract Millian or exact Mengerian version. It is theory in the sense that it contemplates economic reality from a given point of view. However, as for example recognized by Mill, Menger and Neville Keynes, this point of view is incomplete as long as no economic action comes of it alone. Its reach is quite limited. It is very difficult to come up with an adequate explanation for economic occurrences because they are the result of a variety of motivations. This is why *economic theory* does not have a high predictive capacity concerning many topics. It can be useful for prescription, to the extent that it is able to keep sight of economic motivations and leave aside non-economic motivations in concrete situations.

2. Non-maximizing instrumental rationality and Practical rationality applied to economic realities comprises (areas 3 and 4):

- Mill allowing considering no economic motivations, or Menger's empirical realist orientation of economic theory.

- Menger's *Verständnis* or Sidgwick trying to *understand* other motives than economic motives. Part of economic theory.

- Mill's Teleology or normative economics.

- The art of economics or applied economics.

All those need to use economic history and statistics.

It is interesting to compare these ideas with James Buchanan reflections (1987: 68 and 70). For him:

> The residual aspects of human action that are not reducible to rat-like stimuli, even in much more complex human variants, define the domain for a wholly different, wholly human, and uniquely different, science — one that cannot, by its nature, be made analogous to the positive-predictive sciences of orthodox paradigm. There is surely room for both sciences to exist in the more inclusive rubric that we call economic theory.

Buchanan's concept of "economic theory" does not correspond to the concept used here but to the inclusive idea of Menger's "economic sciences" or Neville Keynes "political economy in its widest sense". However, he is recognizing and putting under this umbrella, a scientific treatment of all the other motives, apart from the motive considered by positive economics, which are behind economic phenomena.

In this way, we give ample room for practical rationality in economic sciences. This has beneficial effects. Practical rationality leaves the door open to uncertainty. So-called practical sciences lack exactitude in this knowledge; they go beyond pure acquisition of knowledge, advancing into the field of action. They depend heavily on experience. They are not prone to formalization. They exercise prudential reasoning. It is a rationality of ends to which calculation of ends is not applicable; because of their heterogeneity, they are not commensurable. Therefore, they cannot be reduced to a maximizable unit. Subsistence, culture, friendship and democracy, to give a few examples of possible ends, cannot be reduced to common measure. They can only be compared qualitatively and establish priorities. On the other hand, technical rationality is based on the possibility of reducing its objectives to a common quantifiable unit which enables measurement and maximization. This is why technical rationality differs from practical rationality. The latter, however, makes use of the former.

From a technical point of view, economic actions may be efficient; this is a crucial aspect of the specific sense of the economy. However, the economy is more than just technical rationality. It requires an additional consideration of ends, relevant to practical rationality. This broader discipline features indistinct limits, in terms of its formal object. In fact, it must take into account various perspectives or rationalities. The technical conception of economics, cited in Phelps Brown (1972: 7), is discipline-determined, not field-determined.

Economic sciences, as defined here, cover several human disciplines' viewpoints: "economic theory", sociology, history, cultural anthropology, political and social philosophy, ethics and politics. This discipline is practical science in the classic sense.

As highlighted by Neville Keynes about the art of political economy, though a separate science, it is "the economic side of political philosophy" ([1890] 1955: 58). According to the Aristotelian view, if we do not order economy towards a certain end — the common good of the *polis* —, we cannot judge if economy is fulfilling its mission — i.e., if it is just —, and neither can we judge if individual economic behaviors are just. Within this line of reasoning, it is a conceptual error to think of economics independently of politics.

Conclusion

Economics' main objective is to deal with real economic problems. As Coase (1988: Chapter 1) explains, if we want to take care of real economic problems, we are in danger of divorcing economic theory from its subject of study. This is why we need a whole set of economic sciences. We need history and statistics as the materia prima of all economic sciences. We need positive economics to detect what are the specific economic causes. We need to consider other causes of economic phenomena. We need normative economic to fix our economic ideals, and we need the art of economics to achieve them. These sciences have their corresponding tasks, aims and methods:

- Statistics and economic history provide information; they *describe* and provide elaborated information needed by economic theory.

- Economic theory *explain*. It explains considering economic causes (positive economics), non-economic causes, and reasons or final causes.

- Normative economics *prescribe* ideals or ends.

- The art of economics or applied economics *designs* policies to achieve those ideals through means.

In further works, I will develop the nature, aims and method of these economic sciences and the roles of them. We will see that, though separable, they are closely interrelated given, as John Gerring expresses it, 'the *inextricability* of theory, values, and evidence' (2010: 90).

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