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Das Turgot Problem. The Method *of Economics*

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DAS TURGOT PROBLEM
The method of Economics

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Abstract:
This paper examines A.R.J. Turgot's explanation of the scope and method of economic science. We begin by highlighting two contradictory economic methodologies in Turgot's writings according to the literature: one in his text on progress and another in his papers on concrete economic matters. An initial hypothesis in this paper holds that this 'contradiction' does not exist. To do so, we shall use his texts on scientific methodology, history of science and epistemology, mainly written during the decade of the fifties. The argument is that his taxonomy of sciences explains that the different methodologies observed by the literature, depending on the discipline, are the forms that the unit of science can take in each stage of the progress of the human spirit. A corollary to this hypothesis is that Turgot's multi-disciplinary works describe a scene of the birth of economic science that is very removed from the political arena. Both debates on types of knowledge, the independence of disciplines, the specialized language and the association of authors are better explained from the sociology of science than from the history of political thought.

Keywords: Turgot, History of Economic Thought, History of Science, Enlightenment, and Economic Methodology.

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In 1748, Turgot devised a list of works to write that included a text on economics. Some years later he prepared an outline of the future document and developed some parts, all under the title *Le commerce, la circulation et l'intérêt de l'argent, la richesse des états* (1753-4). The first part of the project set out an account about the study of the principles at the basis of economic relations, called *Principes du commerce*, with *commerce* being understood as the term to refer to the activities of production and exchange, including the economic activity in its totality.[1] The term *science of commerce* stems from Gournay's circle (Steiner, 1998). One of its members, François Véron de Forbonnais, had proposed broadening the knowledge contained in the manuals for merchants to include the economic activity in its entirety (Forbonnais 1753, xxvii-xviii). It was not a new initiative because since the beginning of the century there had been both attempts at devising general treaties based on commercial knowledge and their resulting critiques — e.g., "a savoir sans expérience", or lack of material required to be considered a science (Hoock 1987). The particularity is the need to equip the prince with this knowledge to manage commerce in the State's interest (Steiner, 2006). Following Gournay's death, praise for the master forced Turgot to join this debate and explain what he understands by the scope and method of economic science.

The literature on the subject and content of Turgot's economics is broad in quality, quantity and opposing results. Contrary to a review that points out the importance of natural order and final causes (Neymark 1885; Facarello 1998; Vergara 2008), Ravix & Romani (1984), Morilhat (1988) and Gilles & Berlan (1991) present an inductive reasoning that distances Turgot from the social naturalism of Locke and Quesnay, while Perrot (1988) considers a transition from determinism in his youth to a philosophy of science in his maturity. In the light of the textual basis for each interpretation, a reviewer can easily deduce that Turgot postulates two contradictory economic methodologies: one in his text on progress — e.g., *Tableau philosophique des progrès successifs de l'esprit humain* (1750), *Plan de deux discours sur l'Histoire Universelle* (1751) and *Réflexions sur la Formation et la Distribution des Richesses* (1766) — and another in his papers on concrete economic matters — e.g., *Projet de lettre au contrôleur général Bertin sur un projet d´édit (1761)* and *Valeur et Monnaie* (1768). Our research seeks to contribute to this literature, explaining that this contradiction does not exist. To do so we shall use his texts on scientific methodology, history of science and epistemology, mainly written in the decade of the fifties. We find that Turgot wrote a taxonomy of science to introduce his theory of progress in the scientific method without leaving the rationalism. He organises the disciplines from a continuum, in keeping with the unit of knowledge, with arbitrary and temporary divisions for convenience, known as fields of knowledge or domains. These sciences, separated according to criteria of usefulness, would join together again when the speed of development of scientific methods would enable the increase of that which is

[1] The term *commerce* also has a meaning of communication, both cultural and material, of discovery and of assessing nations' sources of wealth — e.g., the titles of the works of Jean-François Melon and Richard Cantillon — (Spector 2006). See also Steiner (1997).

known to exceed the appearance of new doubts. Therefore, the taxonomy of sciences explains that the different methodologies observed by the literature, depending on the discipline, are the forms that the unit of science can take in each stage of the progress of the human spirit. A corollary to this hypothesis is that economic science does not belong to, nor stem from any general field of knowledge according to Turgot. The *science of commerce* is a philosophical (scientific) knowledge because it encompasses all the phenomena that occur in the domain known as *political economy*. Therefore, the rise of the economy is not a stage in the history of politics or ethics, but the consequence of a fully recognised domain in the mid-18th century. The analysis of Turgot's works presents an author who is clearly part of the assembly of concepts grouped together under the term *economic philosophy* and especially involved in the creation of a specialised language. Turgot's multidisciplinary works depict scenes of discussion that are better explained from the sociology of science than from the history of political thought.

This article is divided into three parts. The first deals with the subject of science and its method in Turgot's work. We develop the influence of his theory of progress on the scientific method. The second part explains the place economics occupies in the taxonomy of science. Its association with other moral and political sciences shall define its research field in collective decision-making. Finally, we want to present a corollary related to the birth of economic science.

1. The organisation of knowledge

In 1748, Turgot became aware of a competition organised by the *Académie de Soissons* to give a prize to the best answer to the question "*Quelles peuvent être, dans tous temps, les causes des progrès et de la décadence du goût dans les arts et dans les sciences?*"[2] Since then, and for ten years, Turgot worked on a project that framed all of his intellectual activity, whether with answers to the question posed or using progress as a means to tackle the problems of other subjects. His initial conclusions were exposed during his university stage in *Sorbonne* over the course of 1750.[3] A first discourse developed the theory of the relation between the Christian religion and the progress of men and societies. He concluded that not only does the divine providence lead humanity toward a greater level of perfection, but the Christian religion itself is a drive behind man's action. The second discourse abandons the central focus of human behaviour to tackle great events in the progress of humanity from the perspective of the duality between nature and history. Nature is the world of need and determinism, where change is represented by a circular movement. History is the field of freedom and progress because it shows the innovations generated by genius and transmitted from one generation to another. In all of this, Turgot minimises the physical causes to leave progress in the hands of moral causes based

[2] Although he wrote a draft called *Recherche sur les causes des progrès et de la décadence des sciences et des arts ou réflexions sur l'histoire des progres de l'esprit humain*, Turgot did not present a text for the competition. Nobody responded to the award (see *Journal des Savans* 1749, February, p. 269).

[3] In the inaugural session of the course, on July 3rd, Turgot read his *Discours sur les avantages que l'établissement du christianisme à procurés au genre humain,* and on December 11th, in the closing speech, he presented *Le Tableau philosophique du progres successifs de l'Esprit Humain.*

on an innate innovative ability and on the guarantee of a constant perfectibility. The result is a schema of progress through different stages of society that is not lineal because the same nation does not always take over in the leadership of knowledge. This theory of progress would influence Turgot's concept of science (Manuel & Manuel 1979). There appeared a need to differentiate between the sciences of man and the natural sciences, stemming from the separation between physical order, where the principle of recurrence reigns, and human order, where the principle of progress exists.[4] Therefore, the division of knowledge presented by René Descartes in the form of a tree, with philosophy as the root, physics as the trunk and other disciplines as branches, is not acceptable. Turgot rejected the subjugation of the sciences of man to natural sciences. What alternative is there for the organisation of knowledge? In October 1750, Denis Diderot published the *Prospecto* to explain the classification of the sciences and arts that would guide *l'Encyclopedie*. As a reference, the outline used Francis Bacon's "tree," classifying knowledge according to man's faculties: reason for science, memory for history and imagination for the arts. Turgot preferred a concept of unit of knowledge that was more in line with his doctrine of progress.

Having completed his university studies, and always from the approach of the progress of the human spirit, Turgot devised planes and articles about subjects that interested him particularly —political geography, universal history, physics, metaphysics, language, religion and economy. One of the subjects tackled in several of these texts is the organisation of scientific knowledge and method. His scientific referents are explicitly presented in his article *Existence* (1756): the need for René Descartes' method, the importance of John Locke's senses and Etienne Bonnot de Condillac's operations of understanding.[5] In addition to this, we must also mention the unit of knowledge of Gottfried Leibniz.

> Leibnitz embrasse dans sa vaste intelligence tous les objets de l'esprit humain. Les différents sciences, resserrées d'abord dans un petit nombre de notions simples, communes à tous, ne peuvent plus, lorsqu'elles sont devenues par leurs progrès plus étendues et plus difficiles, être envisagées que séparément ; mais un progrès plus grand encore se rapproche, parce qu'on découvre cette dépendance mutuelle de toutes les vérités qui, en les enchaînant entre elles, les éclaire une par l'autre : parce que, si chaque jour ajoute à l'immensité des sciences, chaque jour les rend plus faciles, parce que les méthodes se multiplient avec les découvertes, parce que l'échafaud s'élève avec l'édifice. (Turgot 1750b, 235)

Leibniz perceived science as a continuum with arbitrary and acceptable divisions for convenience. The image used is an uninterrupted ocean, although we can make out

[4] Manuel & Manuel (1979) also point out two other consequences. Firstly, innovative passion causes a strong moral trend in the exercise of the sciences. Since the Renaissance, scientific knowledge also has the characteristic of practical usefulness because knowledge provides human beings with the power to modify their environment — e.g., a productive application in industry, agriculture or medicine. For Turgot, science grants us the power of progress. Secondly, art remains on the margin of progress. Artistic knowledge, unlike mechanical or scientific knowledge, is not accumulative and, consequently, the principle of progress is not applicable to these disciplines (Turgot 1748, 118).

[5] Other explicit references also appear — i-e., Isaac Newton, Nicolas Malebranche and N.-C.-J. Trublet — who are mentioned with Turgot's explicit renunciation of dogmatisms.

dividing lines. Turgot adopted this criterion and inserted in into his philosophy of progress. In *Plan de deux discours sur l'Histoire Universelle* (1751), Turgot described this interim with a science classification.

1.1. Mapping the ocean of knowledge

The study of the formation of knowledge — i.e., the explanation of the operations of understanding and of the generation of our ideas — is part of the field of logic, different from metaphysics —concerned with nature and the origin of beings— and physics— observation of both the mutual action of the bodies and the causes of the association of sensitive phenomena. All of these are grouped within the sciences of observation, as opposed to the sciences of combination — geometry and algebra — where there are no facts to be verified, but rather principles and consequences that are reciprocally related.

> Les mathématiques partent d'un petit nombre d'idées, et en combinent à l'infini les rapports: c'est tout le contraire dans les sciences physiques où il s'agit, non d'une suite d'idées et de rapports, mais de faits et d'idées qui ont un objet existant passé ou présent (le futur ne peut être que mathématique), et dont la vérité consiste dans la conformité de nos opinions avec cet objet. (Turgot 1751a, 310)

The sciences of combination are also based on the senses. Initially chains of ideas are created and, from here, formulations (principles or axioms) are built to, later, be broken down into particularised hypotheses. The result is a multiplication of truths through a process that is universal — it stems from nature —, is preferable — many consequences are obtained from only a few principles — and enables reciprocity —we can obtain the principles of consequences and vice versa — (Turgot 1751a, 310).

The methodology is the same between the sciences of observation and is consistent with the sciences of combination, considering the unit of knowledge. The reason begins with the perception of the object or of the effects that we seek to explain — e.g., the formation of images through the reflection of light on the retina reaches the soul in the form of a sensation. A search for the cause begins and, after reasoning through a chain of ideas, we obtain some principles and hypotheses. Verifying the contrasted hypothesis — exact relations between hypothesis and phenomena — makes that which is outside the individual real, whether it is perceived (object, movement, distance) or not (speed of light).[6] Therefore, via the physical world and via ideas we test the certainty of that which is stored in the memory and also personal identity.

The differentiation between the sciences of observation stems from gradually defined fields of study. In particular, Turgot sets out that progress in the field of logic has helped to correct the error committed by philosophers, who did not distinguish physics from metaphysics. Descartes was the turning point when he discovered that sensitive

[6] "Il est visible et incontestable qu'une hypothèse dont toutes les conclusions sont ainsi vérifiées par l'expérience est réelle, et par conséquence que mes rayons visuels, mon objet, mon œil, mon microscope, existent véritablement hors moi : ces rayons que je n'avais fait que supposer, que, selon Berkeley, n'existent même pas, puisqu'ils ne sont point aperçus, sont donc le principe qui lie tout l'ordre de mes sensations. Ce même raisonnement, je puis l'appliquer, comme nous en sommes aussi convenus, à la pression de l'air sur le mercure contenu dans des tubes, au système de Copernic, à celui de Newton." (Turgot 1750a, 189).

phenomena can be described using figures and movements, thereby enabling Physics to use mathematics.

1.2. The Cartesian Revolution

When the subject of study is effects repeated in a cyclical manner, which is the case of the natural sciences, mathematics are preferable over language because they allow greater certainty. They have been included in the contrast phase to, from hypothesis, infer effects which can be compared to the initial observations that we wish to explain. This is the Cartesian world explained by Newton and the origin of the scientific revolution described by Turgot[7]. However, this episode is not possible in all of the sciences of observation.

> On pourrait y ajouter l'histoire [à la science de l'observation], dont la certitude ne peut jamais être aussi grande, parce que l'enchaînement des faits ne peut être aussi lié, et parce que les faits déjà passés depuis longtemps ne peuvent que difficilement être soumis à un nouvel examen. La nature se ressemblant toujours a elle-même, on peut, par des expérimentes, rappeler sous nos yeux les mêmes phénomènes ou en produire de nouveaux : mais, si les premières témoins d'un fait sont peu dignes de foi, le fait reste à jamais dans son incertitude, et ses effets précis ne nous sont jamais connus. (Turgot 1751a, 311).

In the natural sciences, an examination of the circumstances defines the research, while in other sciences of observation —metaphysics, history, ethics or politics— we only know "des côtés d'un pays, il est incertain si c'est une île ou une terre ferme."

Not all the sciences have a cyclical nature which allows repeated effects to be constantly observed and, therefore, it is initially complicated to define the observed fact. In those sciences that do not have this recurrence, the methodological process begins with perception and continues with the formation of ideas. Language is incorporated, requiring an absolute absence of contradictions in terms, to build chains of ideas that give rise to hypothetical truths. The language of specialisation appears as a need for methodical organisation (like a *tablature*) that reason requires.

> Locke, et depuis M l'abbé de Condillac, ont montré que le langage est véritablement une espèce de calcul, dont la grammaire et même la logique en grande partie, ne sont que les règles; mais ce calcul est bien plus compliqué que celui des nombres, sujet à bien plus d'erreurs et de difficultés. Une des principales l'espèce d'impossibilité où les hommes se trouvent de fixer exactement le sens des signes auxquels ils n'ont appris à lier des idées que par une habitude formée dans l'enfance, à force d'entendre répéter les mêmes sons des circonstances semblables, mais qui ne le sont jamais entièrement; en sorte que ni deux hommes ni peut être le même homme dans des temps différents n'attachent précisément au même mot la même idée. (Turgot 1756b, 108).

History provides recurrence and uniformity to the phenomena analysed by non-natural sciences of observation. The duality between nature and history in his second speech in *Sorbonne* adopted in this case a methodological meaning because, in opposition to natural causality there is also a historical causality: "tous les âges enchaînés les uns aux autres par

[7] Regarding the powerful rise of science in the Enlightenment, see Hankins (1985).

une suite de causes et d'effets qui lient l'état présent du monde à tous ceux qui l'ont précédé." (Turgot 1750b, 214-5). The presentation of history as a science is very common and even Voltaire coined it as *philosophie de l'histoire*. David Hume shared this approach although he saw more arbitrary than recurrent phenomena (Redman, 1997). But Turgot's stance would also be very removed from the *fallibility* of Hume because the truth can be obtained, as demonstrated by the discoveries of the natural sciences. On the contrary, Hume considered the inability of these theories to obtain the truth to be the argument to propose a methodological alternative in the sciences of man (Sachabas & Carl Wennerlind 2011)[8]. Hume's concept of causation — trust, belief and probability — (Robinson 1999) requires persuasion so that ideas are accepted by others. For Turgot, the contrast with others' ideas is one of the possible means of verification and in no case is it an alternative to reason. We cannot accept principles based on an event-cause repeatedly having another event-effect as a consequence. It is essential to understand what makes the cause be able to produce the effect. This causation can only be obtained through reason, although the environment provides experience and contrast. There is no need to convince or to look for mechanisms that replace reason.[9] When Condorcet argues the convenience of a public jury, Turgot opts for the rationality of a decision of learned judges adopted by a majority compared to the unanimous decision of an ignorant jury. For Turgot, it is a matter of finding the principles that explain the decision-making of the assembly of judges so that the decisions are rational, and not determining which voting system justifies the decision. These are the subjects tackled in moral science and political science.

The impossibility of associating the phenomena of these sciences with figures and movements, as occurs in the natural sciences, does not make them less existent or incomprehensible. The principles of all the sciences are nothing other than the facts whose causes can be obtained. Turgot criticises those authors who doubt the capacity of some sciences lacking a method with so many desirable properties (Turgot 1756a). His response to all of them is the necessary distinction between the limit of knowledge and the limit of that which has been found. Our current understanding has demarcations that do not match those of nature — e.g., the idea of substance.[10] These limits of knowledge

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[8] Scottish universities swiftly accepted Newton's proposal as greater than the rival Cartesian philosophy. Turgot does not consider the clash between both authors and proposes an explanation that combines them. See *supra* p. .

[9] For Turgot, persuasion forms part of politics, and not of the scientific method. On the role of public opinion in the implementation of economic policy, see Faccarello (1998).

[10] The rationalist debate on the notion of substance, initiated by Descartes, refers to different types of correspondence between thought and reality. In a critique of *Réflexions philosophiques sur l'origine des langues et la signification des mots* (1748) by P.-L.-M. de Maupertuis, and in relation to this debate, Turgot distinguishes between *spinozistes*, *cartésiens* and *leibniziens*. Maupertuis is situated in the first group since he understands substance to be the uniform part of perception; mistakenly, according to Turgot, because substance means a specific and unique existence. The second group — who have placed substance in extension — are asked if substance is extension, and the third group — who see the result of various substances in extension — are asked what makes the monads be a substance. For authors from the 18th century, the limits between Sensualism, Descartes and Leibniz are diffuse but present. For example, La Mettrie differentiates between three groups of authors: followers of Descartes, to whom he does not pay particular attention, followers of

are not a principle of error, as long as we do not judge that which we do not know (Turgot 1751b, 334). The sceptic *pyrrhonisme* is refuted, according to Turgot, by the multitude of scientific principles in which certainty leaves no room for error. The scientific progress that supports or questions Cartesian theories — in psychology, medicine, physics and philosophy (Banzhaf 2000, Smith 2007) — serve as the basis for Turgot's postulates, adapting instruments for the analysis to different fields of knowledge, or transferring the legitimacy that scientific discoveries grant different materials — e.g., Turgot's reply to George Berkeley's anti-materialism is based on findings in the field of optics; the figure that we observe is a representation, through our ideas, but the optic process shows us that that which we see is material and that another person in the same physical situation would see the same (Turgot 1750a, 191). Turgot thus dissociates himself from the tradition of the Baron of Montesquieu, within which other contemporary authors fall such as Ferdinando Galiani or Jacques Necker, who deny the existence of valid truths at any time and place (Faccarello 1998). The result of the ideas in these fields of knowledge are relations — "…nous ne connaissons que le rapport. Vouloir dire quelque chose de plus, c'est confondre les bornes de notre esprit et celle de la nature." (Turgot 1750b, 168) — which we can verify through experience until converting them into laws that are "uniques et primitives". The lack of certainty is due to a limited knowledge that momentarily impedes laws from being found at specific times. It is a matter of time before understanding leads to a knowledge that is "évidentes et irrésistibles". In the scope of our understanding, good logic helps to separate "the wheat from the chaff" and "J'ose croire qu'avec un peu plus de peine on peut arriver au même point dans les autres sciences" (Turgot 1751b, 335-6).

In short, the historical process differentiates between disciplines and their methods although in the end "toutes les ombres sont dissipées." These sciences separated according to criteria of usefulness shall come together again as we see the relationships between their results. The unification stage shall start when the speed of development of scientific methods enables the increase of that which is known to exceed the appearance of new doubts. Therefore, the taxonomy of sciences is a means of expressing the forms that the unit of sciences can take in each stage of the progress of the human spirit.

2.1. Logic, Politics and Commerce

Most of Turgot's writings have been in fields of the non-natural sciences of observation — metaphysics, logic, history, ethics, politics, economics. It is here where we will see the continuum provided by the unit of knowledge coming into play. In Turgot, there is not a general theory in any field of study; neither seems to want to build it. Turgot deals with concrete problems from the unit of knowledge in a way that the principles obtained through reason cannot be incompatible between academic disciplines. For this, it is essential to explain what Turgot understands by reasoning — logic and metaphysics study operations of understanding to explain the individual discovery of the truth — to

Leibniz, such as Émilie du Châtelet and François Quesnay, and the sensualists, among whom the author himself is included. See La Mettrie (1747).

comprehend his positions in debates on social matters — ethics or politics study the collective process of decision-making.[11]

2.1. Motors and Motives

Turgot reveals his results on logic and metaphysics in two letters against George Berekeley's theory of knowledge (1750) and in his article *Existence* (1756). The theory is that similar sensations in all individuals enable us to test the existence of some objects that follow the same laws. Turgot investigates the reflection process, and unlike Condillac, does not consider a natural consequence,[12] to conclude that the existence, and not the presence of these objects, is the origin of our necessities and the drive behind our movement.[13] Contrary to the *idealist* authors — they do not accept other ideas that are not actual sensations —, it is not only a calculation that results from sensations; although the result is a measurement in terms of pleasure/pain, some type of operation on which it can be quantified why the reason is not limited to the calculation is needed. By means of a chain of cause-effect relationships each subject devises a "general system of motives," made up of present objects (united by a perception of the senses) and absent objects (which make up the majority and are associated by a relationship of causality which enables us to perceive them as existent as well). Turgot considers that this set of objects is not given to the individual. It is the subject who builds — in an "arbitrary manner," he would say some years later (Turgot 1774, 670) — both the set of existing objects and their relative relations in terms of pleasure and pain. The concept of rationality remains linked to this *general system of motives* so that this is the rule judging the existence of that which is perceived. The individual acts rationally when he judges according to existence, and irrationally when he follows presence, sensations or illusions (Turgot 1756a, 527). This is what Turgot, years later, would call motors, not to be confused with motives.

> Je dis seulement que le seul principe productif de mouvement indiqué par l'expérience est la volonté des êtres intelligents qui n'est point déterminée primitivement, mais qui se détermine non par des moteurs, mais par des motifs, non par des causes mécaniques, mais d'après des causes finales. Je dis que ces êtres sentant, pensant et voulant, se proposant des fins et

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[11] Diderot's *Prospectus* (1750) and the first volume of l'*Encyclopédie* (1751) classified ethics, politics and œconomy — the last two particular moral sciences —, as sciences of man, specifically linked to will: "La distribution de la science de l'homme nous est donnée par celle de ses facultés. Les facultés principales de l'homme sont l'entendement et la volonté ; l'entendement, qu'il faut diriger à la vérité ; la volonté, qu'il faut plier à la vertu. L'un est le but de la Logique ; l'autre est celui de la Moral." (Diderot & D'Alambert 1751-1765, I: XLIX).

[12] For Turgot, both John Locke and Etienne Bonnot de Condillac establish the foundations on which to base reflections about the formation of knowledge. Condillac's statue is presented as a support for sensations in order to know how the operations of knowledge must be carried out. In the same way, Condillac uses sensualist constructs to define the capacities of the individual: the capacity to appreciate the value of things linked to practical life (judgement), the capacity to find new combinations of ideas received by the senses (inventiveness) and the capacity to manage operations of understanding, using them with ease (spirit).

[13] Unlike the tangible sea proposed by Berkeley, the world in which the individual acts is intellectual and goes beyond the limits of sensations. The objects that we do not perceive might not have disappeared – e.g., 'as the fog blinds the navigator' – and objects that move away from us until they are lost can be followed beyond the reach of the senses. See Turgot (1750b).

> choisissant des moyens constituent un ordre de choses au moins aussi réel et aussi certain que celui des êtres supposés purement matériels agités par des causes purement mécaniques. Je dis que cet ordre de choses n'est pas plus incompréhensible que le système des êtres matériels et qu'il n'est pas moins constaté par l'expérience et par nos sensations, qu'il est même le seul dont l'existence nous soit immédiatement connue, puisque l'existence des corps n'est prouvé que par des inductions dont le résultat est certain, mais n'est pas démontré. (Turgot 1774, 670-1).

When this reflexive spectator, presented alongside units of measurement and principles of inertia, is situated alongside other "êtres intelligents," we are in fields of knowledge that have motives as a starting point and that seek to explain final causes whose phenomena are collective choices of purposes and means. Explicitly, Turgot refers to moral science and political science, both united by a shared motivation.

> Je ne parle pas de sciences, comme la morale et la politique, qui dépendent de l'amour de soi réglé par la justice, laquelle n'est elle-même qu'un amour de soi très-éclairé. Ce que je dis en général sur la différence des sciences de combinaison été des sciences d'observation, doit leur être appliqué. (Turgot 1751a, 311).

Since the 16th century, self-interest has encompassed everything but develops independently depending on whether the problems tackled are religious, moral or political (Faccarello, 2006). It is in this way that Turgot appears to perceive it when he adopted the association between the logic of personal interest and the social domain both in the field of the organisation of society, studied by politics, and in the field of individual behaviour, the subject of moral science.[14] But Turgot presents two special features. Firstly, this motive of action is not the cornerstone on which the disciplines encompassed by modern society should be raised, nor is it the base on which statesman should intervene — the case of Quesnay or James Steuart. It consists of a particular motivation as a common denominator of all the sciences that deal with a subject that is social —therefore, it is not limited to economic activities. Secondly, problems of morality or politics cannot be tackled from an individual motivation that does not distinguish an isolated subject from a subject immersed in a community —this task belongs to logic or metaphysics. He tackles this matter at length in his critique of Hélvétius (Turgot 1773, 637).[15] When the individual constructs their *general system of motives* which enables them to be rational, they also bear in mind moral rules. The result is a behaviour based on the "amour de soi réglé par la justice." Therefore, these rational individuals, on account of being "sensibles et intelligents" — i.e., they act according to that which they have constructed as existing —, and capable of generating progress, as a result of a "volonté arbitraire" — i.e., without a predetermined choice and therefore master of their will — must also be moral to ensure social order.

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[14] See Faccarello & Steiner (2008) for a description of the different trajectories of this approach in French economic thought in the eighteenth century.

[15] Turgot's criticism of Hélvétius' utilitarianism is aimed at the theory of limiting reason to the calculation of pleasures and pains. These machines "sensant, (re-)sentant et obéissant" (Hervier & Leredde 2002, 26) do not allow the universality of morality, because individual interests clash and the result is arbitrary privileges. Thus, it is not possible to guarantee that society as a whole wins.

> ... le plus lourde et la plus absurde des erreurs en morale, et même en politique, il [Helvétius] veut faire regarder ces vertus comme nulles, pour ne vanter que de prétendues vertus publiques beaucoup plus funestes aux hommes qu'elles ne peuvent leur être utiles [...]. Il eût compris que, dans le sens où cette proposition [*l'intérêt est l'unique principe qui fait agir les hommes]* est vrai, elle est une puérilité et une abstraction métaphysique d'où il y n'y a aucun résultat pratique à tirer, puisqu'alors, elle équivaut à dire que *l'homme ne désire que ce qu'il désire*. (Turgot 1773, 637-638).

An example of the analysis that Turgot demands of moral science appears in *Mémoire sur les Mines et Carrières* (1764). Turgot would explain that individuals have been able to find a rule of justice that makes ownership compatible with the interests of society: work has been established as a natural criterion of equity which converts occupation rights into ownership rights (Turgot 1764, 367). This convention means that some self-imposed limitations, considered to be justice, regulate the "amour de soi" to generate a general utility (Menudo 2010).[16] In the fields of politics, the decision-making process is a collective method of discovering the truth for Turgot (Baker 1975). In this case, his critique falls on those who consider collective choice to be a sum of individual electors, without considering problems of equality, aggregation or symmetry. In *Observations sur la mémoire de M. de Saint-Péravy*, Turgot would be especially critical of the supposed theorists of aggregate behaviours so frequently used by physiocrats. For François Quesnay, individuals can both perceive moral rules and learn how to follow them — moral freedom is synonymous of intelligence and antonymous of animal freedom.[17] Thus, the results of the works in the field of Logic may be directly used in moral and political matters because there are no collective decision-making processes — i.e., being a rational subject is sufficient. Turgot's political science works look for the principles of organisation, representation and deliberation that rational decisions ensure, that is, for "l'utilité générale de la société." *Mémoire sur les Municipalités* (1775) is an example of research in the field of political science. For decision-making in tax matters, Turgot suggested a system of collective choice, via local assemblies and with votes distributed among the individuals — i.e., not between groups or classes — according to census-based suffrage rules — one vote for every 600 pounds in revenue.

In short, the causation obtained through reason cannot be incompatible between fields of knowledge. *Arbitrary rationality* in the field of logic is compatible with the necessary innovation in the field of history, while the collective choice voting system of politics is compatible with the tax base in the science of commerce.

2.2. The Science of Commerce

[16] The "utilité générale de la société" refers to the compatible relationship between natural rights, and not to an utilitarian concept of welfare, since decisions are not justified by the general utility that they generate, but by the place from where the principles supporting them stem — human nature — and by being obtained through reason (Vergara 2008).

[17] Only those who do not have access to reason remain outside of justice and freedom: "dans l'ordre moral les enfants, les fous, les imbéciles ne sont pas libres." (Quesnay 1747, 157). See Gilles & Berlan (1991), Steiner (1998) or Banzhaf (2000).

Turgot did not pay particular attention to the term that studies economic relations in his first works or in his last works. Initially, Turgot opted to use *commerce*, in a sense that included the totality of the economic production, by suggesting defining its principles (Turgot 1753-4, 376) and, in other cases, to use *œconomy* to refer to the set of economic activities.

> En politique comme en économie [œconomie], la terre est la seule richesse réelle et permanente ; quoiqu'il soit vrai qu'un pays peu étendu puisse quelquefois, par l'industrie de ses habitants, l'emporter sur un pays beaucoup plus vaste dans la balance du commerce et de la politique, telle est la Hollande ; mais d'autres pays n'ont qu'à vouloir. (Turgot 1755, 454).

The terms *science of commerce* and *political economy* were used in that era and have been recognized by the literature as terms to refer to economic science[18]. More specifically, the expression *political economy* was rather rare in the mid-18th century[19]. The publicity of the term comes from *l'Encyclopédie* by Denis Diderot and Jean D'Alembert (Piguet 2002; Salvat 2006). When Rousseau published his entry *économie* in 1755, the fields of knowledge assigned were ethics and politics[20]. But a year later, *political economy* appeared as a domain in various articles in *l'Encyclopédie* —*fermiers, finances, grains, intérêt*, *mendiant*, *rentier*, *sel*, *spinhuys* and *rasphuis*. The reasons for this change are still unknown, but it is clear that this sense of field of knowledge for new concerns, still undefined, was that used by Turgot in this paragraph.

> … s'occuper de **la science du négoce** en négociante, ce n'est encore qu'une partie de la **science du commerce**. Mais découvrir les causes et les effets de cette multitude de révolutions et de leurs variations continuelles; remonter aux ressorts simples dont l'action toujours combinée et quelquefois déguisée par les circonstances locales dirige toutes les opérations du commerce; reconnaître ces lois uniques et primitives, fondée sur la nature même, par lesquelles toutes les valeurs existant dans le commerce se balancent entre elles et se fixent à une valeur déterminée, comme les corps abandonnés à leur propre pesanteur s'arrangent d'aux-même suivant l'ordre de leur gravité spécifique; saisir ces rapports compliqués par lesquels le commerce s'enchaîne avec toutes les branches de **l'économie politique** (…) ; enfin démêler, dans les hasards des

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[18] Steiner (1997) outlined, in the mid-18th century in France, three trends of economic thought and three terms: i) *economía* denoted the administration of the recourses of a certain social group and would be used in diverse articles published in *Journal Œconomique* (1751-1772), ii) the *science of commerce* was the proposal by a group associated with Vincent de Gournay to make the knowledge of the economic activity of a specific time available to economic policy, iii) and lastly, the physiocratic authors used the term *political economy* to refer to the science that sets out a systematic study about the economic activity. This last meaning would not be used by Turgot because, although he attended the meetings at Quesnay's *Entresol* from 1756 (Charles & Théré 2011) and influences can be observed in this *Éloge* (Schelle 1913-23, I: 75), the term *political economy* was not used to define the new science of physiocrats until the appearance of Mirabeau's *Philosophie rurale* in 1763 (Steiner 1998).

[19] Antoine de Montchrétiene used the term in the title of his work *Traicté d'œconomie politique* (1615). It appears to have been a hapax because the term does not appear in the text or in publications from the 17th and first half of the 18th centuries (Perrot 1992) and there is no definition for a field of knowledge called *political economy* in the dictionaries of Fouretière or Trévoux (Piguet 2002; Salvat 2006).

[20] In 1758, Jacob Vernes published an offprint of Rousseau's article titled *Discours sur l'économie politique*. Although the term does not appear inside, from that time on Rousseau would refer to his article as *économie politique* (Bernardi 2002).

> événements et dans les principes d'administration adoptés par les différentes nations de l'Europe, les véritables causes de leurs progrès ou de leur décadence dans le commerce, c'est l'envisager en philosophe et en homme d'Etat. (Turgot 1759, 124, *my emphasis*).

It was indeed in this *Éloge* to his teacher Vincent de Gournay that Turgot wrote about the scope and method of economics. He explored its content in greater depth by explaining the construction project of Gournay's science of commerce. In this text, Steiner (1997) identifies the characteristic distinction between the science of merchants, interested in commercial flows, and political economy, such as the science of the legislator dedicated to discovering their causes. Spector (2006) prefers to use the distinction of knowledge, between an old and practical savoir-faire, which gives form to the science of commerce, and an economic knowledge, still in formation, which is theorized by philosophers and statesmen. The problem with both interpretations is that they do not respond to the three-way distinction made by Turgot between the science of business, the science of commerce and political economy.

As a starting point, Turgot summarised the principles of his master to perform this task: the existence of a maxim and the results of his professional experience.

> Ces principes, qu'on qualifiait de *système nouveau*, ne lui paraissaient que les maximes du plus simple bon sens. Tout ce prétendu *système* était appuyé sur cette maxime, qu'en général tout homme connaît mieux son propre intérêt, qu'un autre homme à qui cet intérêt est entièrement indifférent. De là, M. de Gournay concluait que lorsque l'intérêt des particuliers est précisément le même que l'intérêt général, ce qu'on peut faire de mieux est de laisser chaque homme libre de faire ce qu'il veut. Or, il trouvait impossible que dans le commerce abandonné à lui-même l'intérêt particulier ne concourût pas avec l'intérêt général. (Turgot 1759, 130-131).

This maxim, entitled *théorie du spéculateur indifférent*, became an argument to limit economic intervention (Turgot 1759, 135). Turgot shared the problems generated by interference in the economic processes described (Turgot 1753-4, 384), but *laissez-faire* alone does not explain economic relations. We must find the principles that collectively associate individual decisions because according to Turgot, Gournay's arguments are part of the field of logic, where concepts such as judgement and local knowledge are analysed.

> Il est inutile de prouver que chaque particulier est le seul juge compétent de cet emploi le plus avantageux de sa terre et de ses bras. Il a seul les connaissances locales sans lesquelles l'homme le plus éclairé n'en raisonne qu'à l'aveugle. Il a seul une expérience d'autant plus sûre qu'elle est bornée à un seul objet. Il s'instruit par des essais réitérés, par ses succès, par ses pertes, et acquiert un tact dont la finesse, aiguisée par le sentiment du besoin, passe de bien loin toute la théorie du spéculateur indifférent. (Turgot 1759, 135).

Turgot had dealt with these matters in his article *Existence* (1756)[21]. But local knowledge and judgement are based on the relationships between objects and the

[21] Individual judgment is a representative expression of the influence objects have on individuals with capacities – imagination and experience – to form, verify and reconstruct their ideas. Hence, individuals with similar senses will discover, soon or later and by comparing their hypotheses, the same relations (Turgot 1756a, 523).

individual. What happens when we include the relationships of other subjects with the individual? As we have seen, the method of operations of understanding is not appropriate to tackle collective problems. Therefore, Turgot distances himself from this formula of Gournay and points out that *science of merchants* is only part of the science of commerce (Turgot 1759, 124)[22]. This practical knowledge does not allow "complex relationships" that go beyond the existing field to be discovered for the rational subject and, as a consequence, "la science de tous les détails particuliers" leads to contradictions (Turgot 1753-4, 382)[23].

> Comme il ne pensait nullement à faire un système nouveau, il se contentait de développer, à l'occasion de chaque affaire en particulier, ce qui était nécessaire pour soutenir son avis ; mais on ne fut pas longtemps sans être frappé de la liaison et de la fécondité de ses principes, et bientôt il eut à soutenir une foule de contradictions. (Turgot 1759, 140)

It would be the *science of commerce* that would study the collective relationships of a field of knowledge (or domain) called *political economy*. There we find the operations of all the public and private actors in all sectors of activity to find those unique laws that enable us to understand the causes of progress or the decline of economic activity (Turgot 1759, 124). This holistic view presents a sense of independence of an individual will, and as a result are processes qualified by Turgot as opposing forces, complex relationships, continuous variations or associations. By definition of the scientific field, the individual needs to be minuscule in the social phenomena that study the science of man. Not only to advance the claims of the system and the relationships defining it, but also to prevent the process form being subject to the control of one of the participants.

This is the task undertaken by Turgot to explain, for example, exchange. It consists of a collective decision process that determines the value of a good. In *Plan d'un ouvrage sur le commerce* (1753-4), *Valeurs et Monnaies* (1769) and *Réflexions* (1766), Turgot develops six different types of exchange, from the most simple case to the most general.[24] The latter consists of various individuals with several goods to explain a collective process of conflict of interests, known as *concurrence réciproque*, between buyer and seller, between patience and need and between agents pursuing the same objectives: "Dans la concurrence réciproque entre les vendeurs et les acheteurs, le prix est fixé par le débat entre la totalité de vendeurs, d'une part, et la totalité des acheteurs, de l'autre, au lieu de l'autre par le débat entre deux personnes seulement." (Turgot 1753-4, 383). The competitive market is a collective decision-making process that reflects a conflict of interests in relation to a

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[22] In the text, distinctions between commerce and political economy are frequent: "… il n'est presque aucune question importante, de commerce ou d'économie politique, sur laquelle il n'ait écrit plusieurs mémoires ou lettres raisonnées." (Turgot 1759, 145; see also p. 142).

[23] A similar argument is used by the philosophers —Diderot, Grimm, Galiani and Mme d'Épinay— to reject that political economy, and specifically the physiocratic proposal, is an autonomous science. The economic principles create a practical knowledge of producers who seek immediate usefulness, compared to the philosophers' profound view which relates economic activity and the other phenomena (Abrosimov 2008, 260-61).

[24] Turgot presents three different isolated exchanges, a multiple exchanges (several individuals with several commodities) and an inter-temporary exchange (present against future goods). See Groenewegen (1970).

certain amount of goods. The result is called "common price" because it expresses the decision, of all and for all, on the value of a good.

In short, the principles explaining the collective decision-making process in the field of economic relations are the subject of study of the science of commerce. Contrary to Gournay, Turgot acknowledged the existence of conflicts in the social order because we access the principles of natural order through a slow process of scientific discovery. The human spirit progresses because, accumulatively, the sciences advance slowly, and with errors, to enable us to understand more principles of natural order.[25] In fact, guaranteeing the lack of conflicts between fundamental natural rights would guide all the measures of economic policy undertaken during Turgot's public responsibility tasks (Rothschild 1992).

3. Corollary: Causes of the Rise of Economic Science

Given the time at which Turgot wrote his texts on scientific methodology, the history of science and epistemology, some reflections on the debate about the birth of economic science can be set out. Spector (2006) and Skornicki (2014), among others, summarised the discussion, distinguishing between a political science approach, including the republican readings of *civic humanism* that presents the appearance of economic science like another chapter of the history of political thought,[26] and the perspective based on *economic philosophy*,[27] where the "new science" emanates from the interdisciplinary assembly of concepts to propose another way of doing politics.

Firstly, economic science does not belong to nor stem from any general discipline of knowledge according to Turgot's taxonomy. Therefore, the rise of the economy is not a stage in the history of politics or ethics, but the consequence of a fully recognised domain in the mid-18th century. Precisely, debates about the term to refer to the new science occur because the field of knowledge is defined or, at least, agreed between authors.[28] Without paying any attention to the debate about terms, Turgot entered the debate about domains with *philosophers* and with his master in *Eloge à Gournay*. In the face of the challenge of a new science that enables the statesman to use the "science du négociant" for the nation's progress, Turgot demonstrated caution because this practical knowledge was incomplete for such target. Faced with the critical opinion of the philosophers, Turgot assigned this task to the *science of commerce*, a philosophical knowledge because it encompasses all the

[25] On this basis, more complex social relationships can be developed with a limited but effective control over progress. Although in the initial stages, passions, both "douces" and "tumultueuses", had a main role in the generation of knowledge (Turgot 1750b, 168).

[26] See Hont & Ignatieff (1983) or Whatmore (2000).

[27] See Perrot (1992), Steiner (1998), Faccarello & Steiner (2008) or Cheney (2010).

[28] Together with *l'Encyclopédie* by Diderot and D'Alembert, we can add other famous refereces as Mirabeau's *L'amie des hommes ou traité sur la population*: "Cette opération très-mal digérée en foi, puisque le seul & unique principe de la véritable économie politique est de laisser tout libre & procurer ainsi l'abondance, qui seule fait baisser efficacement les prix" (Mirabeau, 1756, I : 157). Etienne-François Geoffroy also included Melon's *Le Journal Œconomique*, *Essai sur le commerce* and Savary's *Dictionnaire du commerce* in the section called "Science et Arts: Logique, Moral, Œconomie, Politique et Physique" (Geoffroy 1754, 7)

phenomena that have taken place in the domain known as *political economy*.[29] This explains why, in Éloge de Gournay, Turgot angrily criticizes contemporary philosophers for their methods — i) lack of observation, ii) use of hasty analogies to turn particular facts into principles, iii) the universality of a hasty and biased analysis, iv) tackling the variety of nature with limited and arbitrary methods.

Secondly, the analysis of Turgot's works presents an author who is clearly part of the assembly of concepts grouped together under the term *economic philosophy* and especially involved in the creation of a specialised language. Turgot's multidisciplinary works depict scenes of discussion that are very removed from the political arena. The authors are grouped together with criteria that are better explained from the sociology of science than from the history of political thought. The debates focus on types of knowledge, on the independence of disciplines and on the possibility of a specialised language, while the association of authors — Spinozists, Cartesians, Leibnizians, philosophers, idealists — is performed from the history of science.

Lastly, Turgot forces us to consider members of the public administration in the debate on the rise of economic science, an element that was alien to economic philosophy and to civic humanism, as generators of economic science. Turgot was a man of action, with an active political life, and a man of science, as we have seen. But he also was part of the public administration. This group, barely present in the literature on the rise of economic science, shall require further study.

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[29] Cavanaugh (1968) supports that Turgot is referring to Hélvétius. Regarding the arguments used by the philosophers to reject political economy as a science, see Abrosimov (2008).

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