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## AS RAÍZES ONTOLÓGICAS DO *HOMO ECONOMICUS*

ONTOLOGICAL ROOTS OF *HOMO ECONOMICUS*

RAÍCES ONTOLÓGICAS DEL *HOMO ECONOMICUS*

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### RESUMO

O objetivo deste artigo é identificar as origens ontológicas do *homo economicus* no atomismo moderno para fornecer uma visão mais ampla de suas origens. O *homo economicus*, o agente econômico autônomo e independente, tem sido a pedra angular central das análises nas teorias econômicas ortodoxas, sendo também uma das hipóteses mais criticadas. A maioria dos estudos tenta compreender suas origens e consolidação na Economia analisando o papel do modelo hipotético-dedutivo de raciocínio e das influências da filosofia utilitarista nos economistas. No entanto, argumentamos que as raízes ontológicas do *homo economicus* são uma condição necessária para entendê-lo, uma vez que é a força primária para construir qualquer ciência. O agente representativo na Economia pode ser rastreado até o ressurgimento do atomismo como fundamento ontológico da ciência moderna, o que levou ao estabelecimento do individualismo e reducionismo modernos.

### PALAVRAS-CHAVE

Atomismo. *Homo economicus*. Ontologia.

## ABSTRACT

The aim of this paper is to identify the ontological origins of *homo economicus* in modern atomism to give a bigger picture of its origins. *Homo economicus*, the autonomous and independent economic agent, has been the central cornerstone of analysis in orthodox economic theories, and one of the most criticized hypothesis. The majority of studies try to understand its origins and consolidation in Economics analyzing the role of hipothetico-deductive model of reasoning and utilitarian philosophy influences in economists. However, we argue that the ontological roots of *homo economicus* are a necessary condition to understand it, since is primary force to build any science. The representative agent in Economics can trace to the resurgence of atomism as the ontological foundation of modern science, which lead to the establishment of modern individualism and reductionism.

## KEYWORDS

Atomism; *Homo Economicus*; Ontology.

## RESUMEN

El objetivo de este artículo es identificar los orígenes ontológicos del homo economicus en el atomismo moderno para ofrecer una visión más amplia de sus raíces. El homo economicus, el agente económico autónomo e independiente, ha sido la piedra angular central de los análisis en las teorías económicas ortodoxas, y una de las hipótesis más criticadas. La mayoría de los estudios intentan comprender sus orígenes y consolidación en la Economía analizando el papel del modelo hipotético-deductivo de razonamiento y las influencias de la filosofía utilitarista en los economistas. Sin embargo, sostenemos que las raíces ontológicas del homo economicus son una condición necesaria para entenderlo, ya que es la fuerza primaria para construir cualquier ciencia. El agente representativo en Economía puede rastrearse hasta el resurgimiento del atomismo como fundamento ontológico de la ciencia moderna, lo que llevó al establecimiento del individualismo y reduccionismo modernos.

## PALABRAS CLAVE

Atomismo. Homo economicus. Ontología.

## 1 INTRODUCTION

Throughout history, economists tried to formulate necessary and sufficient axioms and hypothesis to build a proper way to investigate the economics relations in modern society. Following the steps of the so-called *hard sciences*, like Physics, Economics, previously Political Economy, incorporated the ontological and epistemological foundations of modern science, i.e. atomism and reductionism (PRADO, 2011).

One of the main results of this worldview was the construction of hypothetical economic agents that act in hypothetical conditions. More than that, the representative economic agents are autonomous and independent from the others, always pursuing its own benefits and maximizing utility. The later, utility, has been one of the main focus to understand this economic agent, baptized by Vilfredo Pareto as the *homo economicus*.

By focusing on methodological and normative ethical theories to understand the rise and consolidation of *homo economicus* as one of the foundations of economic analysis, ontological origins of the economic agent has been neglected. In a recent awarded paper, for example, Bee and Desmarais-Tremblay (2023) focus on the importance of hypothetico-deductive method and utilitarian philosophy to trace the origins of *homo economicus*.

We believe that ontological foundations of *homo economicus* is a priority to understand its importance to Economics, since the ontological background dictates the methodological directions of scientific analysis. And this can only be reached understanding the constitution of the ontological basis of modern science, namely modern atomism, which lead to reductionism.

Thus, the aim of this paper is to highlight the ontological foundations of *homo economicus* by addressing the constitution of atomism as core worldview of modern science. To do this, we will present the main elements for the rise of modern science and its critique of pre-modern ontology, presenting the resurgence of atomism as the ontological basis of modern scientific inquiry. After that, we presented its influences in economic thought for the establishment of *homo economicus* as the representative economic agent.

## 2 THE SCIENTIFIC REVOLUTION AND MODERN ATOMISM

Pre-modern science, hegemonically established from the Aristotle thought (384 BC-322 BC), was based on the understanding of an ontological duality between the earthly and celestial worlds, each endowed with different matter and laws of motion. Additionally, Aristotelian science was qualitative and non-mathematical, perceiving reality as possessing value, harmony, and perfection. Cause-and-effect relationships had a teleological content. Physical phenomena in reality were explained based on the most immediate human experience: a clear example of this is the perception of the Earth's immobility, which underpinned the geocentric cosmology (Porto, 2009).

The most important aspect for us, however, is to understand that Aristotle developed a holistic conception of the world, where individuals are subordinate to a hierarchized cosmos, with each element in a position that is natural to it. With attributes such as these, this pre-modern science established itself as the hegemonic knowledge for over eighteen centuries in explaining reality until the advent of the modern period (Reale, 1985).

Against this worldview, the great figures of the Scientific Revolution in the modern period fought their battle. Some changes that occurred were: a lack of concern for issues of value and harmony, the need to abstract the qualities of objects under analysis, the understanding that the universe is made of the same substance and subject to the same laws of operation, the systematic use of mathematics, the use of controlled experiments, formulations of general laws etc.

From this new standpoint, the foundations of science undergo a reorientation in the modern period. The principles of this perspective of science, commonly referred to as mechanics or classical, in reference to classical physics, are primarily based on atomism and reductionism. It is in these principles that one can trace the ontological roots of the *homo economicus*. However, it is first necessary to understand the historical backdrop of the transition to this worldview, which begins in the Renaissance.

The European Renaissance is characterized by the urban, commercial, and cultural revival in the Mediterranean basin. It is a multidimensional and multiseccular phenomenon. While the Middle Ages represented a period of darkness for civilization, the Renaissance symbolized the resurgence of enlightenment initiated in Classical Antiquity. The flourishing of cities, urban development, commercial revival, and the development of instruments that facilitated communication (such as the movable-type printing press) were some of the prerequisites for creating a conducive environment for free inquiry and the dissemination of knowledge.

During the Late Middle Ages, profound social and economic transformations took place, particularly in Western Europe. The feudal economic core underwent a progressive decline with the expansion of commercial activities. National states began to emerge during the transition from feudalism to capitalism. Cities flourished, and a new class, the bourgeoisie, appeared, carrying the seeds of the destruction of the old world.

In the words of Coutinho (2018, p. 123):

Now, it is in these cities, especially in the Italian ones, that the Renaissance begins and finds its greatest flourishing. All these cities have a significant, even dominant, presence of mercantile and banking capital. In them, trade is the primary economic activity, bringing them into contact with different cultures. Moreover, or perhaps because of this, they are also societies with significant internal social mobility, where enriched bourgeoisie individuals hold as much or even more influence than the old rural nobility. In these societies, the more active members of subordinate classes can aspire to upward social mobility. In short, the Renaissance is an expression of the emergence of a new social class, the bourgeoisie, to which one belongs not by birth but as a result of social mobility and merit. (It is evident that this mobility diminishes or even disappears as capitalism consolidates).

This “renaissance” relates to these commonalities with classical ancient Greece, but the fundamental factor is that the emerging new society, unlike the Greek world, strengthens itself through commercial expansion. While in the Greek world, commercial expansion was synonymous with decline, as beyond the limits of the Greek city-state were the “barbarians” and the “uncivilized,” for the nascent capitalist society, it was a factor of strength and progress. This is one of the reasons why Greek cosmology favored as a principle a closed, spherical, and cyclical universe: “The narrow limits of the Hellenic city-state lead to the idea of a closed world” (Coutinho, 2018, p. 123).

During the European Renaissance period, in contrast, mercantile expansion was a fundamental factor in the formation of the capitalist social structure that was taking shape. It was during this period that overseas expansion began in pursuit of the formation of the world market. Unlike the social formation of the Greek world, capitalism “points to the commodification of the entire world, to the creation of a world market” (Coutinho, 2018, p. 124). In this context, it becomes possible to assert an infinite universe, without a center, in contestation of the geocentric cosmology.

A principle of extreme novelty and importance in the transition to modernity is the idea of an infinite universe. Another unprecedented and fundamental principle is the conception of individual autonomy. That is, the human being, the “man,” as an autonomous and free being in an infinite universe. The inflexible hierarchy of the estate in feudalism is broken, giving way to the condition of an individual capable of social ascent (although only in principle). The emphasis on the autonomous and free individual is closely connected to the formation of modern atomistic ontology in physics.

In contrast to feudalism, there is no social condition *ad aeternum* at birth: “someone born poor can become rich, a craftsman can become an entrepreneur, or an impoverished noble can engage in trade” (Coutinho, 2018, p. 124). The notion that “man is free, that he can exert effort and elevate himself socially through his merits and develop his personality in an infinitely open world, is the theoretical expression of real possibilities contained in the early bourgeois mercantile economy” (Coutinho, 2018, p. 124).

It is in this realm that the struggle against geocentrism is also a hegemonic battle between worldviews. It is a battle fought between the Aristotelian cosmology of a finite universe centered on Earth, enveloped by spheres, and the new worldview of infinitude and the autonomous and free individual (Coutinho, 2018).

Or rather, a battle between the feudal, aristocratic, and religious worldview against the new bourgeois worldview: “a battle for the truth of experience and reason against the authority of the Bible and the Church” (Coutinho, 2018, p. 125). Furthermore, it is a clash between the “new bourgeois view of the world (which asserted the existence of the free man as the center of an infinite universe) and the old aristocratic-feudal conception (which assigned man a fixed and predetermined place in a hierarchical and closed universe)” (Coutinho, 2018, p. 125).

With these characteristics, the European Renaissance marks a new historical stage of social development, where all aspects of social activity are transformed. For example, the commercial and cultural flourishing at its inception enabled the poetic and novelistic blossoming of names such as Francesco Petrarca (1304-1374) and Giovanni Boccaccio (1313-1375). From a general perspective, there is a radical transformation in how space is conceived, now open and infinite, with the human

being autonomous and free. This position developed throughout the Renaissance through influential thinkers such as Nicholas of Cusa (1401–1464) and Giordano Bruno (1548–1600), for instance.

More than that, the humanist tradition that developed among Renaissance thinkers enabled a fundamental shift in the position of human beings in relation to reality. In antiquity and the medieval period, the human position in the cosmos was one of *vita contemplativa* (contemplative life), i.e., a passive position. In the European Renaissance, the axis of this position changes radically to *vita activa* (active life), i.e., an active position of transforming reality (Koyré, 1957; Henry, 2002).

It is with the so-called Scientific Revolution of the modern period that the foundations of the atomistic worldview (ontology) take shape and influence the individualistic perspective of the modern era. The Scientific Revolution was a phenomenon that occurred in Western Europe between the 16th and 18th centuries, culminating in the establishment of modern science and its institutional, methodological, and experimental structures. As a result of a lengthy process of formation, prominent figures such as Galileo Galilei, René Descartes, and Isaac Newton laid the groundwork for the development of modern scientific thought (Henry, 2002).

As stated by Henry (2002), the Scientific Revolution is the term given to the period in European history that first establishes the conceptual, methodological, and institutional framework of modern science as we know it today, and the period marking this process of constitution varies between the 16th and 18th centuries.

The fact is that between 1500 and 1700, Western Europe underwent profound economic, social, and cultural transformations, significantly altering the way the natural and social world should be conceived, as well as “be studied, analyzed and represented, and many of these developments continue to play a significant part in modern Science” (Henry, 2002, p. 1).

One of the elements of the new scientific worldview of the modern period, coupled with the matematization of reality and the abstraction of object qualities, is the reconstitution of the atomistic worldview from Classical Antiquity. Although ancient atomism has a vast and diverse tradition with authors such as Democritus and Leucippus, modern thought has revived its core assertion that all materiality in the world is constituted by ultimate, indivisible, and immutable elements: the atoms (Prado, 2011).

According to Prado (2011), the atomistic view of the world, in general, understands that reality is formed by the different combination of indivisible atoms. The structures of the world are nothing more than atoms fitted together and aggregated in different ways. It is this worldview that will mark the establishment of modern physics from the 17th century onwards, with figures like Newton understanding that matter consists of elementary particles, formed by atoms.

The indivisible entities, the atoms, are autonomous and independent, which, through mechanical fittings, form the structures of reality. What derives from such a worldview is that to understand any object, it is necessary to decompose that object into its simplest elements, and then it is possible to explain the whole through the simple analysis of its parts. That is, atomism requires reductionism. This will be decisive in influencing the emergence of the representative economic agent in the 19th century.

The resurgence of the atomistic worldview in the modern period had some of its most prominent advocates among authors of modern individualism such as Thomas Hobbes and John Locke. For these authors, there would be an innate and immutable human nature, where the fundamental core of indi-

viduals' actions was the pursuit of their self-interest. Individuals, much like atoms, are autonomous, independent, and relate only externally. This means that, although inserted into a specific set of social relations, individuals do not undergo changes in this elemental behavior when interacting with other individuals (Udehn, 2002).

According to Udehn (2002), the individual, therefore, possesses a fixed human nature, with motivations and interests independent of relations with others, always acting to maximize personal and private interests at the expense of the collective. Thus, the individual has a pre-established configuration that is independent of the societal whole.

Since individuals are, therefore, homogeneous, meaning they all possess a given human nature, it is natural to assume that the analysis of society can be conducted through the simple analysis of the individual. That is, an atomistic worldview necessarily leads to a reductionist position in scientific analysis: society can be investigated through its simplest elements, the individuals. This atomistic and reductionist perspective for the analysis of society became known as *methodological individualism* (Udehn, 2002).

The modern atomism, as a general ontology, seeks to understand reality as a collection of autonomous and independent entities. These entities have fixed qualities that do not depend on relations with other entities. They are petrified parts in their autonomous properties and qualities that, in their aggregate, explain the whole. From a physical standpoint, any system is thus reduced to the different combinations and movements of elements with permanent and homogeneous properties and qualities. From a social perspective, as we will see, it is grounded in conceiving society as a collection of independent individuals with permanent and immutable properties and qualities that relate only externally (Hodgson, 1993).

According to Hodgson (1993), however, this view is closely linked to the transition to capitalist society. Capitalist social relations, based on individualism and competition, favored the development of worldviews that seek to justify certain social relations, such as the idea of a fixed human nature and the notion of the individual who maximizes their private interests. It is from views on the individual like these that political economy will be influenced in constructing the representative economic agent.

### 3 THE BIRTH OF *HOMO ECONOMICUS*

From the 18th century onwards, with the hegemony of economic liberalism, individualism took on an economic dimension, being associated with the idea that the individual is the best judge of their own interests and that the sum of these individual choices results, unintentionally, in the general well-being of society. Views like these had already established themselves in the 18th century with classical liberal thought and various authors of the time, such as Bernard Mandeville and his work *The Fable of the Bees: Or Private Vices, Public Benefits*, published in 1714 (Udehn, 2002).

However, this conception gained greater prominence with the metaphor of the invisible hand presented by Adam Smith (1723-1790) in his work *The Wealth of Nations*. Earlier, in *The Theory of Moral*

*Sentiments*, Adam Smith addresses modern individualism by discussing the pursuit of self-interest by individuals and its relationship to social well-being. Smith argues that the pursuit of self-love is a fundamental motivating force in society because it would be a reconciliation between private and collective interests, aiming to favor social order, reconciled with social well-being through the balance between selfishness and sympathy, foundations that guide human conduct in society (Smith, 1996).

In the modern period, the generally and hegemonically accepted notion was that individuals possessed a fixed, permanent, and universal human nature. Consider, for example, the methodological architecture presented by Smith in *The Wealth of Nations*, where the central point of analysis is an innate tendency, like an inert human nature, towards bargaining, exchange, which necessarily leads to a mercantile society, with the division of labor as the driving element that exponentially increased wealth in modern society (Smith, 1996).

Although Veblen credited Smith with the birth of the *homo economicus*, the latter had a much more complex position on human conduct in society than what later crystallized in the *homo economicus*. According to Bee and Desmarais-Tremblay (2023), the birth of the economic man in modern economic theories would be officially recognized at the end of the 19th century, but its constitution would take decades before that.

According to the authors, it is with the work of John Stuart Mill that the debate around modern individualism materializes in the formation of what later became known as the *homo economicus*, that is, a universal prototype of human behavior attempting to abstract the complexity of individual behavior into a basic unit in economic decision-making.

In *On the Definition and Method of Political Economy*, Mill laid the initial methodological groundwork for the later development of the *homo economicus*. Mill (2007) asserts that the foundation of political economy is dealing with human desires. These desires can be reduced to the utilitarian maxim in the economic sphere: humans always desire to possess more wealth than less wealth. That is, political economy abstracts all other forms of non-economic activity with the aim of exclusively focusing on individuals' desire to possess more wealth.

Although he never named his representative economic agent, since individuals possess an inherent human nature, Mill asserts that all individuals can be homogenized into a single archetype of human behavior. Economic laws, understood as natural laws, would emerge from these individuals acting in self-interest to seek more wealth. According to Mill (2007, p. 42), political economy investigates “the laws that govern these various operations, assuming that man is determined, by the necessity of his nature, to prefer a larger portion of wealth to a smaller one in every case, without any exception”.

An important aspect for establishing the representative economic agent concerns the method guiding the scientific investigation of economics, and this is directly linked to why economic orthodoxy still employs the representative agent to this day.

Mill (2007) asserts that Political Economy is an abstract science grounded in a hypothetical-deductive perspective. In other words, political economy is a science that utilizes abstract and reduced hypotheses about economic reality, creating simplified hypothetical models with the aim of deducing the implications of agents' behavior and the economic system in this ideal theoretical framework. That is why



it is necessary and sufficient for political economy, as a science, to abstract all “passions” and “desires” of human beings, leaving only the universal and inevitable action of seeking more wealth for oneself.

This hypothetical-deductive position is also the root reason why contemporary orthodox economic theories still rely on a specific view of the representative economic agent, even though there is a vast amount of evidence supporting a more complex human behavior in the economic realm. The point is that a scientific position like Mill’s naturally led to the establishment of a specific and universal human behavior, laying the groundwork for the subsequent emergence of the homo economicus.

Bee and Desmarais-Tremblay (2023) state that it is through Mill’s characterization of the economic agent that the idea of *homo economicus* takes shape, becoming the universal representative agent of orthodox economic theories. Following a lengthy process of utilization and refinement, the ideal economic agent is labeled in the 1870s in England as the *economic man* and in France as the Latin version *homo economicus*. According to the authors, with the establishment of marginalist/neoclassical thought, the idea of the representative agent was widely used and popularized by prominent economists such as Vilfredo Pareto.

The so-called *Marginalist Revolution*, led by authors like Stanley Jevons, Carl Menger, and Léon Walras from the 1870s, reoriented the foundations of scientific inquiry in economics towards a closer alignment with the natural sciences. The goal was to transition to the construction of economics as a mathematically established, pure science, founded on the development of hypothetical-deductive models that ideally represent real economic relationships.

Approaching physics more clearly and decisively, the marginalists established differential calculus as the anchor of their models, abandoned the labor theory of value, and embraced the theory of utility value, a subjective perspective on value.

An important point for the establishment of the representative agent as the analytical anchor of orthodox economic thought since the genesis of the marginalist school is the decisive incorporation of the atomistic worldview that was hegemonic in modern thought since the scientific revolution of the 16th century. Since the natural reality is formed only by the combination of atoms that give rise to the structures of the world, social reality is also composed only of singular individuals, each with a given human nature. In this sense, they are the social atoms. Thus, all inquiry in economic science must be grounded in the analysis of the individual, endowed with specific and universal behavior in economic interactions.

According to Ganem (2012), the aim of the marginalists was to construct a pure and exact economic science. To achieve this, they needed to reorient several elements that had been established in political economy until then. This reconstruction of political economy, later becoming just Economics with Alfred Marshall, proposed that (1) mathematics (differential calculus) be the central language of political economy; (2) the theory of utility value (subjective); (3) exclusive focus on purely economic relations; and, most importantly, (4) abstraction of the qualities of individuals to conceive them as homogeneous.

In *The Theory of Political Economy*, W. Stanley Jevons initiates this process in the year 1871. According to the author, political economy should be understood as a mathematical science akin to the natural sciences, specifically physics. Additionally, the author establishes that his conception of the

economic system should follow the view found in the physical sciences, i.e., it can be decomposed into simpler elements. In other words, the author embraces atomism and reductionism for economic analysis. Economics, therefore, is merely an aggregate of individuals, and the focus of the analysis should be the individual in the abstract:

The laws we are about to delineate must be conceived as theoretically true for the individual; they can only be practically verified with regard to the transactions, productions, and consumptions aggregated from a large number of persons. But the laws of the aggregate depend, of course, on the laws that apply to individual cases. (Jevons, 1996, p. 48).

In *Principles of Economics*, also published in 1871, Carl Menger also directs his efforts towards the scientific reorientation of political economy. The construction of a pure and exact political economy needed to follow the path of the physical sciences of the time, that is, embrace atomism and reductionism. It was necessary to “reduce the complex phenomena of human economic activity to the simplest elements that can still be subjected to precise observation” (Menger, 1983, p. 46). These simpler elements of the economic system would be precisely the individuals, who, when modeled, would need to have their qualities and attributes abstracted to ensure maximum precision.

Léon Walras, in *Elements of Pure Economics*, decisively grounds the reorientation of political economy towards a pure, exact, and mathematically founded science, further aligning Economics with the natural sciences, specifically physics. The result of this new and completed stance is that the economic system would be nothing more than “the result of the actions of independent individuals (the social atoms) exclusively pursuing their self-interest, with market equilibrium achieved through the interplay of supply and demand, causing prices to gravitate around their equilibrium point” (Cerqueira, 2006, p. 692).

By reorienting the scientific foundations of political economy, the neoclassicals constructed a pure, mathematically grounded Economics, purging any elements not purely economic, such as values, the state, morality, and the heterogeneity of individuals. It was from this that the construction of the economic agent as “an abstract, atomized being driven by calculation, and that, through an automatic adjustment mechanism, produces equilibrium, a (precise) physical notion that replaces the (vague) notion of Smithian well-being was decisively realized” (Ganem, 2012, p. 151).

However, it was in 1900 that Pareto definitively defined the representative economic agent of a pure and exact economic science. According to the Italian:”

The abstraction based on the subject is the origin of what is called *homo oeconomicus*. This is an abstract being that retains only a small number of characteristics of real-world humans. If we adopt the perspective that pleasure is a quantity, man is reduced to a pleasure machine that seeks to obtain the greatest total sum of pleasure on each occasion. If we look at the issue from the standpoint of one of the choices, *homo oeconomicus* becomes a machine to affect these choices, and this machine, given the circumstances, constantly makes the same choice. (Pareto, 2008, p. 463).

The economic scientification, grounded in general equilibrium models and based on the mathematization and abstraction of real-world characteristics, is considered the core of economic orthodoxy. This perspective assumes perfect rationality of economic agents, ignoring the instability, uncertainty, and adaptive processes present in the real economic system. Although these methodological elements have achieved success in certain fields of natural sciences, their application in social sciences reveals problematic results, reducing society to isolated human atoms and neglecting the social, historical, political, and psychological conditions that permeate economic activities.

This scientific view has exhausted the understanding of the human world by reducing it to a single dimension of extension and quantitative relations. However, since the early 20th century, criticisms and new scientific approaches have emerged aiming to overcome the limitations of mechanical science, recognizing the need to consider the complexity, interaction, and unpredictability of social phenomena, adopting a scientific stance more suitable to reality.

The concept of *homo economicus* perpetuated hegemonically with neoclassical economic theory, which developed in the late 19th and early 20th centuries. Neoclassical theory is based on the idea that the economy is a market system where individuals act autonomously and rationally, seeking to maximize their utility and financial gains. In this context, the individual is viewed as a rational agent who always seeks to maximize their own interests, taking into account available information and budget constraints. The term represents an abstraction of human behavior, aiming to explain individuals' choices in terms of economic rationality. According to this perspective, individuals have well-defined preferences and make decisions consistently and logically, considering available information and budget constraints.

Neoclassical economic theory, grounded in the *homo economicus* concept, became dominant in economic thought throughout the 20th century. However, this perspective also faced criticisms and questioning from other fields of knowledge, such as psychology, sociology, and anthropology.

*Homo economicus* is, thus, closely related to modern atomist ontology, and its deconstruction begins precisely with the questioning of this reductionist worldview, especially with the development of systems theories. Although still hegemonic in economic orthodoxy, the representative economic agent arises from the acknowledgment of its ontological roots in the modern period, making it possible to understand and counter *Homo economicus* as a pillar of scientific analysis in Economics. Moreover, it is necessary to incorporate contemporary developments, not only regarding the behavior of the real economic agent, as Behavioral Economics has done (Thaler, 2019), but also in terms of ontological discussions such as those within systemism (Bunge, 2000).

## 4 CONCLUSIONS

As we stated, modern atomism, as a general ontology of modern science, is one of the main elements that can aggregate to the discussion to understand the bigger picture and influences for the rise and consolidation of *homo economicus*. The economic agent of economic orthodoxy can be traced not only to hypothetico-deductive model or utilitarian philosophy, but primarily by the constitu-

tion of modern atomism, which lead the posterior development of them.

The contemporary rival of atomism is systemism (system theory) which also lead for the current deconstruction of *homo economicus* and the rise of more complex economic agents in the economic models, like *agent-based models* of complexity science. However, again, as we stated, the overcome of the ontological view was the primary force to change the methodological and ethical position of economic agents in economic models and theories. This was just to state that the bigger picture can be comprehend if we add the ontological discussions, which are the primary force to scientific inquiry.

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