

## Social inequalities in the face of scientific and technological development: an antinomy or an historic problem?

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**Abstract** *This paper aims to conduct a conceptual analysis of the relationship between scientific and technical progress and social equality, or the reduction of inequalities. We examine this relationship by drawing on three theoretical perspectives: 1) ethical economics, championed by classical economic thinkers and centered on utilitarian self-interest, 2) Mainstream theories of economic development espousing the endogenous link between labor productivity growth and technical progress, 3) the critique of theories of economic development that emerged in the second half of the twentieth century, including Celso Furtado's critique of the theory of underdevelopment, emphasizing the prevalence of egalitarian tendencies, and ecological economics, which suggest alternative paths to those set by "classical" theories of development. The fundamental antinomy posed by the title of this article, characterized by an intrinsic contradiction between technical progress and social equality, strictly presupposes the ethical economics perspective, dominated by the social relations that constitute the "social order".*

**Key words** *Social/Economic inequality, Social/Economic conditions, Science, technology and society, Scientific and technological/Ethical activities*

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## Introduction

The explicit question posed by the title of this article indicates that there is a potential contradiction in the relationship between social equality and technical and scientific progress. That said, the purpose of this paper is to clarify and respond this fundamental question, for which we propose a critical path.

With this in mind, we draw on three theoretical approaches to unravel the contradiction implied in the title: the antinomic relationship between technical and scientific progress and social equality. The first is the ethical approach, which is historically contextualized within the ethical foundations of modern economics. The second is the economic development approach, a polysemic concept wherein the relationship between technical progress and equality is a haven of sorts for different theoretical concepts. However, it is important to note that any discussion of ethics, which also underlies development theory, involves making political choices regarding the “fair” distribution of the fruits of technical progress. This is because endogenous economic growth does not in itself ensure fairness, but rather leads to skewed distribution.

Fittingly, the third approach focuses on social equality, which, to a certain extent, is implicit in the other two approaches, but requires conceptual explicitation, for which we draw on historically contextualized theories of justice. We explore, alternatively, criteria relative to equality, or the correction of inequalities or distributive justice that most adequately conform to a social paradigm of solidarity. On basis of this ethical approach, we consider the human development theory, which is capable of elucidating the fundamental antinomy raised by this article: social inequality and technical progress.

By comparing these different theoretical approaches, the article goes on to develop a hermeneutic framework that is capable of responding the question implied in the title in a non binary manner.

### Conceptualizing and problematizing tensions: the ethical approach

The inverse relationship between social equality and scientific and technical progress implied by the title of this article begs us from the very outset to conceptualize the historical and ethico-philosophical setting within which this relationship poses a problem. Two approaches are

particularly useful for this purpose: a) the first seeks to conceptually unravel this relationship, paying special attention to the antinomic aspects of the dynamics of technical progress and social equality in contemporaneous capitalism; b) the second discusses the conditions of possibility for the reconceptualization of this relationship from the perspective of social justice and liberty. For both approaches, the ethics of human actions geared towards ends is explored: in the first case as a problem, given the approach’s complete submission to the utilitarian norms as the only admissible guidance for the behavior of the rational “homo economicus”; while in the second case, human needs and theories of human development are examined, clearly implying a paradigm shift in scientific thinking that pursues an amicable relationship between technical progress and social equality.

The transition from approach ‘a’ to approach ‘b’ and the possible conciliation (or lack of) are open questions. These questions will be discussed on focus of development and social equality approaches, that are matter in sequence

### The Ethical Foundations of Technical Progress and Social Inequality

Utilitarian and individual ethics relative to modern production methods (the division of labor, manufacturing, machinery, and large-scale industry) espoused by the founders of modern economics may be considered the driving force behind the progress brought about by the industrial revolution at the end of the eighteenth century in England. The economic success of the marriage between individualistic (utilitarian) ethics and technical and scientific progress, the driver of the “wealth of (capitalist) nations” in the nineteenth and twentieth centuries, is also the effective cause of the endogenous social inequality inherent in this system. The social forces operating in the political spaces that seek to redress or neutralize this contradiction confirm this.

The ethical foundations of contemporary economics embraced by the various strands or schools of thinking that pass the baton of so-called “normal science” are underpinned by the conduct of “homo economicus”, who is motivated by self-interest or utilitarian selfish behavior, the driving force behind material progress.

The central tenet of the various schools of economic thought, from the classical school and Marxism, to the neo-classical (neo-liberalism), Schumpeterian, and Keynesian schools, and ev-

ery generation of “neo” thereafter, is that the economic agent is made in the image and likeness of an accumulating animal motivated primarily by the utilitarian drive<sup>1</sup>.

Thinkers of classical ethical economics who influenced or founded modern economics, such as Mandeville, David Hume, Adam Smith, and David Ricardo, held that the pursuit of one’s own interests, passions, preferences and/or individual desires for income and wealth and technical progress were the perfect marriage in a new world of prosperity and wealth.

Another bedrock of classical economics, which is autonomous relative to the ethics of self-interest but that would come to give new meaning to the capitalist economy, is the pursuit of technical progress. In addressing this question, Adam Smith<sup>2</sup> departs from the principles of division of labor and the organization of the production process to obtain a substantial increase in labor productivity. Marx developed his own theory on technical progress centered on the development of the productive forces of capital, dealing extensively with this theme in Part IV of his first book, especially in the chapters entitled the “Division of Labor and Manufacture” and “Machinery and Modern Industry<sup>3</sup>. Later, in the twentieth century, Joseph Schumpeter<sup>4</sup> identified technical innovation as the main driving force behind competition and progress in capitalist economies.

An historic-theoretical overview of the material growth of wealth and economic power throughout two centuries of capitalist hegemony reveals a peculiar situation. The unprecedented advances of experimental science boosted by various industrial revolutions preceded by the Enlightenment in the eighteenth century created technical and scientific conditions that allowed the business class (the industrial bourgeoisie) to forge a new wave of civilization centered on the production, circulation, and consumption of goods. These waves propagated in deep cycles of expansion and contraction for more than two hundred years, producing the globalized society and capitalist economy that we know today. Never in the history of humanity had empires amassed such power and material wealth as in the nineteenth and twentieth centuries. Capitalism in the industrial era inaugurated this cycle of history.

A third significant idea common to classical and neo-classical economics (though not to Keynesianism or Marxism) is the theory that, when left free to negotiate private contracts in

respective markets, entrepreneurs, consumers and workers pursue their own self-interests and seek to maximize their own respective gains, thus producing general prosperity. In a market without government intervention, provided the state ensures the enforcement of contracts and protects private property in order to achieve full employment and maximum economic efficiency, individuals are guided by an endogenous mechanism (the invisible hand of the market).

The ethics of utilitarianism that underpin the economic theories purported by the classical and neo-classical fields include the principles of value and utility, whereby consumers and entrepreneurs, respectively, are impelled to satisfy their desire for consumption and maximize profits.

This is viewed as the only admissible model in the economic system because it is conducive to private efficiency in the utilitarian sense (more pleasure and less pain or greater gain at less cost). Private efficiency is a sort of cornerstone of microeconomics. The hedonic calculus excludes social efficiency and social well-being criteria, which are regarded by conventional economic theory as “externalities”.

Explaining human economic behavior is a common thread running through other theoretical systems that use the concepts of regularities or the “law of capitalist accumulation”, such as Marxian or Keynesian economics or Schumpeter’s theories, and the thinking of practically every economist that has pondered about economic development in the last 100 years.

However, the strict economic principles of utilitarian individualism, self-regulation, and technical progress does not enable the market economy to resolve two central problems posed by Keynes<sup>5</sup> and adopted by various generations of Keynesian economists concerned with the system’s socio-economic functionality and who, incidentally, fail to question the ethical foundations of the system:

- 1 - Guaranteeing full employment and overcoming cyclic crises of realization (or sale) of production,
- 2 – Ensuring a “fair” distribution of income and wealth.

The economic and social policies created to tackle these two macro problems posed by Keynesianism have yet to address the key issue that concerns us here: to ensure that human well being, or the satisfaction of fundamental human needs as an end rather than a mean. It is an ethical paradigm of political economy that doesn’t govern the driving elements of the market system.

### **How to Place the Ethics” on the Economic Agenda on the Economic Agenda**

The crucial problems relating to human life in society are also major socio-economic concerns. How to provide the means to support yourself and your family under the system of remuneration for work done is certainly one of these concerns. However, what is to be done in the case of widespread unemployment or when physical disability prevents somebody from working? How do we provide health care for individuals and the population as whole? How do we approach basic education, protect the poor, and ensure adequate housing, food security, and public security? The above are essential means by which individuals exercise their liberties, all of which may be placed on the fundamental human needs agenda. However, meeting these needs fundamentally depends on social ethics and political economy. However, this problematization is not done through economic theories that proffer the deregulation of the market economy, whose vectors of social demand reflect consumer preferences and desires, furnished with income and wealth and expressed through the purchase of goods. The science of economics founded by the classicists is essentially the science of the production, circulation and the distribution of goods, even within Marx’s *Capital: A Critique of Political Economy*.

Meeting needs, upholding social rights, preserving human life, protecting ecosystems, and promoting human development are underlying principles of an economics geared towards life, yet are external to the utilitarian ethics of the market economy. There is certainly a point of intersection between utilitarian ethics and ethics as a protector of life; as, moreover, the history of capitalism and the rise of mass democracy in the West has shown.

The welfare state, together with changes in the capitalist economy after the war, endeavored to create this bridge. Even so, this type of pact or political agreement will always be in dispute. The harbingers of the free market economy, reinvigorated at the end of the twentieth century by the doctrine of neo-liberalism, view individualistic utilitarian ethics as self-sufficient. They also believe that the very ideas of social rights and the egalitarian society, intimately related to welfare economics, can be dispensed with. It is as if the economic agents of the capitalist economy were driven by a declared “animal spirit” and stupefied whenever they tried to interpose other ethical imperatives than those espoused by utilitarian individualism.

The field of public policy, which has a strong influence on the economy, is the space in which social ethics appears, contraposing the closed principles of utilitarian individualism. It is necessary here to identify the limits of the public space in these economies and societies, dominated as they are by utilitarian culture, to uphold the principles of social equality within public policy sphere.

To formulate questions and criteria relative to the economy and society in the twenty-first century, it is necessary to go back to the originating sources of the signification of human life in society.

### **Technical progress and inequality (or reducing inequalities) from the development perspective**

The theoretical construction of economic development took place within a specific historical setting –that of the industrial revolution, when the systemic bases for a persistent increase in labor productivity were coordinated by the industrial bourgeoisie, who also managed the technical and scientific innovations created during the Enlightenment to improve the production of goods. The theoretical paradigm was the development of industrial capitalism, which was technologically self-sufficient in developing its own productive forces and driven by specific immanent “laws” of capitalist production to ensure the reproduction of the system.

Despite major differences, the description of which is beyond the scope of this article, the classical, neo-classical, Marxist, Schumpeterian and Keynesian theories of economic development formulated between the eighteenth and twentieth centuries have a common thread: that labor productivity growth, sustained by technical and scientific innovations or by other factors, was the driving force behind economic development or the “wealth of nations”; term classically coined by Adam Smith to describe capitalist development at the end of the eighteenth century. A problem would arise however as to the distribution and ownership of the fruits of technical and scientific progress. The class struggles posited by Marx and manifested at the end of the nineteenth century and during the best part of the twentieth century called into question inequalities in the distribution of “surplus-value”, yet did not question technical progress, which was regarded as a virtue from the perspective of the development of productive forces of civilization. Technical and sci-

entific development in the former Soviet Union and China rather than being distinct from that of capitalist economies, imitated it.

Questions of meaning or regarding the guiding principles of development pertinent to the theme of this article are suggestive of different theoretical and political orientations whose implications in terms of the promotion of equality will be made evident from the following analysis: 1) *distribution of social income*, 2) *human liberty and meeting “basic needs”*, 3) *overcoming the structural characteristics of underdevelopment, theoretically elaborated in Celso Furtado’s vast work*, and 4) *environmental sustainability*. One problem underlies these four issues: social inequality. A conceptual analysis will be presented in the next section; however, in this section social inequality is treated as a problem of development in the “classical” sense. These four problematizations of development theory, analyzed below, are historically dated (second half of the twentieth century). They were formulated in an environment that is critical of the founding traditions of capitalist economic growth (the classicists, Marxists, neo-classicists, Schumpeterians, and Keynesianists), not to create a revolutionary scission, as was the case of political Marxism in the twentieth century, but rather in pursuit of democratic reform (or bourgeois democracy in Marxist jargon), and thus address the problem of inequality and, more recently, with the advent of ecological economics, environmental sustainability.

### **The Critical Field (in development theories): Identities and Some differences in Questions Relating to Equality and Technical Progress**

Development theorists describe four basic problematizations and their relationship to social equality and technical progress. These appear on the fringes of the dominant theory of economic development outlined above.

In capitalism, income distribution criteria presuppose that income inequality is an endogenous problem resulting from an unequal relationship between profit and salary. However, technical progress does not come into the discussion because improvements in labor productivity allow for, under pressure, a more equitable distribution of earnings. In turn, the creation of social and labor rights associated with the welfare state is also propitious to labor productivity growth.

Other more recent theories of development, such as those linked to human development

(Amartya Sen)<sup>6</sup> and the critique of the theory of underdevelopment (Celso Furtado)<sup>7</sup>, emphasize a common aspect of distribution. asserts that human privacy to blockade freedom, while Furtado suggests that, without the dissemination of autonomous streams of technical progress, social inequality and external dependence are self-reproducing and reinforce under-development.

Moreover, the founders of contemporary ecological economics and environmental sustainability call into question the widely-used standards for measuring technical progress, given the fundamental contradiction between these standards and the concept of ecological sustainability and the dissipation of useful (low entropy) energy. Nicholas Georgescu, one of the most influential founders of ecological economics<sup>8</sup>, calls the very concept of labor productivity in conventional economies into question. However, they (the ecologists) are not primarily situated in the discussion of equality and distribution; although currently various multidisciplinary strands of integral ecology may be regarded as being part of a common field that deals with social equality.

There is, therefore, an epistemological cut that goes beyond the problem of distribution and which needs to be explained. It touches the very depths of the concepts of development under two different “paradigms”, between which, for the purposes of simplicity, I make the following preliminary distinction: conventional versus critical.

The first approach, which I will call here the conventional approach, encompasses all the founding theoretical traditions of capitalist economic growth in vogue particularly in the second half of the twentieth century (the “classicists”, Marxists, Neo-classicists, Schumpeterians, Keynesians, etc.). The theoretical point of convergence of these traditions is technical and scientific innovation to promote labor productivity growth as an engine to drive the widening “capital stock”. The most refined theory in this field is Joseph Schumpeter’s “Theory of Economic Development”.

In part a critique, the “second approach” is no stranger to Marxist thinking but has other guiding principles: social equality, human liberty, meeting basic needs and, finally, the self-reproduction of the conditions of nature – environmental sustainability. Amartya Sen, with his “Development as Liberty”, and Celso Furtado<sup>9,10</sup>, with his critique of the theory of underdevelopment, can be said to be pioneers of the second approach.

In Amartya Sen's theory of "Development as Liberty", there is an epistemological break with the fundamental idea of technical progress to promote labor productivity growth via markets as the driving force of development. According to A. Sen, innate and acquired human capacities, endowed with an ensemble potential functionalities to act, are the key to development. When these capacities are used by individuals to achieve the ends they value –i.e. the exercise of liberty – we are effectively promoting development. The capacity to act and liberty are, to some extent, synonymous. However, they are subject to social or personal privation that constitute a barrier to development because it impairs one's capacity to act freely.

It can be observed that the dichotomy of technical progress versus social equality does not fit into this theory. This is because, when the chains of potential functionalities are free of privations that blockade it, the exercise of capacities are released. Then, intrinsically good actions are performed to free personal ethics rather than utilitarian compulsory imposed by the binomial of self-interest anchored in the criteria of labor productivity.

At the same time, Len Doyal and Ian Gough developed *A Theory of human need*<sup>11</sup>, which is very similar to Amartya Sen's approach. It asserts that to meet needs governments should promote an agenda of technical progress and social demand, since these factors are essential for the full exercise of human rights. To a certain extent, Doyal and Gough's work builds upon the theories of the welfare state based on Marxism, while Amartya Sen's draws more on the liberal vision in the Anglo-Saxon sense.

Amartya Sen, a colleague of the Brazilian Celso Furtado at Cambridge in the 1950s, took a similar path to that of Furtado and his critique of the theory of underdevelopment. Furtado<sup>12</sup> asserts that preindustrial countries, brought together with central industrialized economies through world trade, practice a peculiar sort of socioeconomic mimicry, reproducing the consumption patterns that were "central" to an elite connected to the export-oriented primary sector, while the majority of the population subsists under a scenario of crippling inequality at the fringes of the consumption patterns of so-called civilized life. In these "underdeveloped" economies, technical and scientific progress, the engine of the industrial revolution, is completely peripheral and "natural comparative advantage" is seen as the way forward to promote integration into

world trade and plays a key role in the dependent insertion of these countries into the international division of labor.

Ecological economics, whose founder could be said to be the Romanian American economist, physicist, and philosopher Nicholas Georgescu-Roegen, radically attacks the foundations of "high entropy", or the waste of useful energy that causes global pollution. The emergence of the problems of global warming and climate change, clearly identified in the twenty-first century, revived the thinking of Georgescu developed in the 1970s and 1980s when the technological paradigm of the industrial revolution was largely "unquestionable" in the academic circles that this economist and philosopher frequented.

The approaches adopted by Georgescu, Amartya Sen, Celso Furtado, Ian Gough and many other welfare state theorists are different in various aspects. However, when interpreted in the light of the antinomic relationship between technical progress and social equality, they yield important insights for addressing the problem in hand. However, they are still not sufficient to break with the endogenous alliance established at the beginnings of capitalism outlined above and the paradigm of technological innovation, overseen by individualistic utilitarian ethics, as the engine that drives not only the "wealth of the nations" and individuals, but also inequality. However, they map out the field of a sort of scientific revolution<sup>13</sup> in development theory, which, via pluridisciplinary influences, questions the paradigm of technical progress (labor productivity) alternatively reviving the principles of equality, liberty (including the assumption of solidarity), and environmental sustainability as new ethical bearings for a post-capitalist society that is still to be built.

### The social equality approach

From the above analysis it can be deduced that individualistic utilitarian ethics and narrowly conceived concepts of development based on the primacy of capital accumulation do not resolve the antinomy of technical and scientific progress and social equality. On the contrary, they tend to deepen the divergence. John M. Keynes had already identified this problem in the "The General Theory of Employment, Interest and Money", which asserts that unemployment and unfair distribution of wealth and income are inherent in the capitalist economic system and suggests ways of overcoming this problem, which his English

contemporaries interpreted in the light of the construction of the welfare state. However, where on the other hand there is a certain amount of agreement as to the correction of income inequality (in the welfare state), there is no consensus between scholars regarding key concepts. Divergence exists when one examines social inequality as a whole; when one asks, as Amartya Sen does, “inequality of what?”, or thinking normatively, what should be made equal?

The answers to these questions reveal that income inequality lies among an array of other forms of social inequality that create and deepen hardship, which in turn is likely to impair individuals’ capacities to act to achieve the ends they value and even to choose these ends.

Given the inherent individual and social diversity of the human condition, there are many forms of inequality (age, sex, talents, wealth, genetic hereditariness, ethnicity, etc.). This begs the questions “inequality of what?” and “what needs to be made equal?”. By posing such questions, Amartya Sen<sup>14</sup> proposes that human liberty is the means and ends of social equality. Here, liberty is conceived as an individual’s capacity to act to achieve the ends he/she values, whereby the individual is able to alter these ends by exercising the freedom of choice. However, this freedom of choice is not defined by predetermined criteria or principles of value, as in the case of utility value in individualistic utilitarian ethics. To the contrary, the capacity to act once released from the chains of hardship that constrain this capacity is free, creative, and diverse, and eliminates all forms of social inequality that limit human development. It requires a complex process to eliminate the array of social, economic, sanitary, educational, political and cultural hardships that impair the exercise of freedom of choice.

To achieve equality, according to the concept of “capability of performing” (functioning), priority is given to the means and, above all else, the ends, which is liberty itself.

One of the fundamental points of the discussion of means are the policies designed to remove the constraints on human liberty – adequate health, nutrition, basic education, technical training, and social rights, always bearing in mind their role as mediating instruments.

Possibly the great unknown of Amartya Sen’s work is responding how to move, ethically and politically speaking, from a situation of extreme social inequality (the realm of extreme need) to the opposite end of the spectrum (the realm of freedom and social justice).

However, regardless of whether this is the main approach adopted by the author or not, he nonetheless provides a major contribution in his critique of economic utilitarianism as a unifying criterion of social well-being. He further reveals that even in societies with a more equal distribution of wealth, fruit of a fairer distribution facilitated by the welfare state, many focuses of inequalities remain. This is because, essentially, the freedom to choose ends has not been promoted; commercial choices between “A” or “B” are simply imposed based on desires and preferences linked to a pre-established utility scale.

Two other approaches to inequality are particularly useful in the search for solutions to overcome inequality, social backwardness, and underdevelopment, namely: “Justice as Fairness: Political not Metaphysical”, by John Rawls; and *Em Torno da Noção de Justiça* (On the Notion of Justice)<sup>15</sup>, by Norberto Bobbio. Drawing on theories put forward by these authors, the following section provides a theoretical-political synthesis of social policy as one way of moving from situations of backwardness and inequality towards development within the context of capitalism and democracy, the latter of which are underlying assumptions of these theories.

### Social Policy, Equality and Development for Certain Theories of Justice

The developmentalist thesis that is revisited here is completely different from the dualistic-modernizing view outlined above in referring to the conventional approach to development. As such, this thesis comprises a theoretical possibility to be considered when tackling poverty and inequality with political and economic policies supposedly designed to overcome this initial situation.

On this point, this approach embodies a sense of equity and justice that is absent from conventional economics. Here, it is also necessary to draw on various concepts adopted in conventional theories of development. These are significant ideas that deepen our understanding of development and can be reclaimed from literature otherwise regarded as liberal (in the Anglo-Saxon sense) or social democratic, whose origins goes back to continental Europe. As examples, we can take the concept of “primary goods” and “public goods”, Rawls’s<sup>16</sup> theory of “justice as equity”, the concept of “capabilities”, from A. Sen’s theory of human development<sup>17</sup>, and, finally, the concept of “public goods” in N. Bobbio’s theory of the state<sup>18</sup>.

These concepts, each in its own way, embody the principles of equity as a political undertaking that shape the initial conditions of inequality. Below, we draw on each of these concepts, appropriating from their different theoretical contexts that which is relevant to our explanatory framework.

In Rawl's theory of justice as equity, primary goods and public goods are essential for a fair society. Primary goods – “rights, liberties and opportunities, income and wealth, and the social bases of self-respect” – are necessary for the dignified survival all individuals.

Public goods, such as education, health, housing, security, etc. are necessary to ensure equally dignified conditions of collective well-being, i.e. the preservation of our collective quality of life, and are agreed socially depending on the political development of society. According to Rawls, both primary goods and “public goods are ultimately produced in the public sphere where a fair state undertakes, among others, the functions of transfer (that establishes a social minimum for all members of society)<sup>19</sup> and distribution (continuous funding of programs aimed at compensating those who, for reasons beyond their control, find themselves outside of the production system and the possibility of achieving the necessary primary goods).

Rawls' concept of primary and public goods is equivalent to that of “entitlements” in A. Sen's theory of human development, whereby the capacities of those who are underprivileged are enhanced by building on capabilities of performing. Thus, by providing access to these goods, the initial conditions of equality of opportunity and equality of capacities are met, providing the essential conditions for human development.

Finally, Bobbio's theory of equality adopts the principle of “equal treatment of equals and unequal of unequals”<sup>20</sup>, where the concept of public good is precisely that which guarantees distributive justice and the promotion of equality through the legal action of the state. Bobbio's criterion of equality goes beyond equality of opportunity. It affects not only the conditions of the initial undertaking of the competitive-cooperative process of economic and social relations, but also the conditions for achieving equality of outcome.

It is important to understand from this theoretical discussion that the concepts of primary goods, public goods, and capabilities of performing are political undertakings and thus depend on state action and regulation. In this sense, they imply changing the initial conditions of self-reproducing inequality and embodying the condi-

tion of development with justice so as to achieve the “potential output” of the economy, which is directly and indirectly affected by the allocation of the primary and public goods described above.

In the context of social policy in Brazil, these goods materialize in the form of ‘imputed’ income (social spending on basic education and public health), direct monetary income (non-contributory social security benefits), and land titles associated with agrarian reform. These goods fundamentally affect the circulation of social income for the benefit of the poorest segments of the population. However, funding these public goods depends on the tax system and the progressivity of tax laid out in tax policies defined under the democratic system. Based on the above, it can be concluded that the theoretical criteria presented here can help formulate a justice-based conception of development. Furthermore, as outlined above, they represent a change of situation and shift in theoretical paradigm and, as such, are employed uniquely to tackle abstractly defined situations of poverty and inequality. It is important to note that the historical concrete application of these theoretical conceptions to domestic problems is beyond the objective and scope of this paper.

## Conclusions

The fundamental question posed by the title of this article is does an intrinsic antinomy exist between scientific and technical progress and social equality; or is this contradiction historic in conception, situated within limits of societies hegemonized by individualistic utilitarian ethics founded by the forerunners of modern economics. In this formulation, the original question provide their own answer. But this an issue that need to be interpreted in a non-binary manner.

It can be noted that, from its beginnings, individualistic utilitarian ethics, which provided the foundations of modern political economics, has been intrinsically associated with technical progress. From this marriage, which has gone through different historical cycles, was born modern political economics, which in less than two centuries has established a truly global industrial civilization. This civilization makes the pretense of being an all-encompassing totality in which human relations are subordinate to the regulations of mercantile relations governed by the financial sphere. In this historical context, the utilitarian ethics is dominant as” center of social life.



In this sense, economic ethics, which at the beginnings of capitalism governed just the nascent mercantile structures of capitalism, seeks to replace general ethics, subjecting it, but never being subjected itself, to politics.

However, such a claim does not provide solutions for the general problems facing society, especially those generated by the very expansion of this thinking, such as unemployment and the poor distribution of income, so well noted by J.M. Keynes in his “The General Theory of Employment, Interest and Money”.

Thus, from the ethical point of view, there certainly is an essential antinomy between technical progress, under the aegis of capital accumulation, and social equality.

On the other hand, the historical development of societies hegemonized by capitalism

has, in a broad sense, also produced institutions within the democratic state, which contain other forces that oppose the totalitarian tendencies of capital and money. Theoretically, these state institutions are supposed to be capable to control the antinomic relationship outlined here to account. The so-called “welfare state” represents a commitment in this sense, albeit limited both historically and geographically.

There is an open historical question, that remains after more than two centuries of capitalist hegemony. But this hegemony on industrial basis in the present global capitalism didn't produce answers to questions of social equality and, even less so, environment sustainability. The answer to the former question remains open, probably lacking the disjunctive dualist – ‘antinomy versus historical problem’, that can be suggested in the title.

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