Abstract: Knowledge is an indicator of human development, and to contribute further knowledge to the interpretation of the legacy of Marx and Engels is the objective of this article. The relevant question in this theme is: Is the Marxian message alive in the twenty-first century? This article in the fields of the history of economic thought and methodology outlines the vision of Marx-Engels in its economic, sociological and philosophical elements—chiefly the first of these. For that purpose, a description of their Scientific Research Program (SRP), a Lakatosian concept is outlined in the first section as a test of their theoretical soundness. Specifically the hard core of Marx and Engels’ SRP is outlined in the second section along with a brief literature review of conceptions about the legacy of Marx and Engels’ work. Marx’s theory is thus systematically organized in terms of scientific research programs. In addition, both the positive heuristic and protective belt of Marx and Engels’ SRP are outlined in the third section. Since a research program is an indicator of progress in science based on the empirical success of the theory in question, some fulfilled (and previously discredited) predictions of Marx and Engels’ SRP are briefly mentioned in the fourth section. These interrelated methodological tasks test the argument of the qualitative aliveness of the interdisciplinary message of Marx and Engels for all time, since the identification of theoretical soundness is the first step to test scientific progressiveness in a SRP. During the process some key concepts of Marx and Engels’ SRP such as exploitation, alienation and surplus are reinterpreted under this perspective, proving their relevance in modern life. It is concluded from this exercise in the fifth section that Marx and Engels’ SRP is sound and progressive in qualitative terms, although it was previously rejected on the basis of ideological, theoretical and practical misinterpretations.
Finally, the complex system of Marx is discussed in the Appendix to undertake a further test of the former arguments. References and further reading are listed at the end of the article.

**Key words:** Marx; Engels; history of economic thought; Lakatos; methodology; epistemology; Scientific Research Programs; complex systems

1. Methodological Introduction

**Basic concepts of philosophy and economics**

Science is clear, objective, rational, real, systematic and communicable knowledge about a field, which must be empirically tested *vis-à-vis* reality, and therefore possesses a dynamic character.

The goals of science are both explanation and prediction (Machlup 1978). Both apriorism and ultraempiricism are extreme strands in epistemology. According to apriorism, the abstraction of processes is the most relevant constituent of knowledge. According to ultraempiricism, both hypotheses and problem identification depart from observation. The distinction between these two approaches will allow the methodological assessment of the perspectives from which hypothesis formulation arises.

What is the relevance of methodology? In 1932 Joan Robinson addressed the question of whether economics is a serious subject. A serious subject in the academic sense, she claimed, “is neither more nor less than its own technique” (Robinson 1932: 3).

Other voices must be heeded. “Why should economists, or for that matter researchers of any kind, bother with methodology? The simple answer is because it is unavoidable. All research contributions carry methodological presuppositions. Decisions about whether or not to use data, to employ methods of econometrics or any other kind of mathematical modeling approach, to halt an empirical investigation once results of the form expected or hoped for are observed, to contrast results achieved with those of others, to emphasize explanatory power, predictive power, understanding or something else, to aim for generality, complexity, simplicity or parsimony, are all methodological” (Lawson n.d.: 1).

Methodology is the “study of logical principles useful for determining if certain proposals are accepted or rejected as valid constituents of the structure of scientific knowledge” (Machlup 1978: 490).

Methodology and philosophy of science are thus relevant for the study of economics as the dismal science has experienced several challenges in terms of its structure and object of study, regarding its scientific status. Something similar may have occurred to sociology.
External voices to economics must also be heeded. Karl Popper, perhaps the most outstanding philosopher of science during the last century, is an advocate of falsificationism, in which a theory must be continuously tested and discarded at least partially in the event of not being able to stand refutations. Hence, falsificationism may be the main determinant of progress in science and in economics.

**Lakatos and scientific research programs**

The underlying organizing principle of theories is the interrelation of systems. For this purpose, the epistemological theories of two successors of Popper are mentioned. Thomas Kuhn proposes the methodology of paradigms (Kuhn 1962), whereas Lakatos suggests that of scientific research programs or SRPs (Lakatos 1978).

Paradigms are organizing world views or approaches to scientific thought in terms of problems and their solutions. In contrast, SRPs analyze theories in terms of their gradual advance. The Lakatosian methodology is hereby chosen since continuity in Marx and Engels’ SRP is assessed. Another reason for selecting SRPs is that they are also an explicit criterion for the detailed comparison of theories.

The first constituent of SRPs is the hard core, which is not subject to falsificationism by methodological principle. The second constituent is positive or negative heuristics or guidelines for the implementation of theories to be used throughout the research. They are written in terms of suggestions about the use of theories. The third constituent is the protective belt, which comprises the auxiliary assumptions of theories, which vary with respect to either time or place and are often expressed as parameters.

SRPs are either progressive or degenerative according to the success of replacement of its constituents, particularly of the core. Thus SRPs must be chosen if their new contributions contain either new theoretical or empirical prescriptions. In turn, the replacement of some heuristics means that the essence of that theory has not been modified at all. Finally, the replacement of a protective belt only widens the extent of application of that theory, sometimes in an artificial manner.

The internal history of science is the rational reconstruction of the meaning of a SRP. The external history of science is the description of empirical facts within a field of research. Both consistency and refutation are the main criteria for accepting a SRP (Blaug 1980).

If differences between two schools arise only from their cores, both schools are independent SRPs. If the differentiation arises only from specific parts of their cores, both schools are independent sub-SRPs. If diversions from an original SRP on the part of any school do not stem from their cores, these schools are just scientific movements away from the original SRP. The methodology of economics has been
dominated by Popper since the 1950s, including the contributions of Lakatos since the 1970s.

Summarizing this section, this article focuses on the application of Lakatosian principles of appraisal to special theories since his methodology allows the qualification of progress in Science as measured by the evolution of SRPs. Bearing these concepts in mind, the structure of the SRP of the economics of Marx is now identified.

2. The Hard Core of Marx and Engels’ Scientific Research Program

Marx’s ideas may be useful to understand, criticize and change the world today in view of the existence of rapid social change. It may be argued that Marx was misinterpreted in terms of his conceptions of the State, of globalization and of the individual. Nevertheless, no issue is definitively settled. Not even Marx’s critical conception of the contradictions and issues of our time based on his materialistic conception of history are settled. In this context the objective of this exercise is to test the accuracy of Marx’s theory.

Historical materialism is the central assumption that social changes must be explained in terms of class struggles, wherein the economic basis of society determines the nature of social classes and the details about class struggles.

The study of the main works of Marx allows the historian of economic thought to outline the core of his theory of Historical Materialism. This is due to Marx being a supreme example in terms of scientific innovation, as the application of methodology of SRPs to this case will once again demonstrate.\(^1\)

Marx, a product of European culture, borrowed concepts from three main sources, transforming them into something new. His first source is Classic German Idealistic Philosophy departing from Kant and ending with Hegel, a strand which had a huge impact on science. Marx also relied on the emphasis of Hegel on history, the State and alienation as well as on the work of Post-Hegelian German philosophers such as Ludwig Feuerbach, mainly his concept of religion. Then Marx turned them upside down, modifying the path of Western philosophy (see Foucault for example, who dubs Marx as one of the philosophers of suspicion).

Further Marx denied the core of Classical British political economy in terms of message and method, mainly through the revision of the analysis of labor of David Ricardo. He also revised the classic concepts of Laissez Faire, the Invisible Hand, the atomistic (as opposed to the organicist) view of the economy and the existence of a self-regulating system, in both universal and eternal terms.

Finally Marx improved the concept of utopian socialism of Owen, Fourier and Saint-Simon among others, viewing Socialism as a social-historical product rather than as a fantasy. The objectives, methodology, ontology, institutions and essence of
Marx and Engels’ SRP (hereafter M-E SRP) are now analyzed, firstly in descriptive terms and immediately after in Lakatosian terms.

**Marx and Engels’ objectives**

The most important economic insight of M-E SRP is the acknowledgement of the priority of the economic factor in human history, a strand called Historical Materialism, which is a theoretical and practical breakthrough that has permeated both science and practical affairs.

According to the economic interpretation of history, the current system as a mode of production will be self destroyed by its internal (dialectical) contradictions after passing through several phases, wherein labor and workers gain greater relevance. In other words, at the outset of Capitalism there arises a dialectical evolution which is reflected in recurrent crises (fueled by contradictions between labor and capital), and generate a change in the rules of the game. A new system will then arise wherein co-operation bypasses competition.

Yet another way of describing this evolution is by realizing that the system is not able to self-regulate, since equilibrium and stability in political economies do not exist. Accordingly the objective of the analysis of Marx and Engels is to explain the functioning of Capitalism and to predict its fate.

**Marx and Engels’ methodology and epistemological insights**

Marx’s vision, vitalizing language and philosophy (mainly about method, political philosophy and ethics) have always interested first-rate scholars, for instance Joan Robinson, Piero Sraffa, Erich Fromm or Isaiah Berlin.

This is due to Marx and Engels analysis being full of interesting interpretations (for instance Keynes talks about powerful insights based on intuition on the part of Marx). Nonetheless, the most outstanding feature of the influential M-E SRP is its coherence and integration. Each one of its elements and insights is complexly— but discernibly—interrelated to others. This is true in every organicist system. However the interdisciplinary vision of M-E SRP clarifies facts in economics, history, philosophy and anthropology unifying them into a single perception of the universe.

Accordingly, a special place in the methodology of Marx belongs to organicism or what used to be called the fallacy of composition. This allows him to differentiate macroeconomics from microeconomics as the whole is more than (or different from) the sum of its parts, since the interrelations among the elements of the system are not linear but complex (see Appendix). Marx also uses the concept of historical time as opposed to that of logical (imaginary) time.

Finally Marx’s prophecy highlights the role of praxis, which is reflected in his emphasis on the active role of man in shaping both his destiny and his relation with...
nature. Whereas Hegel preached that awareness for action arrives too late, Marx proposes that theoretical insights must be rapidly accompanied by a transformation of reality. See Tables 1 and 2, below, which are a complement of the methodological vision of M-E SRP.

**Marx and Engels’ ontology**

The insights generated by Marx and Engels break the Classical core since in their vision there is heterogeneity in agents’ behaviors; that is, unities and structures do not necessarily work in a co-ordinate fashion. The main examples of this anomaly are the concepts of an interacting typology (free competition vs. state intervention) and a class asymmetry (capitalist vs. workers).

Capitalists are rational in the defense of their interests whereas workers must only be rational in that sense. The reason is that the labor and money markets are special for Marx and must be treated in a different manner, as man is distinct from merchandises or commodities and money is an emerging property of the current mode of production (see Appendix).

Interrelated decision making must exist in an organicist system and this is highly relevant for M-E SRP, since humans are involved in social relations. Social relations constitute his (or her) essence and have an impact on human nature in terms of both psychological and economic motivations.

**Marx and Engels’ institutions**

The State must stabilize and plan activities. Unlike the late Hegel, Marx is a social revolutionary. For him, both free competition and private property rights must be reformed. He is also an innovator when stating that the State will lead activity during the process.

Marx also had a different view of money as a store of value and used this view to link the real sector with the monetary sector. Money is not at the center of Marx’s political economy, but it is highly relevant unlike in Classical Theory. Monetary factors (and their evolution) also propitiate capital formation, reproduction and accumulation, which are the most relevant motives for the existence of dynamic economic systems. These concepts are the basis for the lack of stability in the system, which results in recurrent (dialectical) crises. Crises are the result of contradictions in the current mode of production: Capitalism.

**Marx and Engels’ essence**

A philosophical insight of M-E SRP is its prediction of increasing dehumanization and alienation, which unlike in Hegel arises from economic reasons. It arises specifically from both dehumanizing labor and the increasing adoration of money as a result of social relations in Capitalism. This is difficult to be proved, but human
isolation certainly exists amid abundant means of communication. The concept of alienation which appeared in the initial works of Marx acquires full meaning as an emerging property of sociological systems after Marx and Engels analyze the workings of political economies in the 1850s, 1860s and 1870s. They make this concept operational by means of the use of the concept of surplus.

**Overview of Marx and Engels’ scientific research program**

All of the contributions of Marx and Engels must be dealt with as a unity. Novel epistemological issues are ubiquitous in their work and certain factors are actual scientific novelties. *The German Ideology* of 1845 and the *Economic and Philosophic Manuscripts of 1844* contain the essence of the philosophical legacy of Marx and Engels, which is complemented by the economic analysis made by them after 1849, which is synthesized in *A Critique of Political Economy*, the *Grundrisse* and *Das Capital*.

Nevertheless, all these contributions only make sense when M-E SRP is described taking account of Marx’s theoretical, empirical, ideological and policy-related issues. The main constituents of Marx and Engels’ core were outlined in the previous section, but they are summarized in both Table 1 and Table 2.

Table 1  
Marx and Engels’ SRP: Hard Core I

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Method</th>
<th>Ontology, Concept of man</th>
</tr>
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<tbody>
<tr>
<td>To explain and to transform the development process and leading factors of human history as well as the historical role and future of Capitalism.</td>
<td>Laws in societies are historical.³ Hence historical stages which are determined by modes of production and their corresponding institutions, are transitory.</td>
<td>Emancipation is achieved through the unfolding of man’s potential via work. Alienation must be surpassed.</td>
</tr>
<tr>
<td>Historical (dialectical)¹ materialism is the hallmark of Marxism wherein economic forces shape human history.</td>
<td>Science must explain, predict and transform reality under a new framework of rationalism.</td>
<td>A new concept of man is proposed, aiming for authenticity, happiness and egalitarianism. Marx’s conception of humankind is organicist. Atomism must be discarded.</td>
</tr>
<tr>
<td>Thus Marx turns Hegel’s Absolute Idea—spirit—upside down. Ideas are the result of economic events or modes of production.</td>
<td>Inter-disciplinarity is relevant. Marx’s vision merges economics, philosophy, politics, history, sociology, anthropology and methodology.</td>
<td>Man must identify himself with life and nature via work, not as an abstract idea as in classical German philosophy.³</td>
</tr>
<tr>
<td>To create a new method of investigation for the social sciences.</td>
<td>Method is dynamic and rational for solving concrete problems.</td>
<td>Man must be explained in subjective terms, since he is a human—social—being.</td>
</tr>
<tr>
<td>The analysis aims to analyze and reform Capitalism, which is the current mode of production.</td>
<td>Both theory and praxis are part of the essence of phenomena. Explanation, prediction and transformation of facts are all required.</td>
<td>Human life acquires meaning as man modifies his environment.</td>
</tr>
</tbody>
</table>
The means to surpass capitalism is a revolution. The aim is Scientific Socialism and the end of a communist society.

To undertake a rational and useful reconstruction of history, the analysis is composed by both theory and ideology (ideas imposed by the dominant class). The latter is a key constituent of the superstructure and is determined by material conditions.

Objectives are social. Societies must fight exploitation, inequality and alienation.

Science must be subordinated to man rather than to ideologies. Observation is key before creating—or verifying—theories (the 1848 Revolution).

Reject pragmatism since causes and interrelations are as important as ends. Reject Positivism since it is solely based on the examination of facts. Reject pure Historicism as it neglects Historical Materialism.

Table 2  Marx and Engels’ SRP: Hard Core II

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Essence</th>
</tr>
</thead>
<tbody>
<tr>
<td>The basis comprised by economic conditions determines the superstructure of societies.</td>
<td>Life moves in a dialectical fashion, wherein strife and movement are the engines. Strife is translated into domination and greed.</td>
</tr>
<tr>
<td>Ideology is comprised by philosophy, politics and jurisprudence.</td>
<td>Freedom, equality and growth constitute the essence of man. Exploitation is a social construct rather than a natural fact.</td>
</tr>
<tr>
<td>Revision of the roles of the State is relevant, as it is the support of modes of production.</td>
<td>History is a spiral. This vision is contrasted with both the capitalistic notion of progress as a straight line and the Chinese idea of growth as function of recurrent cycles.</td>
</tr>
<tr>
<td>Institutions refer to laws, organizations, policies, technology, science, religion, culture, civilization, language, art, music and the like.</td>
<td>History is a spiral. This vision is contrasted with both the capitalistic notion of progress as a straight line and the Chinese idea of growth as function of recurrent cycles.</td>
</tr>
<tr>
<td>Complex productive social interrelations in Capitalism generate institutional objects such as money and its variants such as capital.</td>
<td>Alienation is key to dehumanization, but this is a social result. Certain objects and symbols have become subjects of adoration in Capitalism.</td>
</tr>
</tbody>
</table>
Finally, political economy must explain the theory of value by means of short-term disequilibria, which reflect the dialectical nature of the current mode of production. The consequence is that the system is prone to crises with amplified cycles until the system implodes. Both the money and the labor markets play a special role in this mechanism.

**Brief literature review of conceptions about the legacy of Marx and Engels’ work**

The existence of some relevant studies in the field of assessing scientifically and methodologically the contribution of Marx must be acknowledged to make our positioning clear and to enable academic debates to reinvigorate.

Therefore, some external voices about the methodological relevance of Marx and Engels’ work must be heeded. Following Popper, for Lakatos it was highly relevant to adopt an objective perspective when writing the internal history of a science. This is related to the internal development of objective science. In this sense Marx adopts an objective stance when talking about Historical Materialism, since in his analysis objectivism is applied to the analysis of society. The result of social actions on the part of an individual is determined by the details of his social situation, which differs from what he aimed.

Objectivism is necessary to comprehend both social changes and epistemological developments. An interpretation of Marxism which stresses objective knowledge is that defended by Althusser along with that exposed by Lecourt in *Marxism and Epistemology*.

As is widely known, Althusser stated that Marx discovered a new theoretical continent based on Historical Materialism. Marx studied modes of production, investigating their structure and transitional forms, rejecting that Marx is only a critique of Capitalism. For Althusser, Marxism is a complete philosophy comprised by a theory based on materialism and a dialectic method, wherein philosophy is a theory of theoretical practice. This is a demonstration of an objective attitude on the part of Marx.

There are dissenting views in terms of objectivity in regards to Marx’s work. First of all, an objective attitude is independent of the perceiving individual, as existing in thought. In this sense Marx parts company from Hegel. A researcher must prefer science versus human authority. In this issue, some thinkers argue that Marxism is full of ideological statements, which according to this study are included in Marx and Engels’ core. Nevertheless, a core is irrefutable by methodological definition for Lakatos, but must be supported by empirical evidence (see section 5, below).

This identification of Marx’s core allows the identification of Marx and Engels’ work as both normal and revolutionary—progressive—science, wherein the historical dimension in the treatment of science is highly relevant. If the legacy of Marx is the objective understanding of the development of an egalitarian conscience,
his objective attitude lies in that social research arises from vital requirements. Popper’s assault consists in his contention that knowledge is transitory and societies modify their conditions, so that no mechanical rules are functional.

For the Frankfurt School (1930–45), transition to socialism is undeniable. Although domination forms vary according to times and require new theoretical explanations, Marx’s message is alive as no theory lies outside social reality. Other commentators such as Adorno and Habermas in the mid 1900s, especially the former, conduct a critique of positivism, validating the relevance of historical methods.

In methodological terms, concerning the relevance of SRPs in economics, it is advisable to review the classical study of Spiro Latsis (Latsis 1972), *Situational Determinism in Economics*, which applies the SRP framework into Neoclassical economics of Milton Friedman, the core of which is profit maximization, perfect knowledge, independent decision making and market perfection. Although this is the opposite kind of core, something can be learned from this type of study about the applicability of SRPs in economics. For a systematic—non Lakatosian—comparison among the three major economic theories see *Contending Economic Theories: Neoclassical, Keynesian, and Marxian* by R. D. Wolff and S. A. Resnick (MIT Press, 2012).

Returning to Marx’s SRP, each scholar had different views on the position of the scientific status of the Marxian work. There are writings by Lakatos himself and by Feyerabend about the question of whether or not Marxian economics belongs in progressive science. Surprisingly Lakatos considered Marxian economics as degenerating science because all of its novel predictions are empirically refuted. This is highly debatable. He has not been to the developing world.

Feyerabend is tilted toward progressive science, arguing that the theory of imperialism and colonial exploitation provided a wealth of novel predictions. Desai (1974) also evaluates Marxian economics as progressive.

Finally, John Maynard Keynes (1935, 1936) dismissed Marx’s contributions as obsolete. Nevertheless some post-Keynesians compare in more favorable terms the works of Keynes and Marx. Sardoni (2008), states that both thinkers foresaw the end of capitalism and its transition into a new system.

Other commentators see Marx as a non economic thinker, but perhaps this is the strength of his legacy. Obviously this list of commentators on the legacy of Marx is far from being exhaustive.

3. The Heuristics and Protective Belt of M-E Scientific Research Program

The preceding section dealt with the philosophical insights of this SRP. Now the guidelines for action which arise from the hard core are synthesized in this section.
They are highly relevant for the studied German intellectuals and revolutionaries who aimed to take practical actions for transforming the world.

These guidelines in the form of imperatives for the researcher, which are outlined in the following paragraphs, are related to the practical methods that Marx and Engels undertook in order to achieve the objectives of their analysis. This section is highly relevant to understand the essence and details of their contribution to the study of economic phenomena based on the concept of Historical Materialism and by using economic categories to describe the evolution of Capitalism.

**Positive heuristics: guidelines**

Use a powerful language to explain the essence, aims, and means of a SRP, based on (but not limited to) philosophical, sociological and economic issues. For that purpose, re-create a terminology (categories, typologies and dichotomies), envisaging interrelations and thereby focusing on existing issues in new ways.

Consider the following scheme for investigation: Commodities (C) and Money ($) = surplus value. Capital (K) and labor (L) = surplus value realized. Accumulation of capital entails the transition to crises, revolution, Socialism and Communism. Describe labor theory, labor value, the role of commodities (merchandises or C), the dichotomy between labor and capital, the role of money and the role of capital.

Explain the organic composition of capital in terms of its constituents: Labor (variable K) and capital (constant K). Explain the genesis of capital departing from the role of money as a medium of exchange. Discuss the amplified reproduction of capital.

Discuss the role of money and the monetary amplified circuit: $-C-$’. It creates capital. Discuss its preeminence over the simple monetary circuit: C-$-C$ in Capitalism.

Discuss also the functioning and evolution of modes of production (production forces plus production relations). Then explain how earnings (E) determine surplus value and exploitation. Interpret surplus as the unpaid amount of money to the worker or the excess of earnings over paid wages.

Consider that economic systems include the spheres of production, distribution and exchange. Finally, investigate the genesis and role of private property in the conservation of the system.

**Positive heuristics: prescriptions**

Undertake critical theory, considering political economy as a moral science since its aim is to understand human essence.

Explain the means and ends of political economy in the following sequence of socio-economic categories: private property, commodities, use and exchange values, labor, labor value, money, earnings, capital, surplus, exploitation, labor vs. capital.
(constant and variable), class struggle, Socialism, communism. The objective is to achieve human emancipation.

Analyze the following economic categories: wages (W), earnings (E), rents, interests. Describe the role of the surplus value and exploitation in the determination of economic history as related to the philosophy of Historical Materialism.

Explain the transition from Feudalism to Capitalism, and then to Socialism. Discuss the role of technology in the evolution of modes of production. Also discuss how industry determines history, and the role of machines and capital in that process.

Identify the relations among modes of production and superstructure (mainly ideology and religion).

Restate the relation between masters and slaves—struggle between labor and capital—along with a new supporting role of the State and that of private property.

Distinguish between value of use and value of exchange. Consider the proletariat as the agent of change for Scientific Socialism under the framework of the struggle between labor and capital. Consider stocks as the highest form of capital.

Explain how societies must co-ordinate in Socialism, which is the ultimate mode of production. Modify institutions for improving economic conditions.

Negative heuristics: guidelines

Study the philosophy of the invisible hand and its contradictions and empirical validation. Reject strange theoretical bodies or empirical insights (anarchism?). Improve previous SRPs in the following respects: The role of the State (Hegel); the concept of passive man (Feuerbach); Utopian Socialism (Owen, Fourier, Saint-Simon, Proudhon); political economy (Say, Ricardo).

Follow the next sequence related to the genesis, reproduction and accumulation of capital: Commodities, value, exploitation, transformation problem, $, K. Analyze not only the level but also the distribution of the social product.

Review the historical and economic nature of recurrent crises (based on overproduction and low purchasing power), and thus how capitalism is—dialectically—destroying itself.

Study the fetishism of commodities and money to further understand the essence of both political economy and man. Analyze the four varieties of alienation and their impact on workers. Specify the active role of workers in the conduction of revolution. Create, use and export revolutionary thought and organizations. Identify the role of internationalization in praxis (revolution), which leads to Socialism.

Those almost mechanical prescriptions arise from the hard core of the SRP. This is especially true in this case since positive heuristics is the bedrock of praxis. Most treatises on Marxian economics refer to the heuristic part, perhaps preventing them from comprehending the full essence of Marx and Engels’ legacy.
Protective belt

This is the most flexible but less essential part of M-E SRP. It assumes away both current conditions and those belonging to the place where theories are conceived. In other words, protective belts reflect specific circumstances. It should be noted however, that M-E SRP is universal and eternal in this sense since it has few auxiliary assumptions. Obviously, the Protective Belt is comprised of the most superficial prescriptions of the analysis, but they must reinforce the concepts stated in the Hard Core of a SRP.

The Protective Belt may be confused with the Hard Core. Even more relevantly, most auxiliary assumptions are sometimes either artificially modified or superficially mistaken by changes in cores on the part of rival programs, which would be a signal of progress or degeneration. This is easy to identify nevertheless, whenever a SRP is appropriately defined, as can be seen in the following paragraphs.

The historical modes of production are primitive, Asian, feudal, pre-industrial and capitalistic. Capitalism is currently at the verge of financial globalization, which arises in the maturity of industrialization. In terms of economic functioning, hysteresis is small in normal reactions, whereas overproduction prevails. Say’s Law is not applicable.

The public sector and the private sector must be united in Socialism. In addition, capital reproduces itself at an increasing rate. Industry is the most refined form of productive forces.

The dictatorship of proletariat must be a (rapid) transitory state, wherein the steps are Raw Socialism and Scientific Socialism. Social classes are concrete and discrete categories.

In addition, production forces are unequally distributed. The worker obtains a subsistence-level wage, unlike slaves. Population is growing, especially the working population. Subsistence levels tend to stagnate. The labor journey is of 16 hours daily, and workers live at the subsistence level. Only workers in industrial economies are ready to initiate changes.

Finally, communications exist among international workers and among international capitalists. No barriers exist for products and capital flows.

About the selection of Lakatosian categories

This Lakatosian-type list of Positive Heuristics and Protective Belts (auxiliary assumptions) might be helpful for identifying the categories of Marx and Engels’ theory. The former analyses allow the identification of the powerfulness of Marx and Engels’ method.

Some authors state that the selection of Lakatosian categories is somewhat arbitrary. It all depends on the background and aims of the researcher. We consider this selection process is related to deepness. In this study Hard Core issues refer to
the philosophical—essential and perhaps abstract—concepts that are the foundation of Marxian thinking, which possess both a dissenting and an interdisciplinary spirit. Examples are alienation and Historical Materialism.

Concepts included in the category of Positive Heuristics refer to the practical guidelines to do Marxian economics operational and hence measurable. An example is the monetary circuit—from money to commodities to capital—that renders profits. Finally, those flexible concepts included in the Protective Belt category are specific to the epoch, for example the labor journey in the 1850s, which is related to the concepts of surplus and alienation.

4. Evidence in Marx and Engels’ SRP: Fulfilled Predictions and Progressiveness

In view of the former analysis of Marx and Engels’ concepts in Lakatosian terms, it is necessary to insist on the analysis of both the misinterpretations and the evolutionary character of Marx’s ideas. For this purpose we may quote a relevant Marxist academician. According to Musto, “[t]he reality is much more complicated: the political revolution does not mean at all the automatic realization of social change, the end of history, as we have also learned from the twentieth century, but should be considered just as the beginning of a permanent process of dealienation and emancipation” (Musto 2011b: 10). To quote Musto once again, “[t]his proves that capitalism is not the only stage in human history, nor is it the final one” (ibid.).

This means that M-E SRP should be permanently assessed. According to Musto, “Marx’s contribution to social sciences is very rich, even though his discoveries were not the fruit of a sudden outpouring, but the result of a process” (ibid.). He continues: “I will focus only on two topics. The first is his famous theory of surplus value, the specific way in which exploitation takes place in the capitalist mode of production: value created in production by unpaid surplus labor, which also represents the basis for the accumulation of capital. The second point that I would like to mention, and I have already done it a little bit by answering the question about historical materialism, is Marx’s idea of the historical character of all social formations” (ibid.).

We also want to relate evolution to the most relevant issue in Marx’s core. This is related according to Musto to “the historical specificity of the capitalist mode of production. He harshly criticized every time he could the way in which economists portrayed historical categories as ‘natural’ realities” (ibid.: 11).

This dichotomy between natural and social sciences reappears in other economic thinkers, for example in Keynes and is at the heart of the critique of the nucleus of classical political economy. After this introduction to the topic of the theoretical evidence and progressiveness of M-E SRP, the objective of this section is to
investigate whether M-E SRP is empirically progressive in Lakatosian terms. This can be tested by falsifying its predictions, and constitutes evidence on the applicability of the theory-praxis dichotomy advocated by Marx.

Eventual empirical progress is the proof of the aliveness of SRPs whenever they are falsified in reality while their positive heuristics are tested in both theoretical and empirical terms. In the case of M-E SRP the following fulfilled predictions amount to prove its empirical soundness and validity, and hence its progress. Although facts have a pluralistic explanation, the vision of Marx may either explain or predict many currently observed facts in societies. Perhaps, at least in some regions of the world, some predictions of Marx have been fulfilled. For opposing views, see the Literature Review subsection above.

Examples demonstrating the relevance and modernity of his SRP might be the destruction of middle classes (in some countries), modern levels of surplus and pauperization, recurrent crises with the prominent role of finance, globalization of labor, products and capital markets, uneven development levels and the fetishism of merchandises and dehumanization. A concrete list of these tentative and interrelated predictions and their explanations arising from the Lakatosian exercise conducted above is presented in the following paragraphs.

The existence of a global decreasing profit rate may be demonstrated by recent capital flows into emerging economies. Likewise, increasing industrial concentration may be related to the fact that Capitalism may require that owners increase their share in production.

The observed predominance of large financial capitals may be supported by the fact that concentration arises in the financial sectors as the ultimate step of industrialization (see the transit from monetary circuits in Positive Heuristics).

On the other hand, increasing globalization is related to the fact that capitalists join without borders. Nevertheless communication among workers and among peasants is weak.

As a result, recurrent (dialectical) financial crises are propelled by imbalances between production and finance in the latest stage of Capitalism. A parallel result is that increasing inequality and class polarization may be due to large disparities remaining in terms of income distribution in emerging economies and among regions and countries (no convergence theory is applicable).

There is an increasing and continuous transit of workers from the rural to the urban sector. This disparity reflects that existing between capital and labor, as the former is concentrated on cities and industry. Technology and finance mainly pertain to industry.

An increasing industrial reserve army may be due to increases in both involuntary and sectoral unemployment. Finally Marxism can be extended into other realms of exploitation.
5. Conclusions

The purpose of this article is to show that the Marxian message is still alive in the 21st century in the fields of economic thought and methodology. This article shows how Marx’s theory can be systematically organized in terms of SRPs rather than suggesting hints about the aliveness of Marx’s theory in terms of a scientific methodology. The strength of Marx’s theory is in its theoretical—progressive—hierarchy, which contrasts sharply with atomic neoclassical and bourgeois theory.14

This article only displays aliveness of Marx’s theory in the 21st century in terms of empirical evidence in section 5. We recognize that further studies must be conducted or reviewed in order to support the conclusion of aliveness in empirical terms. However, theoretical soundness and empirical relevance are the two sides of a coin. This is due to theoretical strength related to the fulfillment of predictions since the task of science is both explanation and prediction. Hence, an initial conclusion is that Marx’s aliveness could be possible in its power explaining the law of motion of capitalist mode of production and exploitation.

The application of the Lakatosian Framework of SRPs gives some opportunities to evaluate Marxian research program as normal science. It also gives some chances to compare Marxism with other competing SRPs. If Marxism can be demonstrated as normal science or it surpasses other SRPs in scientific degree, the place for Marxism is expanded at least in academic communities. Nevertheless, Marxism itself is closely related to praxis.

The above-conducted exercise of synthesizing the message of Marx and Engels aims to be a methodological explanation of their legacy. A conclusion in this sense is that most of the insights of M-E SRP fall under the category of Hard Core. Recalling that according to Lakatos Hard Core prescriptions are not susceptible of falsification by definition, this proves the relevance of their legacy along with their deepness and originality. The reason for this statement is that the Hard Core in question is highly grounded on profound analyses, which are related to deep human and natural considerations based on the observation of historical processes. Some contenders would argue however that even philosophical insights must be susceptible to falsification as otherwise they can be interpreted as dogmas (mainly Popper).

In contrast SRPs with large Protective Belts are epoch and region-specific, and as a consequence their validity is transitory. SRPs with large Positive Heuristics contribute few philosophical insights and are therefore only rich in operational methods, meaning that they are SubSRPs of previous SRPs. This is not included in Lakatosian methodology but can be learned in practice. The relevant issue of a SRP in the normative sense is its general applicability in terms of being both universal and timeless.
In spite that there surely exist some benefits in application of a SRP framework into Marxism, the dead-weight loss of this application must be considered. This cost may arise from the difference between the SRP’s framework criteria and Marxism’s theoretical orientation. In the SRP approach any assumption that underlies theories from which corroborated predictions are derived is always accepted. It is because explanations are sometimes found in the Protective Belt of a SRP. As a result assumptions are not tested directly, but predictions matter. We cannot assume as a fact what is supposed to be deduced. However in the Marxian approach instrumentalism cannot be accepted.

Nevertheless, a further conclusion might be that Marx, like say Keynes or Freud is not free of falling under the spell of the strands prevailing in his time, such as an extreme positivism, which is a straightforward legacy of the French Enlightenment. Nonetheless M-E SRP is highly applicable today. The aliveness of a SRP also arises from its ability to predict qualitative results and conditions. In this case fulfilled predictions tell the following story. In terms of humanism, Marx predicts both the individualistic vacuum and the capitalistic collapse. In this and many other respects M-E SRP will be useful throughout the 21st century. For opposing views on applicability, see Popper himself (Popper 1945), who dubs Marx’s theory as metaphysical since it is not susceptible to falsification.

On the other hand, the neoclassical SRP can be assessed as a comparison with the analysis hereby conducted. Perhaps the most remarkable characteristic of the former is that it is based on eternal and universal (rather than historical) laws in regards to human behavior. This consideration is widely acknowledged in the economics profession. This must be however, the subject matter of further studies.

If the contributions of Marx and Engels contain both new theoretical and empirical prescriptions, as this analysis attempts to demonstrate, further theoretical progress nevertheless has to be achieved. For instance, a rather confusing notion is that Communism represents the final stage of history and of dialectical materialism. But dialectics mean perpetual change. Why should dialectics be detained at any particular point of history? Whatever exists is imperfect. Ideal states in societies’ processes are states of mind. Further, equilibrium is just a concept borrowed from exact sciences, and especially used in British political economy and in both Cartesian and Kantian ordered visions of life. No social theory is free from subjection to ideology or from historical considerations.

There are differences between the development of nature entities (simple) and the development of human beings and societies (dialectic). The transition from potentiality to actuality in societies’ development is mediated by consciousness and will. Thus contradictions constitute the essence of Spirit if freedom is the goal. But Marx’s economic sublimates are empirically verifiable unlike those of either Freud (sexual sublimates) or Nietzsche (power sublimates).
The Lakatosian methodology of SRP demonstrates that systems of thought must be clear and contributive to explanations and predictions. In terms of clarity, most Marx and Engels’ concepts were hereby labeled under different headings of a SRP for obtaining a practical result of the undertaken classification. A practical conclusion from this classification may be that human emancipation is an achievable goal, taking into account that surplus value is a historical product. Perhaps Marx and Engels’ idea of human emancipation, Marx’s epistemology (mixing theoretical with ideological and practical concerns) and Marx and Engels’ emphasis on the role of the economic issue in history constitutes the deepest part of their legacy to mankind.

Regarding conclusions about the literature review of Marx and Engels’ legacy it can be stated that no definitive proof of aliveness can be drawn, although M-E SRP is theoretically sound and progressive—as can be seen in their Hard Core, and hence useful for conducting specific predictions. Marx’s philosophy is both evolutive and revolutionary.

Finally, general conclusions could be seen by using a holistic view of the objectives of the intellectual bequeaths of Marx and Engels. Other systems of thought look superficial and temporary when this Lakatosian type of exercise is conducted, but further studies of Marx and Engels’ legacy should be reviewed in order to drawn a valid conclusion. However it can be initially stated that only such systems as the Darwinian, the Copernican and the Marxian SRPs have both eternal and universal applicability.

All in all, both Marx’s philosophy and qualitative predictions survive with success, which is a requirement for a SRP to be progressive.

**Appendix: Marx and Engels’ Complex System**

A complex system is a methodology borrowed from physics. It is a sequence of interrelated and progressive steps, which is useful for characterizing and synthesizing the main issues belonging to a project of investigation. Its main features are its dynamical properties and its interrelations, where every element has an influence on (and is influenced by) others in sophisticated patterns.

This is useful here as it was already proved that Marx’s vision articulated by his organicism is suitable for outlining his interdisciplinary contribution on the huge issue of human emancipation.

The main points comprising a complex system are: extreme sensitivity to initial conditions, causes, purpose, interrelations (for either co-operating or struggling purposes), mobile (engine), emerging properties, consequences and suggestions or implications. Interrelations have a key role in complex systems, as simple systems are comprised of simple, unidirectional and linear interrelations among concepts or categories.
The purpose of this appendix is to classify Marx and Engels concepts in a new way for obtaining a deeper understanding and an improved applicability of those concepts as well as the legacy of Marxism. This task is done in the next paragraphs, where M-E SRP is outlined with a high level of—interdisciplinary—coherence, which is the hallmark of modern complex systems.

Marx and Engels’ Complex System: A verbal description

- Objective = The improvement of human condition.
- Causes = Alienation, exploitation, economic phases and cycles.
- Emerging properties = Money, credit.
- Mobile = Struggle, economic impulses, the desire for obtaining benefits in the face of high benefits rates.
- Interrelations or antagonisms = They occur between objective and subjective factors, between economic phases (within modes of production) and between workers and capitalists.
- Purpose = Realization and evolution of human nature into a communist society.
- Consequences = Abstract factors are subordinated to concrete factors, alienation, human pauperization, human unhappiness.
- Policies = Struggle, surpassing of economic phases.

This list represents the scheme of complex systems; although the whole M-E Complex System is synthesized below, taking into account the multiplicity and richness of its interrelated—not linearly—insights. The issues of both emerging properties and mobile are outside the system although they have an impact on it. Some further issues in the M-E Complex System are outlined in the next paragraphs as an additional form of classification of categories in order to obtain new insights.

With respect to the beginning—initial conditions—of the M-E Complex System, Primitivism exists in social modes of production, where the method used in social sciences is the same as that in natural sciences.

Sources are French Utopian Socialism, British political economy and German philosophy, both idealistic and subsequent Post-Hegelian thinkers. Another source of inspiration is an appreciation for workers.

Objectives are the understanding of the law of motion of human history and of the historical role of Capitalism. It should be noted that Rationalism and egalitarianism in the co-operative organization of societies exist.

The mobile is economic thermodynamics referred to the process among work, greed, class struggle, and the dichotomy between labor and capital as reflected in earnings. Even more importantly, emerging properties are: money, capital, industry, the machine-man dichotomy, alienation. Money is transformed into capital.
Consequences and ends are: Capitalism must be surpassed, whereas Scientific Socialism and Communism are the ends via praxis. The end is human emancipation. Finally the suggestions are to address science issues to practical concerns, to conduct revolutionary processes as the relevant part of praxis and to understand man as both a subjective and a social being.

Suggestions in this case deal with both causes and initial conditions since the studied complex system is also focused on modifying both modes of thought and methodological attitudes.

Outstanding among the issues of Marx and Engels under this perspective is that money is a part of the essence of man and hence a cause of alienation. Emerging properties may be as hazardous as collateral effects.

Man and systems alike are highly dependent on initial conditions. Perhaps Marx and Engels’ message under the complex and dynamic perspective is that any present state of affairs can be reformed, since man is able to shape history through his work, productive potential and applied thought.

Notes
1. Marx-Engels vision may also be labeled as one of the main Kuhnian revolutions of all time.
2. This insight is referred to as the Owl of Minerva.
3. Laws are universal and eternal in physics.
4. A definition firstly proposed by Engels, and supported by Lenin.
5. Mainly in Schelling and in Hegel.
6. Popper criticizes this point of view in both The Poverty of Historicism (1957) and The Open Society and its Enemies (1945).
7. The basic Hegelian idea of thesis, synthesis and antithesis is followed, although forces are economic.
8. This insight is also found in Hegel or in Schopenhauer. But it is envisaged by Marx in a concrete form, as opposed to an idealistic (either abstract or pessimistic) form.
9. Rather than into passion which supports the path to the Absolute Spirit or Idea in Hegel. Man is a passive sensuous subject in Feuerbach and an object in Capitalism.
10. The State is the reincarnation of Absolute Spirit or Absolute Idea in Hegel.
11. The flexible idea that advanced nations must start revolutions is a part of the protective belt.
12. This prediction is considered as erroneous by many authors.
13. This can be a debatable point.
14. This issue requires a detailed comparative study.
15. History detained at the consolidation of the Prussian State during the nineteenth century, according to Hegel.

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