

Journal of  
**Economic and Social Thought**

www.kspjournals.org

Volume 7

December 2020

Issue 4

**Development and underdevelopment from the  
perspective of evolutionary socioeconomics in the  
post-COVID-19 era**

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**Abstract.** In economics, the problematics of development and underdevelopment is a field of conceptual controversies and constant “re-comprehension,” already since classical economists’ fundamental explorations. Nowadays, especially within the particularly pressing conditions caused by the global pandemic of COVID-19, it seems that this field of research and scientific knowledge must be profoundly re-fertilized in analytical and explanatory terms. The current crisis seems to function as a catalyst for various structural changes globally, leading to a necessary theoretical reorientation of the related thematics towards exploring the inner evolutionary “mechanisms” that will drive socio-economic development (and underdevelopment) in the future. This article aims to study the conceptual evolution of the notions of development and underdevelopment in the light of modern evolutionary economics, which we think could offer a foundational repositioning at the interpretative level in response to the new emerging conditions. More specifically, this article tries to respond to what development and underdevelopment mean over time, where analytical readjustments the evolutionary economics lead to nowadays, and whether it is possible to counter-propose a multilevel approach that enriches the theoretical background for an interdisciplinary and unifying understanding of the specific problematics at the dawn of the new global reality that appears in the post-COVID-19 era. At first, we look at essential development and underdevelopment concepts by critically exploring corresponding basic definitions throughout time. Next, we study the essential and associated elements of evolutionary economics, in the light of the problematics of development and underdevelopment of our days, intending to reach a synthesizing theoretical perspective. We counter-propose the “development web” approach and analysis as a useful repositioned perspective on addressing the developmental/underdevelopmental problem since the compartmentalization of social sciences between the “micro, meso and macro” approaches seems progressively inadequate and sterile.

**Keywords.** Development, Underdevelopment, Evolutionary economics, Development web, Micro-meso-macro, Evolutionary microeconomics, Evolutionary mesoeconomics, Evolutionary macroeconomics.

**JEL.** O40, B52.

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## 1. Introduction

The focus on the problematics of development and underdevelopment is already central among other in the works of A. Smith (1776), J.S. Mill (1848) and K. Marx (1867). Following the debate, Schumpeter's (1942) approach was the first that highlighted the concept of continuous and revolutionary business innovation. Georgescu-Roegen (1971), for his part, argued that evolution is the result of a "natural law," an entropic process where the status, matter and energy of the current situation are degraded to give their place to a new one. In various works since then, thorough research and analysis have been conducted on the phenomenon of economic development and underdevelopment, perceived as something more profound than the mere accumulation of quantities and economic values (Alcouffe & Ferrari, 2008).

Today, the current socio-economic and pandemic crisis of COVID-19 causes multiple adverse mutations. A steep rise of poverty in various areas of the planet, the multiplication of deaths due to falling incomes below the survival threshold, and profound increase in unemployment and collapse of various industries, especially in less developed regions worldwide, all sum up for a challenging future ahead (International Civil Aviation Organization, 2020; International Energy Agency, 2020; OECD, 2020). More specifically, the World Trade Organization has forecasted that the COVID-19 crisis will surpass in most indexes the corresponding economic crisis of 2008-2009 (Azevêdo, 2020), and, respectively, the IMF (2020) and the World Bank (2020) have forecasted a global recession for 2020 of more than 4% to 5%. At the same time, the United Nations (2020) has noticed that extreme poverty will rise again to a particularly worrying extent, especially in less developed countries around the world, while the International Labor Organization (2020) has observed that more than four hundred million jobs have been lost within the first months of 2020. For various analysts and policymakers, the pandemic and socio-economic crisis of COVID-19 is a passage to a new phase of global evolution: more specifically, "a gateway between one world and the next" (Matthewman & Huppatz, 2020), or an irreversible reality in which there can be "no return to normal" (WHO Director-General, 2020).

Therefore, the prospects for the immediate future in the post-COVID-19 era for various less developed regions is exceedingly worrying. The dynamics of underdevelopment in these areas seem to take on new forms and dimensions and become even more severe and painful, as well as new forms of exclusion and lagging will be added to their structural weaknesses (FAO, 2020). For these difficult cases, re-entering into a development trajectory seems to require new adaptive and functional capabilities that they currently do not have, and it seems exceedingly toilsome to build and cultivate—such as digital applications, intangible infrastructure and knowledge, strategic repositioning, modern management methodologies (Mhlanga & Moloji, 2020; Modiba & Kekwaletswe, 2020; UNESCO *et al.*, 2020; Vladoš, & Chatzinikolaou, *et al.*, 2019). In this sense, an in-depth

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reorientation towards an evolutionary, holistic, and unified way of understanding socio-economic development and underdevelopment seems to be increasingly imperative nowadays for providing the necessary theoretical background to articulate new appropriate public policies, especially for the less competitive and resilient socio-economic systems.

This article approaches the evolution of the problematics of development and underdevelopment, offering an overview of the principal critical dimensions raised over the years. We perform a semi-systematic review and assessment of the literature (Snyder, 2019), and our goal is to offer a restructured theoretical framework that will function as a repositioning to the study of this theme under investigation. The primary goal is to counter-propose an evolutionary interpretation that can be further used to analyze today's new global development problems and prospects.

The first step examines the essential conceptual framework of development and underdevelopment shaped throughout time in the scientific dialogue by critically exploring fundamental definitions of these concepts and emerging issues concerning quantitative indicators in measuring the phenomenon. The second step examines the essential theoretical components of evolutionary economics in studying socio-economic development, from the foundations of this theoretical stream to the present day, resulting in the suggestion of an evolutionary conception of today's developmental aspects by unifying the analysis at the "micro, meso, and macro" economic and social levels. More precisely, the following questions are examined:

- What do development and underdevelopment mean, how can we define and approach these concepts over time, and what theoretical instruments are available to classify and measure them nowadays?
- How and to what extent do evolutionary economic science concern the theorization of current and future development and underdevelopment challenges?
- Is it possible for a holistic, interdisciplinary, and evolutionarily unifying approach to function as a new theoretical "mechanism" to enrich the interpretations and analyses offered in the context of these problematics and to perceive the in-depth restructuration of socio-economic development?

### **2. What do development and underdevelopment mean?**

Since the foundation of the specific discipline of economic development in the post-WWII era, its precise theoretical identity took shape and gained prominence in the relevant scholarly debate. According to Perroux's phraseology (Perroux, 1969), economic development means combining moral and social changes that enable a population to increase its actual total product in duration and cumulatively. In a similar vein, Behrman *et al.* (1988, p.xi) notice two decades later that development falls within the

theme of development economics, including the following analytical aspects:

“Development economics has been defined as the study of the economic structure and behavior of poor (or less developed) countries [...] It is generally agreed that ‘development’ encompasses the reduction of poverty, improvements in the health and education of the population, and an increase in productive capacity as well as rising per capita income. Although the core concerns of development economics are clear enough, its outer boundaries are difficult to establish and essentially arbitrary.”

Apart from the primary conceptual convergences on the subject, disagreement, interpretive divergences and theoretical re-positionings within the relevant scientific community never ceased to exist and be reproduced. The next sections analyze these fundamental aspects.

### 2.1. Fundamental definitions of economic development

In this socio-economic approach, a wide variety of definitions of development can be captured over time. In a book by UNESCO back in 1982 under the title “Different theories and practices of development,” a comprehensive definition of development is provided (Iraida, 1982, p.25):

“Development is integrated: it is an organic process involving a number of economic, social and cultural factors which overlap and constantly influence one another. Development is endogenous: each country carries out its development according to its own choice, and in conformity with the real values, aspirations and motivations of the population. Development is global: its objectives and problems are determined with relation to world problems and reflect the general nature of development [...] The society in which development is carried out is not isolated, but forms part of the network relations and forces that cover the entire world, including the most economically advanced societies as well as those which, from the economic point of view, are the most deprived.”

From a convergent perspective, sustainable development is defined, which refers to a particular type of development dynamics that allows the needs of today’s generations to be met, although without damaging the potential for the well-being of future generations. In other words, it is about a comprehensively perceived socio-economic development, which takes place by protecting, keeping, sustaining, and reproducing the “intact” potential of the natural environment—and not only that but also the cultural, political, and social environment—of the different societies of our planet. In the context of this theoretical understanding, the socio-economic environmental limits are also perceivable, as the increasing—and sometimes irreversible—overall environmental problems at local, national, and global levels show this, often in a painful way. However, this conclusion cannot mean any extreme “environmentalism” or “neo-Luddism,” which invokes the “return to the noble life of the savage” (Ellingson, 2001; Hannesson, 2015; McKay, 2020). Therefore, what becomes increasingly significant is not how much we produce and consume as

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human societies, but what we produce, how we distribute it and how we manage to achieve a sustainable growth potential with adequate equality and social sensitivity.

Also, an enrichment of the problematics is concerned with human-centered development and its implications. For example, according to the neo-Marxist approach by E. Fromm (1979), the primary interest should be attributed to human-centered development, arguing that production must serve man's actual needs, not the demands caused by the economic system. The author concludes that exacerbated individualistic competition must be replaced by solidarity, the aim of all social arrangements should be human well-being, reasonable consumption instead of maximum consumption must be pursued, and the individual must be an active stakeholder in social life instead of passive. However, this approach does not equilibrium assess the significance of individuality, freedom, and ambition in implementing development efforts in all historical periods.

Today, the principal point of view concerning economic development is that it has a purely dynamic socio-economic character (Acemoglu, 2010; Andrikopoulos, 2019; Carayannis & Campbell, 2019; Kanbur, 2002). For example, in a recent report by OECD (2018, p.36), it is argued that individual and collective action is necessary for co-operation in terms of achieving development, geared towards seventeen sustainable development goals set by the United Nations<sup>2</sup>. In turn, the United Nations, together with these goals, attributes significance to the policy effort needed to combat inequality in human development. A relevant report of 2019 (Conceição & United Nations Development Programme, 2019, pp.1–4) concludes that we need to investigate inequality in human development beyond income, averages—and beyond today—based on five key messages:

“First, while many people are stepping above minimum floors of achievement in human development, widespread disparities remain. [...] Second, a new generation of severe inequalities in human development is emerging, even if many of the unresolved inequalities of the 20<sup>th</sup> century are declining. [...] Third, inequalities in human development can accumulate through life, frequently heightened by deep power imbalances. [...] Fourth, assessing inequalities in human development demands a revolution in metrics. [...] Fifth, redressing inequalities in human development in the 21<sup>st</sup> century is possible—if we act now, before imbalances in economic power translate into entrenched political dominance.”

The recent “World development report” of the World Bank expresses similar concerns, analyzing the theme of today's transforming working

<sup>2</sup> The seventeen goals are as follows: 1) no poverty, 2) zero hunger, 3) good health and well-being, 4) quality education, 5) gender equality, 6) clean water and sanitation, 7) affordable and clean energy, 8) decent work and economic growth, 9) industry, innovation and infrastructure, 10) reduced inequalities, 11) sustainable cities and communities, 12) responsible consumption and production, 13) climate action, 14) life below water, 15) life on land, 16) peace, justice and strong institutions, 17) partnerships for the goals.

conditions (World Bank, 2019). The report raises the formalization issue in the traditional perspective of economic development, calling for a re-consideration based on understanding the forces of continuous change by setting as an example the changing working conditions and the relative “inertia” of labor laws. Various recent definitions, from different fields of interest each, shows us that the content of socio-economic development is still—undiminishingly and inevitably—broad and multidimensional:

- Peng *et al.* (2020) suggest that economic development is the fundamental basis for modernization, although the rapid development of the economy is often associated with the natural environment’s destruction and massive energy consumption.
- Kumar *et al.* (2020) argue that economic development means the process of qualitative improvement in people’s living conditions. Furthermore, economic development refers to progress in the social sphere, such as improvements in education and literacy, enhancement of quality of life, and better healthcare access.
- Palvia *et al.* (2018) think defining socio-economic development requires first understanding the term as closely associated (and sometimes interchangeably used) with the respective term of economic growth. However, the distinction between these two terms becomes evident when considering the concept of horizontal expansion and vertical advancement. For example, an increase in the service area of information and communication technologies by putting more cellular towers, laying more network cables, or allowing people in far off places to connect to Internet hubs means growth. On the contrary, development means vertical advancement where society moves from lesser to greater energy efficiency, quality of products and procedures, complexity, comprehension, creativity, enjoyment, and accomplishment.

Overall, it seems that there is an increasing interest in the holistic perspective of development against that of simple growth advancements (Marinelli, 2018; Peet & Hartwick, 2015). From the evolutionary perspective, the main trends are that development means primordially understanding the continuous contact and “communication” with the real (empirical) data provided by social and economic history. Also, denying any rigid perspective that entrenches and “over-specializes” the different branches of economics and social studies, heading towards interdisciplinarity, are equally observed trends (Augsburg, 2010; Klein, 1993; Stehr & Weingart, 2000; Vados, 2020).

### 2.2. Basic underdevelopment approaches

Simultaneously, the definitions of underdevelopment keep referring to a concept with “variable geometry” that raises various analytical concerns. First, considering underdevelopment and poverty in terms of one of the first analyses by B. Rowntree (1941), poverty is determined by the level of income by which nothing can be purchased except what is strictly

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necessary to sustain physical health. Rowntree (1941) also doubts whether a static and universal minimum wage exists, arguing that we need to understand the forces that hinder development in parallel, causing underdevelopment to appear. For many decades now, it has been evident in the context of this research field that underdevelopment is, in essence, dependent upon ideological and political aspects and criteria (Rowntree, 1941). More specifically, from S. Kuznets's (1955) perspective, underdevelopment is a comparative concept that can be defined based on a model (distance from the standard of living in developed countries), based on an assessment of what is possible (underemployment of resources) or based on what is necessary (insufficient "meeting" of needs).

The various approaches that perceive underdevelopment as a "capitalist development product" are not scarce in the relevant literature. According to the views of most neo-Marxist theorists, both older and recent (Amin, 1971; Frank, 1966), underdevelopment and capitalism are only two sides of the same coin. However, neo-Marxist approaches fail when they do not recognize that poverty and underdevelopment existed—even more intensely—well before the era of the so-called "deterministic exploitation of capitalism" and, as a result, the spatial concentration that causes uneven development and dependence relationships cannot be the sole cause of "misery" and suppression on the planet (Kotz, 2003; McDonough, 1995; Vladoš, 2019d).

Are there any fixed patterns and characteristics of underdevelopment in today's global economy? What can the "archetypical" characteristics of an underdeveloped country tell us (Leibenstein, 1960)? The economic characteristics for a typical "less developed," "underdeveloped," or "developing" country can be the excessive size of the agricultural sector and population, the reproduction of concealed (hidden) forms of unemployment, and the insufficient employment opportunities beyond the traditional rural sector (Cohen *et al.*, 2005; Kitching, 2012). They may also relate to staggeringly low per capita income—and, therefore, a standard of living on the threshold of survival for a large segment of the population (Ashaver, 2013). Also, most people will have almost-zero savings combined with a domestic investment "inertia" on the part of the wealthy strata of the population (mostly landowners), while the main "development" path will be exports of low value-added agricultural products and raw materials. The low per capita volume of trade and the barter system's survival, the fragmentation of agricultural land and the "perpetuation" of forms of agricultural production of low productivity, and the "typical image" of underdevelopment in terms of demography, culture, and technology are also similar conditions that cause underdevelopment (Bradshaw, 1987; Carlson, 2018).

Simultaneously, the standard profile of underdevelopment also includes demographic parameters such as high birth rate and mortality, and low life expectancy at birth, inadequate nutrition, and deficiencies in primary hygiene conditions for a large part of the population, and urban over-

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concentration and phenomena of “slums” within the cities (Campolina Diniz & Vieira, 2016; Charles Shapu *et al.*, 2020; Chen, 2010; Fox, 2014; Saxena, 2018). It also seems that underdevelopment is usually reflected at both cultural and institutional level, with the main characteristics being the significant level of illiteracy and inadequacies of education systems. There is also usually a perpetuation of “traditional” models of understanding social reality and weak social mobility, a degraded social and political status of women, ambiguity in setting property rights, not-intense competition, and phenomena of over-concentration of economic and political power (Okafor *et al.*, 2007; Soto, 2000). Finally, underdevelopment is also reflected in terms of anemic knowledge production and diffusion and lack of material and intangible infrastructure, manifested in substantial deficiencies in sophisticated human resources, in the inability to quickly assimilate modern technology, at significant shortcomings in transport, communications, water supply, and health infrastructure (Aggarwal, 2007; Arocena & Senker, 2003; Downs, 2000).

By expressing an “anti-capitalist” point of view, Taylor (2016, p.166) views underdevelopment as *“a dynamic—not static—condition; it is a relationship and expresses a particular relationship of exploitation: namely, the exploitation of one country by another.”* Jalata (2015, p.75), who also blames “neoliberalism,” argues that *“underdevelopment is characterized by dictatorship, powerlessness, joblessness, illiteracy, violence, hunger, famine, absolute poverty, disease, and untimely death.”* However, we should notice that such definitions might neglect significant development outcomes that were achieved in the front of battling with extreme poverty that occurred over the “evil” past years of globalization (Dollar, 2001; Friedman, 1999; Laudicina & Peterson, 2016; Rodrik, 2011; Vlados, Deniozos, & Chatzinikolaou, 2018a). On the contrary, from an evolutionary perspective, the following approach to underdevelopment by Perrotta (2016, pp.214–215) offers useful theoretical insight:

*“[...] we should stress that underdevelopment is not a synonym for backwardness. While the development economists of the 1940s and 1950s used the two terms interchangeably, later on a conceptual distinction emerged. In general, an economy is considered backward when it is poor and has not yet been touched by industrialization, and this distinction is based mainly on traditional agriculture. In the 1960s and 1970s, economists began to use underdevelopment in the sense of an economy which—although still poor and little industrialized—is transformed by a relationship with a stronger, more developed economy. The two economies develop a dependence on each other, in which the stronger one reshapes the other to its own advantage. It is a spontaneous, although not necessary, process.”*

All these dimensions suggest that an essential understanding of underdevelopment requires further processing and deepening the study beyond the narrow economic rationality, causes and effects. As Gillis *et al.* (1996, pp.24–25) aptly note:

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“Therefore, while there are economic causes for the prevalence of poverty in large parts of the world, economic explanations alone cannot account for why particular economic barriers exist. Economists are uncomfortable when they leave the realm of economic explanations, in part because the tools of economic analysis are of only limited help outside the sphere for which they were designed. But if one is seriously interested in understanding why some nations have had so much trouble initiating growth, there is little choice but to explore the relationship between economic development on the one hand, and political and social obstacles to development on the other.”

### 2.3. Quantitative indicators of growth

Analyzing the development process and finding the development models that govern it forces us to investigate the correlation between different methods and factors used to present the specific economy's size. As is well known, Gross National Product (GNP) and GDP per capita are widely used as the primary growth indicators of a country's economy. Simultaneously, other composite economic and social development indicators have been developed over time.

Amongst the most significant is the Human Development Index (HDI), which is a statistic composite index that measures various aspects of social and economic reality, such as life expectancy, literacy level, and per capita income indices to grade the different countries in terms of human development (Hou *et al.*, 2015). Introduced by Haq (1999), this indicator achieved to cut off the traditional view of human development, which postulated that it was sufficient to consider only the Gross Domestic Product (GDP) of the country. Human Development Index uses different statistical standards to collect and analyze nationwide data, making it today the most popular measure of development (Kpolovie *et al.*, 2017). HDI is considered the most used indicator in this topic, even though it only correlates data at the national level, ignoring subnational variations within countries and diverse local idiosyncrasies; the recent research by Permanyer & Smits (2020) tries to address this problem.

Quite naturally, the process of “measuring” in development economics is not only an area of unanimous consensus but also a field of intense scientific disagreements and dispute. As Chalmers (1982, p.xvi) puts it, referring to the widespread problem of measurement in socio-economic sciences:

“An inscription on the facade of the Social Science Research Building at the University of Chicago reads, ‘if you cannot measure, your knowledge is meagre and unsatisfactory.’ No doubt, many of its inhabitants, imprisoned in their modern laboratories, scrutinize the world through the iron bars of the integers, failing to realize that the method that they endeavour to follow is not only necessarily barren and unfruitful but also is not the method to which the success of physics is to be attributed.”

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Undoubtedly, the role of the theory of economic development, more profoundly than any partial measurement, takes place in signifying and giving specific meaning to measurements related to the evolution of a socio-economic system. Most significantly, development economics needs to investigate how quantitative accumulations (growth) lead to qualitative transitions (development). This semantic process requires critical perspective and capacities to synthesize different socio-economic development approaches (Brinkman, 1995; Nnadozie & Jerome, 2019).

The traditional measurement of development and underdevelopment raises and other methodological controversies and doubts. For example, are these measurements legitimate? Various scholars are against a narrowly defined "Economism" (or "monoeconomics"), which reduces the complexity of social relations by referring only to quantifiable trade relations (Hosseini, 2003). Also, nation-centrism is equally in question because it usually compares the underdeveloped with developed nations, arguing that developed ones are examples to follow (Antunes de Oliveira, 2020). Finally, by considering only national balances and statistics, structural differences between societies are equated with fluctuations in their economic flows and sizes (Wang *et al.*, 2008). Another question is whether measuring development is a reliable technique. Since underdeveloped countries have insufficient statistics (informal activities, "black" markets, and incomplete statistical data collection mechanisms), measurements only make sense within the specific structure under investigation. As a result, it is impossible to make precise comparisons of the level of prosperity of a developed and underdeveloped economy and their substantial diversification at a cultural level (Kaldor, 1972).

There can be no doubt that both the "imperfections" and the "virtues" of the quantitative method emerge in this scientific debate. In this subject, the view of S. Kuznets (1930, p.440) seems to enlighten things up:

"The theoretical economists of today are therefore right when they attack the quantitative approach, both in its relevance to static theory and in reference to its doubtful fruitfulness. It is an unsatisfactory approach if one wants to have a basis, unreal as it may be, for providing definite answers to questions of social desirability or social effects of a certain change. In such a criticism, however, two considerations are overlooked. (1) In preparing the ground for solving practical problems, the quantitative method cannot be neglected. Many an economist would profit by knowing the different factors at play, the various groups of changes already marked out by quantitative investigators to look for in any analysis of original data. (2) The potential fruitfulness of the method will materialize only after the body of inductive data has been accumulated and analyzed, after the ground is prepared for whatever systematic construction is to take place. It is in the future that the system of dynamic economics will be evolved by a concerted effort of both the inductive workers and of the theorists, probably combined in one and the same group of students."

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Therefore, various criticisms exist on the appropriateness of conventional economic growth indicators as a means of capturing the issue and extensions of economic development. The primary criticism is that there is an inability to make “objective” comparisons and, therefore, a “silent” acceptance of “myopic” averages takes place (Chiras, 1995). As there is substantial and lasting heterogeneity between prices and values between developed and underdeveloped economies, international accounts’ homogeneity is incomplete. In this context, the domestic purchasing power of money in the least developed countries is greater than that of the official exchange rate. Simultaneously, there are (and often dominant) non-tradable goods in the least developed countries. There is also a usually informal, non-statistically reflected economy, which is not fully included in the analysis, although it is an integral structural part of their economic system. Therefore, behind the use of empirical indicators, evaluative judgments, cultural and moral stereotypes exist (what is better and what worse, for the organized life of a society?) and internalized paradigmatic imperatives, which the simple quantification does not seem to have the necessary conceptual tools to capture altogether (Brown *et al.*, 1992; Papanek, 2002; Vlados, Deniozos, & Chatzinikolaou, *et al.*, 2018).

We conclude that growth indicators’ correlation enables us to make useful international comparisons, construct typologies, and develop econometric models in instantaneous sections or chronological orders. It cannot, however, define the content itself, the essence of development. This correlation of “development indicators” tends to reduce the complex interconnections of the socio-economic organizations under investigation into simple correlations between mechanistically interdependent variables (Mirowski, 1992; Vlados, 2019a). It can thereby build technical “black box” models based on the logic of simulation, which do not necessarily construct and integrated and theoretical framework (Rosenberg, 1994). On the contrary, evolutionary economics (whose elements and extensions will be analyzed in the next section) seems to study—far more profoundly than any mechanistic approach—the dynamics of development and underdevelopment when it presents and structures a framework to examine the historic and path-dependent socio-economic development.

### **3. Evolutionary economics and today’s theorization of development and underdevelopment**

Evolutionary economics is even to this day one of the “heterodox” currents of economic science. With the most concise definition possible, evolutionary economics sees the economy as a system in constant motion driven mostly by the forces of change and innovation. The scientific study of evolutionary phenomena—as a distinct field of analysis—is due to the monumental work of C. Darwin on the *Origin of Species* published in 1859. From a generic point of view—since this article does not intend to delve deeper into the science of biology—evolution means the self-

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transformation of an organic system based on the creation, absorption, and diffusion of novelty—innovation, in socio-economic terms. Once a new genetic variation occurs in one or more organisms, then it is the environment that decides the successful assimilation or failure of this novelty.

Moreover, in the years following the publication of Darwin's work, economists (in particular, Veblen, Marshall, and Schumpeter are the most prominent of them) started to underline the relevance of economic science to biology mostly and not so much to physics. In this sense, today's evolutionary economics are shaped by methodological orientations and arguments with profound theoretical roots (Andersen, 2009). The application of evolutionary thinking to economic analysis was first introduced at the end of the 19<sup>th</sup>/mid-20<sup>th</sup> century, first by T. Veblen and then by J. Schumpeter, while its roots can be traced in the works of classical economists and the school of Classical Political Economy. Classical economists and social scientists (among them Hume, Mandeville, Smith, Ferguson, Malthus, Babbage, and Jones) can be told that they were, in fact, evolutionary economists as they studied the socio-economic background and dynamics of their societies (Hart, 2013; Vlados, 2019c).

Although Neoclassical Economics is primarily rooted in the Principles of Economics written by A. Marshall (1890) that was the primary textbook for economics for generations of economists, the evolutionary approach also has apparent effects from this "Marshallian tradition" (Antonelli & Ferraris, 2018; Becattini, 1990). Evolutionary economists present today an "unorthodox" interpretation of the Marshallian work, usually quoting a now-famous passage from Marshall's Principles of Economics in which he noted that "The Mecca of economics lies in economic biology rather than economic mechanics" (Hodgson, 1993). Therefore, although Marshall was the forerunner of the later "orthodoxy," his thinking is closer to evolutionary economics that is generally accepted. As far as evolutionary economics is concerned, it studies the processes that transform the economy into its foundations while exploring the interactions between firms and industries, production, trade, employment, and growth (Witt, 2008). More specifically, in the "evolutionary theory of the firm," the different socio-economic actors have and articulate individualized behaviors, which create—but also co-create, respectively—their entire socio-economic context of action, creating thus specific development trajectories. According to Nelson & Winter (1982), two of the principal authors in this stream of thought, firms are also biological organisms with specific routines—a concept "diametrically-opposed" to the conventional neoclassical maximization rationale—that continuously claim their competitive survival in an ever-changing environment.

According to Veblen (1898), who directly criticized the back-then prevailing theory of economic analysis, evolutionary economics is the theory of cultural development through economic institutions' cumulative sequence. More specifically, Veblen wondered why the dominant economic

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science of that time was not an evolutionary science, giving interpretations that will later lay the institutional foundations of economic analysis by seeing the institutions through the prism of biological analogies (Foster, 1997; Levallois, 2011; Penrose, 1952). For Veblen, the individual's economic life is a cumulative process of adjustment to the surrounding environment. As G. Hodgson (1994, 1998) argues, Veblen adopted the Darwinian idea of natural selection but did not deny the role of "behavior," postulating that the basis of the targeted action is decided by the institutional environment, which includes all the structures that produce culture and behavior. At this point, opening an analytical parenthesis, it is worth noting that "natural selection," which is a fundamental concept of evolutionary biology meaning that the organisms that survive in nature are the more adaptive ones, differs from "behavior" in the sense that "socio-economic organisms" do not only passively adapt but are active adaptation actors through their innovative action<sup>3</sup>.

Therefore, the institutional school of thought, which appeared after Veblen's contribution (with important representatives being C. Ayres, J. Commons, and W. Mitchell), abandoned Veblen's analytical effort to fuse biology with social sciences. The decoupling between the institutional stream of thought and the evolutionary approaches in the period that followed is mainly because Veblen (like Marshall in this research orientation) was unable to systematize and suggest a comprehensive analytical framework, such as to incorporate the evolutionary dimensions that economic change always carries (Hodgson, 2012; Schütz & Rainer, 2016; Waller, 1982).

The theoretical renewal of evolutionary economics before the second half of the 20<sup>th</sup> century and later is mostly due to J. Schumpeter and the neo-Schumpeterian economists and successors (Chatzinikolaou & Vlado, 2019; Hanusch & Pyka, 2007; Levinthal, 2006; Magnusson, 1994; Perez, 2010). Schumpeter developed a dynamic perspective based mostly on Karl Marx and the German Historical School's dialectics by emphasizing each socio-economic system's historical specificity and the continuous creative destruction in industrial terms (Michaelides & Milios, 2009). Schumpeter's work was also influenced by the neoclassical tradition, as he adopted ideas of early theorists of "general equilibrium" without limiting his evolutionary micro-economic point of view (Andersen, 1996). Schumpeter (1939) specifically defined economic development to describe the changes in the economic process caused by innovation and how different economic systems react to innovation. Arguing that the capitalist process involves an inevitable evolutionary character, Schumpeter (1942) stressed that the fundamental impulse that drives the capitalist engine comes from new consumer goods, new production and transport methods, new markets, and new industrial organization forms shaped by the capitalist enterprise.

<sup>3</sup> However, it is worth stressing that most neoclassical models of dynamic monopoly concern firms that shape market conditions rather than passively accept them (Bensaid & Lesne, 1996; Bose *et al.*, 2006; Gul *et al.*, 1986; Pindyck, 1985).

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In this way, economic development is presented in Schumpeter's view as spontaneous and discontinuous and characterized by imbalances that rearrange the earlier equilibrium regime. Innovation, imitation, and competition based on technology lead to qualitative transformation and "creative destruction" where old and "saturated" means of production, as well as the social arrangements that produced and "hosted" them, are progressively driven to destruction (Pacheco *et al.*, 2017; Schubert, 2013). In this context, a dialectic development in the economy is inevitable, as prosperity itself cultivates the "necessary" resources of its future destruction internally. Schumpeter (1942, p.83) stresses the following on this:

"The opening up of new markets, foreign or domestic, and the organizational development from the craft shop and factory to such concerns as U.S. Steel illustrate the same process of industrial mutation—if I may use that biological term—that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in."

However, in Schumpeter's thought, the usefulness of the "biological paradigm" of interpreting economic phenomena is not explicit. It is a fact that Schumpeter himself was "temperate" to Darwin's invocation and other biological mechanisms of differentiation, heredity, or natural selection to describe economic structures. As Schumpeter (1954) mentions in the last and incomplete magnum opus on the History of Economic Analysis, the term "biological sociology" does not exist.

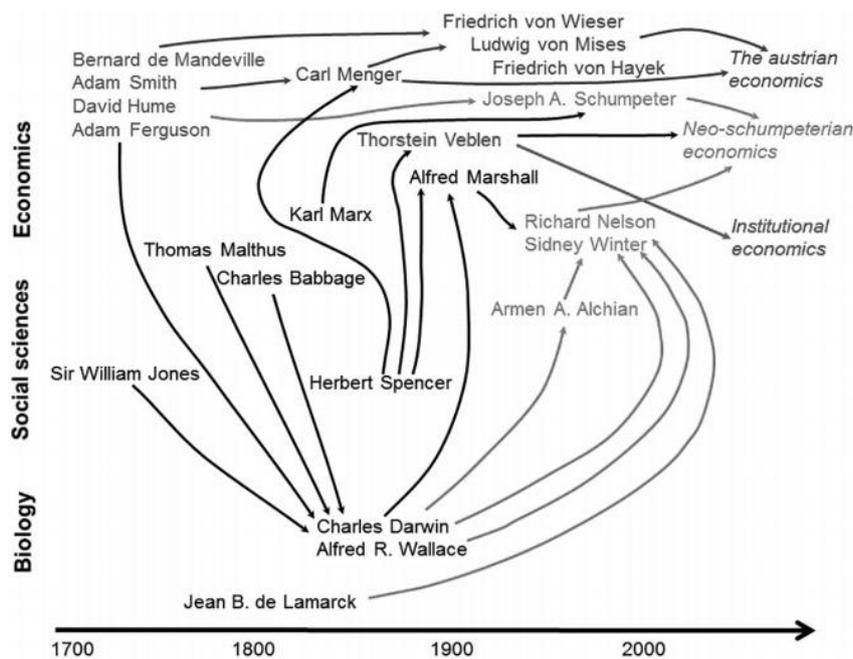
Schumpeter was also opposed to Veblen's view of the prospect of studying economics through a Darwinian approach, whose work, according to Schumpeter, falls under economic sociology. A similar belief in Veblen's role in the foundation of evolutionary economics seems to be shared by Nelson & Winter (1982) since they do not refer at all to Veblen's work in their milestone book "*Evolutionary theory of economic change*." Later, however, Veblen's contribution—mostly by writers of Hodgson's theoretical stream of thought—is recognized as key to the foundation of evolutionary economics (Hodgson & Lamberg, 2018).

Simultaneously, modern evolutionary economics has its roots and is bifurcated into another significant stream of thought based on the "Austrian School." The Austrian school started with Carl Menger (1871), who developed the theory of money formation at the end of the 19<sup>th</sup> century, arguing that the origin of money is natural and not an invention of the state. Friedrich Hayek and Ludwig Von Mises, two of the most eminent continuators of this stream, further developed this theory by incorporating evolutionary characteristics. For Hayek (1988), institutions' creation comes primarily from human action rather than human design, showing a "spontaneous order" of institutions. For Mises (1949), this human action

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shapes the market economy by dividing labor into a long evolutionary process.

To sum up, evolutionary economics is therefore divided into three prominent “theoretical families,” each with specific roots and diachronic influences (Kwasnicki, 1999): institutional economics, neo-Schumpeterian economics, and Austrian economics (Figure 1).



**Figure 1.** Diagrammatic representation of the theoretical foundations of evolutionary economics and mutual influences (Kwasnicki, 1999).

All three schools of thought focus on economic dynamics, clearly arguing that analysis epicentered on the system’s static equilibrium is insufficient in analytical terms. In the background, evolutionary economics differs from the “standard” economic analysis to the extent that it studies continuous change and innovation. The dynamics of innovation means that new elements of change are continually being introduced and absorbed into the different interconnected socio-economic systems, while others are being driven to their inevitable extinction.

Where are we today, and how does the scholarly literature cover socio-economic issues from evolutionary economics’ perspective? Below we focus on an elliptical but essential sample of evolutionary contributions to socio-economic sciences, presenting various relevant perspectives developed over the past twenty years. We examine at their diachronic development some of these approaches, which seem to be directly linked to the articulation of today’s problematics of development and underdevelopment:

- Boschma & Lambooy (1999) try to apply evolutionary thinking to economic geography, arguing that we should perceive regions as

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spatial entities that identify, select, or influence firms' innovative capacity. In this context, the firm affects its spatial contours with its action, but the "space" itself also is a reproducible evolutionary unit.

- Martin & Sunley (2007) think that new knowledge (innovation) appears on a small scale in local contexts in a similar methodological direction. They also argue that evolutionary economic geography should consider geographical space's role in creating and diffusing economic novelty.
- According to Dopfer & Potts (2008), there is a "general theory" of economic development that is not limited to the study of "micro" processes, nor can it be exhausted in detail at the cumulative "macro" level as today's economic growth theory postulates. They suggest that we need an integrated "micro-meso-macro" framework, in which the "micro" examines how different actors produce and keep new "rules," the "meso" investigates how these "rules," industries and institutions are transformed, and the "macro" analyzes how "meso-units" are coordinated within a historical development trajectory.
- Safarzyńska & van den Bergh (2010), who explore how evolutionary models are classified in economics, argue that a comprehensive understanding of the economy as an evolving system requires the construction of models in which the consumers and producers have equal value, in a relationship of co-evolution of supply and demand.
- Heinrich (2016) then argues that there are substantial differences between evolutionary biology and the evolution of institutions, businesses, and strategies in economics. There is no genetic coding (DNA and RNA) or sexual reproduction in economic development because the actors involved can deliberately intervene. However, the author suggests that extensive mutation phenomena in socio-economic organizations periodically lead to the exclusion of "the fittest." Protecting small businesses by sustaining their knowledge could contribute to stability and limit these random variations. Heinrich (2017) also postulates that specific evolutionary economics models are based on metaphors from genetic evolution, assuming a population of enterprises with specific routines, technologies, and strategies where the forces of variety generation and "natural selection" occur. This "narrow" conceptualization, the author argues, could be enriched with the "broader" findings of evolutionary biology that allow one or more entities to adapt. In this context, an institution or society can also be perceived as an evolutionary entity in developmental terms.
- Araujo & Teixeira (2011) investigate what mechanisms prevent technological progress diffusion from developed to underdeveloped countries. They argue that an approach of "structural economic dynamics" enables studying the problem from an industrial perspective while the evolutionary approach focuses on enterprises' dynamic abilities to highlight innovative complexity. The authors

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conclude that technological progress diffusion is due to the specific operational or industrial environments, such as the level of per capita income and the sum of institutions.

- Sica (2016) compares the neoclassical with the evolutionary approach to “eco-innovation,” arguing that neoclassical theories focus on analyzing incremental eco-innovations and researching specific innovation characteristics such as efficiency, prevention, or environmental regulations. In contrast, the analysis of eco-innovation in its dynamic and multidimensional nature through the evolutionary approach perceives the issue as correlated with the interactions between technical, social, and economic elements.
- Potts (2017) stresses that Keynes did not develop an endogenous interpretation of innovation or economic transformation like, for example, Schumpeter did. Potts argues that if Keynes had developed such a theory, he would have focused more on institutions’ role in continually reinventing the economic system, creating new opportunities for entrepreneurship and production in broad terms.
- Monasterolo, Roventini & Foxon (2019) argue that approaches based on evolutionary economics could strengthen existing traditional economic and financial models for managing the risk of climate change by analyzing the micro and macro behavioral levels of systems characterized by non-linearity and time dependency.

Altogether, the newer evolutionary approaches to the points that intersect the theme of economic development seem to attribute an increasing significance to the study of the continuous interaction and co-determination of the functional and spatial dimensions of the development process. In the background, in terms of studying the development process, they see the innovative dynamic in all its aspects as the primary pillar of socio-economic development. In this evolutionary approach to development, it is noted that a call to an evolutionary perspective of economic geography, where socio-economic space is also reproduced evolutionarily and not just the firms and the sectors. Finally, in the evolutionary development point of view, the transfer of analogies from evolutionary biology to economics now seems to be a standard reference for evolutionary economics; all firms, industries, institutions, and other socio-economic actors, although they do not face biological and genetic variations, are biological organisms capable of “deliberate” intervention, continuous learning, and adaptation.

### **4. Concluding remarks: The integration of “micro, meso, and macro” social and economic analysis in the evolutionary understanding of development in the post-COVID-19 era**

It seems that the theoretical preoccupation of evolutionary economics—the emphasis on the study of innovation, the rejection of individualistic

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rational optimization (Urbina & Ruiz-Villaverde, 2019), and the ongoing interest in the evolution of institutions—acquires increasing significance in today's conditions of globalization's restructuring (Altman, 2020; Bhattacharya *et al.*, 2017; Kotler & Caslione, 2009; Larionova & Kirton, 2020; Vlado, Deniozos, & Chatzinikolaou, 2018b). In this context, It becomes evident in socioeconomics that correlating quantitative indicators is useful but not enough to study profound developmental/underdevelopmental structures and dynamics of today's global socio-economic system. In these circumstances, evolutionary economics emerges as an integrated theoretical framework that leads to new directions of understanding how socio-economic actors behave at all levels of their economic and social symbiosis. In effect, various developments in today's evolutionary economic analysis appear, which open new paths to conceive the issue of development and underdevelopment. These developments also seem to be of particular importance in structuring a renewed conceptual framework to understand the development process and address the worldwide difficulties we will have to face in the post-COVID-19 era.

More specifically, today's evolutionary economics invites us to deny any rigid autonomous theoretical perspective in social sciences, entrenched in partial specializations and disciplines. On the contrary, it seems to argue—in an increasingly convincing way—that to approach the thorny issue of economic development fruitfully, we must try interpreting socio-economic development components, structures, and dynamics in a consistently interdisciplinary, synthetic and dialectical way (Fine, 2019; Mainzer, 2011; Morabito *et al.*, 2018; Pacheco *et al.*, 2017; Vlado, Deniozos, *et al.*, 2019; Williams, 1989).

In the background, the analytical perspective of evolutionary economics argues that it is not enough to perceive the “engine” of socio-economic development only in the individual “screws” that make it up. We must always search at how this “engine” transforms structurally and evolutionarily its entire architecture's content and qualities. Moreover, we call on this repositioned concept of the socio-economic system's mutation because we are not dealing with a simple “engine,” but with a living entity in continuous development.

Furthermore, according to Dopfer & Nelson (2018, p.9), an “explicitly evolutionary” perspective is necessary, combined with a “reform movement” oriented at breaking the monopoly of neoclassical theory “*on conceptualizations at a general level of what economic activity and structure are about that professional economists know and teach.*” A fundamental orientation in the evolutionary socio-economic approach is that within the socio-economic system of capitalism, all “socio-economic organisms” evolve like biological organisms, whether they are microeconomic actors, markets, or other kinds of social institutions (Nelson, 2018). According to the converging view of Pyka *et al.* (2018), to understand how long-run economic development is structured from an evolutionary perspective, we must distinguish and synthesize the wide range of different interrelated

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perspectives. More specifically, Pyka *et al.* (2018, p.166) argue that we must explore, at the same time:

“the relationships between technological advance and the rising capital intensity of production and of labor productivity that have been striking features of economic growth particularly when viewed at a macroeconomic level [...] the changing mix of industries and products produced and consumed that also are salient features of the economic development we have experienced [...] the changes in economic institutions that has been another striking feature of the economic development process, and how this has been related to the evolution of technologies and economic structure that have occurred.”

In this theoretical background, modern evolutionary economics encourages a synthetic repositioning of development economics in unified “micro-meso-macro” economic and social terms<sup>4</sup>. To this end, this approach could be further fertilized and strengthened by merging into a shared interpretive platform all three basic analytical levels of economic and social sciences simultaneously.

#### 4.1. Microeconomic and microsocial analysis

The first approach it synthesizes is the microeconomic and microsocial aspects of the development phenomena, which concern a specific approach to problems, usually limited to analyzing the behavior and action of units working within the economy and society (individuals, groups, and organizations). Microeconomics refers to the study of factors deciding the relative prices of goods and inputs, focusing on the different relevant markets (Gavetti *et al.*, 2012). In terms of evolutionary economics, the approach of firms’ behavior and capabilities assumes that firms do not and cannot “optimize” because they always make decisions that are only relatively satisfactory. According to Helfat (2018), firms are profit-seekers rather than profit maximizers, while the organizational routines—and the capabilities they sustain—shape this profit-seeking behavior. As firms are the most significant players in innovation and the development of a socio-economic system, the economic catch-up between different socio-economic systems is primarily a cumulative process of learning and assimilating new capabilities. According to Lee & Malerba (2018), this evolutionary process always takes a long time. To this end, a significant intersection arises—based on the “evolutionary microsociology” that we suggest—where it becomes clear that we also need to simultaneously refer to the relationships

<sup>4</sup> Therefore, we directly agree with the view of Galbraith (1987, pp.295–297), whose related argument is expressed as follows: “The distinction between microeconomics and macroeconomics will blur and disappear. This distinction, which, to remind, was the legacy of Keynes, gave responsibility for overall economic performance to the state and the central bank, leaving the traditional role of the classical market to the individual sectors of the economy. Inflation and unemployment were for macroeconomic attention; if they were thereby controlled, the microeconomic performance of the market could be left in firm descent from classical orthodoxy. The compartmentalization of economics between microeconomics and macroeconomics hides the most stubborn cause of present-day unemployment in the mature industrial countries: the decline of the older industries. And it also hides the relevant solutions.”

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between social members in small groups (for example, in terms of family organization). However, we should not consider the individual from the “isolationistic” perspective that most microsocial approaches do (Cherkaoui, 2003; McQuarie & Denisoff, 1995; Meyer, 2019).

### 4.2. Macroeconomic and macrosocial analysis

The second is macroeconomic and macrosocial analysis, which concerns the specific way of approaching economic phenomena in their overall, cumulative economic and social dimension. More specifically, macroeconomics refers to the study of factors deciding the economic system’s flows and sizes altogether, including economic cycle phenomena and growth (Grinin *et al.*, 2016). Apart from the explicit macroeconomic perspective, there seems to be a great deal of interest in the interpretive combination with macrosocial research to study development dynamics. According to macrosociology, this theme refers to the study of large-scale phenomena, covering a broad range of topics that include groups and institutions of diverse sizes, trying to encompass all human society and history (Borgatta & Montgomery, 2000). In an evolutionary context, the joint approach of macroeconomics and macrosociological development information seems to give the ability to treat the dynamics of development of the different socio-economic systems from an integrated and historical perspective.

### 4.3. Meso-economic and mesosocial analysis

Third—and perhaps the most significant—level exploring the development process we think is the meso-analysis that analytically “bridges” the “micro” and the “macro” levels. Meso-economics concerns the specific way of approaching economic phenomena in their intermediate, dynamic, and evolutionary socio-economic dimension, referring to the study of the factors that decide the structural dimensions and sizes of the economic system under investigation (Mann, 2011; Peneder, 2017; Vladoš & Chatzinikolaou, 2020; Zezza & Llambí, 2002). More specifically, under the scope of meso-economics fall specific localities, different economic sectors or industries, their concentration, and their internal and evolving forms of competition and innovation (Moore, 1993; Porter, 1998; Vladoš & Chatzinikolaou, 2019). In this context, technological advance is an evolutionary process in which “different kinds of actors and activities are involved, and both market and non-market institutions” (Dosi & Nelson, 2018, p. 72). As Dosi & Nelson (2018) suggest, the firm is the most significant structure that houses these activities and the practices governing them in contemporary economies. At this point, the synthetic exploration of the various social dimensions that lie at the foundations of the dynamics of these meso-systems (meso-social)—such as the production and diffusion of knowledge, the reproduction of cultural patterns, mentality and lifestyles in the different socio-economic systems—seems to be of significant interest in understanding the broader dynamics of development and

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underdevelopment. The reason behind this is that meso-social structures—such as the organization of the work-place—can offer an enlargement of our theoretical comprehension because they encompass all relevant levels of social organization (Levy, 2002; Pyka & Nelson, 2018; van Wijk *et al.*, 2019).

### 4.4. The multilevel “development web” approach

We think an integrated and holistic evolutionary approach forms the basis for a necessary regeneration and the explicative enforcement of the modern economic development theory. We argue that these three approaches (micro, meso, and macro) to the economic and social phenomena are not “by definition” incompatible or conflicting with each other. As evolutionary economics proves, they can be analytically distinguished because they have a different starting point, although they are robustly complementary and mutually reinforced in analytical terms<sup>5</sup>. The unified “micro-meso-macro” analysis shows that these three spheres are entirely inter-fertilized in exploratory terms, and, in this sense, modern economic development must use them in a synthesizing way (Dopfer *et al.*, 2004).

To this end, we suggest the extension of the “competitiveness web” approach (Vlados, 2019b) to what we call the “development web” approach (Figure 2). The competitiveness web approach forms an analytical enlargement and enrichment of Porter’s “diamond” theoretical framework.

<sup>5</sup> In this context, we also meet a similar critical perspective of Ruttan (1998, p.16), who offers a respective insight on the subject: *“My own sense is that the most significant advances in knowledge about economic development will continue to emerge from research conducted at the micro-level. The real sources of growth that result from efficiency gains, technical change, institutional reform and design can only be observed and understood by investigations conducted at the household, firm, and sector level. The effects of those technical and institutional changes generate the disequilibrium effects that are captured at the aggregate level in measures of scale economies and total factor productivity growth.”*

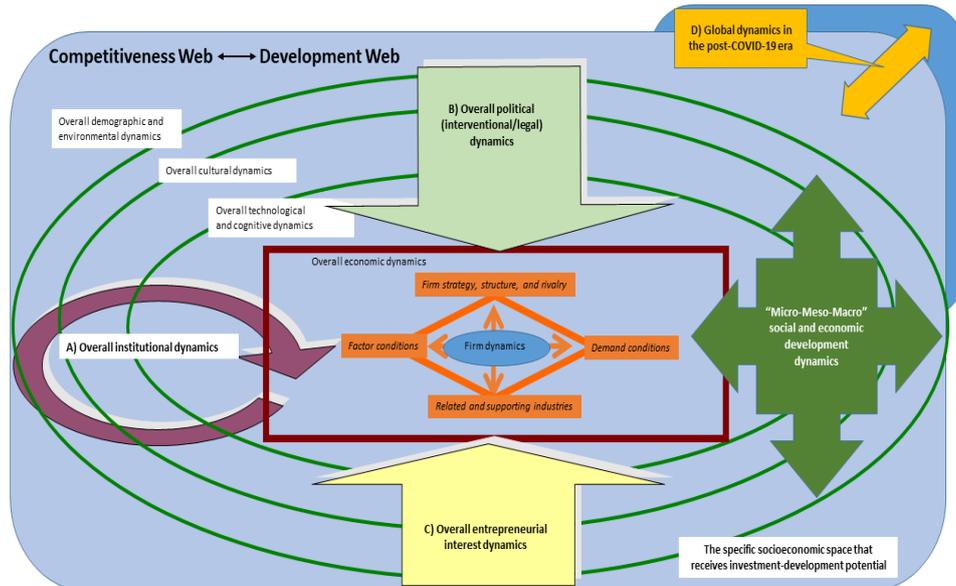


Figure 2. From competitiveness web to development web. Based on Vlados (2019b).

According to the competitiveness web approach, at every level of space (local, national, regional, and supranational), a system of forces is always shaped and reproduced, simultaneously created (and constantly re-created) by various sub-systemic socio-economic dimensions. Each specific socio-economic space receives—to a greater or lesser extent—a specific investment dynamic, based on the entire attractiveness it cultivates and diffuses (Atkinson, 2012), and the ability to sustainably reproduce its internal balance; all these dimensions practically decide its development potential and perspective. In this context, demographic and environmental dynamics, cultural dynamics, technological and cognitive dynamics are synthesized, together with the overall economic dynamics related to the entire system at the level of economic sectors, clusters, and actively hosted firms. All these sub-systemic dimensions are co-evolving and co-determined, concretizing the specific spatialized socio-economic system. Within this system, there are four significant poles of action that decide its specific competitive trajectory:

- A. The pole of the entire institutional dynamics that crystallizes the system’s existing structures and balances at all levels, in terms of specific institutional forms and agents.
- B. The pole of the entire political, interventional, and legal dynamics defines the activity limits of the different actors who coexist in the system.
- C. The pole of the entire entrepreneurial interest dynamics reflects the extent to which this socio-economic system can draw and assimilate investment interest both internally and externally.
- D. The fourth and last pole is the one that reflects global dynamics, expressing how this socio-economic is inserted and live together (symbiosis) with its broader international environment.

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These four poles of dynamics interact in actual terms and reshape the socio-economic system's specificity (idiomorphy) incessantly. At this point, the critical significance of "micro-meso-macro" development dynamics appears as the primary synthesis element of the entire socio-economic system. Therefore, in practice, this competitiveness web seems to be "the other side of the coin" of each socio-economic system's development physiognomy, as the shortcomings and weaknesses that appear in the competitiveness web of each socio-economic system lead directly to the deduction of its positive development prospects. This close interconnection becomes increasingly significant for the near future, especially in the effort of each less powerful and competitive socio-economic system to insert itself into a new positive development trajectory in the post-COVID-19 era.

### **Acknowledgment**

Thanks go to Dimos Chatzinikolaou, my doctoral student at the Department of Economics of Democritus University of Thrace, for his help in editing this text. I warmly thank Dr. Andreas Andrikopoulos, Associate Professor at the Department of Business Administration of University of the Aegean, who offered useful comments on this manuscript's last version.

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C. Vladoš, JEST, 7(4), 2020, p.181-212.