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Marxist Systems Thinking and the Categorization of Materialist Dialectic

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ABSTRACT: In this paper, I consider the relationship between the systematicity of Marxism and the attempts to analyse materialist dialectic in terms of categories and laws. Is the categorization of materialist dialectic a necessary outcome of the scientific character of Marxist thought and a confirmation of that scientificity? Or is Marxism a systemic mode of thought precisely because it rests on conceptions of dialectic and materialism that are expressed through general laws and all–encompassing categories? At the heart of the problem lies the connection between the ideas of "system" and "science," which was already emphasized by Kant and Hegel, whose works famously highlight the concept of "category". Starting with this debate, I focus on the thesis that Marxism is a system composed of interconnected subsystems, and I present an account that unifies three complementary interpretations of Marxism. Then, I highlight the interrelations between systemic philosophy, Marxism, and various layers and applications of the systems paradigm. Subsequently, I tackle selected aspects of the question of the categories of materialist dialectic based on the categorization attempts undertaken by Sovient Marxist categoricians. The suggestion that Marxism should be considered as an open system is formulated by means of a call for an open categorization of materialist dialectic that admits the primacy of the category of praxis.

KEYWORDS: Marxism, Materialism, Dialectic, Systems Thinking, Scientificity, Systematicity, Category.

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Introduction

In his analysis of capitalist society, Karl Marx manifestly makes use of systems thinking, so that–at the time of the establishment of systems sciences–he was described in socialist countries as the "first cyberneticist" and the "first structuralist" (Warnke 1977, 793). Today, the significance of systems thinking within Marxism[1] is already detectable in a number of emergent scientific research fields. Especially with regards to the complex interactions between the ecosystem and the human technological achievements, the actuality of Marxian (and Marxist) theories and analyses is striking. In our current digital age, "Marx's categories" have proven to be exceptionally pertinent and they "offer greater penetrating explanatory power than other approaches" (Healy 2020, 26). To give one meaningful example, one can recall the observations of Marx in *Outlines of the Critique of Political Economy* (the rough draft of 1857–1858, second instalment) concerning the "metamorphoses" of the means of labour into "an automatic system of machinery:" As maintained by Marx, that system "consists of a large number of mechanical and intellectual organs, with the workers themselves cast in the role of merely conscious members of it" (Marx [1857–1858] 2010b, 82). I claim that this Marxian analysis entails already the core of the contemporary understanding of what the "technosphere" refers to. Indeed, Marx's systems thinking and his materialist–dialectical critique of the categories of political economy are expressed in the thesis according to which the interactions between human beings, their technological achievements, and the natural environment constitute one single global system. It is precisely this Marxian thesis that represents the current research program of Earth System Science (ESS), namely to "bring social mediated dynamics into [its] theory, analysis and models" (Donges et al. 2017). Such a task would be optimally carried out with the help of an *open* Marxist systems thinking, which equally considers theory and practice, adopting an *open* system of materialist dialectic that connects its philosophical categories to the categories of both social and natural sciences. While we will come back later to the characteristic of openness, it is appropriate to start our analysis by approaching the connection between the systemic character of Marxism and the problem of categories (and categorization) by means of the following elements.

1. I use the term "Marxism" in a broad sense that refers to various schools of thought built upon the works of Marx and Engels. Depending on the specific context, the reader might substitute the term "Marxism" by "Marxist theory," "scientific Marxism," "dialectical and historical Materialism," etc.

The examination of the relationship between Marxism as a whole and materialist dialectic as one of its essential components can follow very different courses. One possible path is the focus on the historical perspective that analyses the Marx–Hegel relation and the extent to which the elaboration of Marxism is indebted to a materialization by Marx of the idealist Hegelian dialectic. Another possible starting point would be the questioning of the status of materialist dialectic within the foundational Marxist theories and works, especially through the focus on Marx' *Capital* (e.g. Nesbitt 2024). It goes without saying these two research paths can be complementary. Yet they call for further perspectives to optimize their results. As an additional (double) step, I suggest considering the following two theses: (T_1) The reexamination of the status of materialist dialectic in Marxism should occur within the general context of the *systems paradigm*. (T_2) Especially regarding the crucial question of scientificity, to take the systems paradigm into account means principally to have to do with the problems of categories and categorization.

As far as (T_1) is concerned, the reason for assuming the systems paradigm is not only that the mereological relation between the whole and the parts can be expressed in terms of systems and subsystems. More importantly, grasping the systemic character of both Marxism and its materialist dialectic is pivotal for any assessment and/or development attempt. Regarding (T_2), the categorial mode of thought is a necessary condition of logical thinking, i.e. without categories it is impossible to think logically (Rosental and Schtraks 1959, 19). Since logical thought is the core of scientific thought, and systems thinking—as we will see—is inherent to scientificity, analyzing both Marxism and its materialist dialectic in terms of systematicity must focus primarily on the question of categories.

Regarding the research efforts on categories and categorization, it is difficult to overestimate the significance of these questions and their impact on the development of both philosophy and scientific disciplines. As far as Marxism is concerned, and apart from a recently published remarkable work on the status of categories in Marx's dialectical method (Heilgendorff 2023), the topic has been widely neglected in the last decades. This was not the case in the 1950s and 1960s, as the categorization of materialist dialectic was highly prioritized. The problem of categories was tackled especially within debates in Soviet philosophy, to which we will return as we will address both the historical context (section 1) and the various systematic aspects of our subject matter.

To defend the theses (T_1) and (T_2) mentioned above, and to examin the relationships between Marxist systems thinking and the problem of the categories of materialist dialectic, I will start with an analysis of the systemic character of Marxism (section 2). Then, I will shed light on the relations between systematicity and scientificity, as exemplified through the relation between systemic philosophy on the one hand and the different layers of the systems paradigm on the other hand (section 3). Subsequently, I will tackle selected aspects of the question of the categories of materialist dialectic and their relations to Marxist systems thinking (section 4). Finally, through the focus on the practical sides of the issue of categorization, I will attempt to highlight the open character of Marxism as a system as well as the category of praxis (section 5).

Historical and Systematic Contextualization

In this section, I will present some representative insights regarding the contributions by Marxist thinkers in the debates that concern both the problem of systematicity of materialist dialectic (cf. T_1) and the problem of its categorization (cf. T_2). This short overview[2] would make clear the extent to which the two problems have been hitherto tackled separately, so that the meaningfulness of connecting them—as one basic aim of this paper—is sufficiently underlined.

Concerning both aspects, namely the systemic character of materialist dialectic and its categorization, there have been various development lines along the history of Marxism. Before addressing some examples of them, it seems necessary to recall that any attempt to cover the entire history of Marxist thought would exceed by far the scope of the present work. Moreover, the difficulty of the task would inevitably increase since any historical and systematic contextualization of (T_1) and (T_2) must entail numerous presuppositions as to the categorization of the very history of Marxism: For instance, the distinction between a so-called "Western Marxism" and an "Eastern Marxism" would necessitate an extended discussion of the relation of this classification to our subject matter. The same holds true for the assumption that we can consider the history of Marxism as a continuous oscillation between a group of "orthodox" thinkers (with readings that closely stick to the founding texts), and a group of "unorthodox" or even "dissident" thinkers (who more frequently and effectively diverge from the original sources). Nonetheless, by combining the debates in the imperialist countries (e.g.,

2. I am very grateful to the anonymous reviewers for their valuable hints and instructive comments.

the Frankfurt school, the "neue Marx-Lektüre," etc.) with those in the countries of the "really existing socialism" (e.g., Soviet philosophy), we aim at presenting a heterogeneous picture that can approximately correspond to the general designation of "Marxist thought." Having this observation in mind, we can now formulate the following selected elements of our representative overview:

Let us begin by underlining the decisive role of the official textbooks on Marxism.[3] Published in different countries and along various epochs, these manuals offer instructive insights concerning the systematicity of Marxism and the categorization of its materialist dialectic. Indeed, most of the classical manuals of Marxism-Leninism attempted to highlight the relevant status of materialist dialectic within Marxism as a (philosophical) *system*. For instance, it was recalled that "[m]aterialist dialectics and philosophical materialism are inseparably connected. They are interwoven, being two aspects of the single philosophical system of Marxism" (Kuusinen et al. 1963, 59). Moreover, the very idea of creating such kinds of clearly structured and easily accessible literature—as were in the USSR and the socialist countries the officially printed and widely disseminated manuals—represents in itself a direct systematization (and popularization) attempt of Marxist thought.

While official manuals are closely related to the ideological line of the Communist parties, there have been also different contributions by the Marxist thinkers who critically engage with the mainstream positions. Shortly after the publication of Karl Korsch's *Marxism and Philosophy* and Georg Lukács' s *History and Class Consciousness* (both published in 1923), the Soviet thinker Isaak Rubin–in his works on Marx's theory of value–draws the attention to the crucial importance of the problem of categories. He clearly affirms that

> "Political Economy deals with determined material categories if they are connected with social production relations. [...]. The revolution in Political Economy which Marx carried out consists in his having considered social production relations behind material categories. This is the genuine subject of Political Economy as a social science." (Rubin [1928]1990, 47)

This subject matter of political economy was also the starting point of Rubin's famous lecture on the "dialectical development of the categories in the economic system of Marx," in which he stressed the systemic character of the relation of production in capitalism (Rubin and Bessonow et

3. Examples of the early textbooks and manuals that have been published in the Soviet Union between 1917 and 1947 are mentioned in (Blakeley 1966).

al. 1975, 55). This connection between the aspects of systematicity on the one hand and the problems of categorization on the other hand will be tackled more intensively and far beyond the sole field of political economy—as we will see—in the post-war Soviet philosophy. From the 1920s to 1940s in the Western countries, the link between the systemic character of Marxist thought and the categories of materialist dialectic was not specifically focused on. A worth noting exception is the role of Horkheimer's essays of the 1930s in preparing the ground for an intended "larger project on dialectical logic" (cf. Abromeit 2018, 157). This project, which was only partially carried out, would have benefited from the diversity of several preliminary studies. In fact, the early Critical Theory of Horkheimer focused primarily on "three main components: Marx's critique of political economy and ideology, empirical social research, and a psychoanalytically oriented theory of social and group psychology" (ibid., 153). However, the lectures given by Adorno after the war entailed some remarkable insights regarding the problem of categories that influenced the elaboration of the so-called "neue Marx-Lektüre" in West Germany. For instance, the new reading of Marx's *Capital* developed by Hans-Georg Backhaus was directly influenced by Adorno's lectures with their concepts and "questions about the constitution of categories and their internal connections [*inneren Zusammenhang*] in the political economy" (Reichelt 2013, 11).

The tendency of the "neue Marx-Lektüre," which is related to further designations such as "Neomarxism," "critical Marxism," "Kapitallogik," "Hegel-Marxism," "Marxism as social science," etc., constitutes a new type of interpretation, established alongside with the traditional interpretations of Marxism, i.e. with the well-known, consensual, and official reading of Marx (Elbe 2010, 13). In this context, one can mention the example of the innovative suggestions of Backhaus, who challenges the prevailing official interpretations by taking the concept of value as his starting point in the discussion about political economy of socialism (see Rauhala 2021). This structure of the coexistence of two interpretation lines determines also the course of the debates concerning the problem of categories. In fact, while traditional Marxists seem to acknowledge an identity of the categorial representation with the real development history, the protagonists of the "neue Marx-Lektüre" argue for a logical arrangement of the categories (Heilgendorff 2023, 37). The traces of this dichotomy are not very visible in present day research. One reason of that may be the influence–since the late 1980s–of a long accumulation of different forms of negative assessments of the so-called "ontological

gaze" within Marxist philosophy and the related critique of "ontologism in Soviet Marxism, especially its codification in the form of *Diamat* (Dialectical Materialism)" (Oittinen 2021, 207). However, eventual rectifications of some similar one-sided assessments could be obtained if one considers further aspects of the historical and systematic contexts of the problems of categorization and systematicity.

Before getting into the substance of these aspects, and because I will rely on some debates in Soviet philosophy, it seems appropriate to make the following remarks. There is a tendency to discredit the focus of Soviet philosophy on the ontological significance of dialectic in general and the topic of the categories of materialist dialectic in particular. The main reason for that attitude is a legitimate protest against the dogmatic character of some ideologically motivated attempts to construct a fixed set of teachings, which stand in an obvious contradiction to the very essence of dialectic as an open, critical, and ever—evolving mode of thought. However, I maintain that Marxist thinkers, precisely in the case of dealing with the historical achievements of Soviet philosophy, should not throw the baby out with the bathwater. In fact, the endeavors of Soviet philosophers to elaborate systems of categories of materialist dialectic entail valuable results, the reconsideration of which can be decisive for the development prospects of Marxist philosophy.

In the Soviet context, as we already mentioned above, the period of the 1950s and 1960s witnessed a revival of interest regarding the topic of the categorization of materialist dialectic. Within Soviet philosophy, there were several endeavors to elaborate systems of categories of dialectical materialism such as the attempts of E. P. Sitkovskij, V. P. Tugarinov, V. Ž. Kelle and M. Ja. Koval'zon, and D. P. Gorskij.[4] It should be mentioned that the very idea of a "system of categories" within dialectical materialism is quite controversial and that many Marxist thinkers strongly contested it.[5] Nevertheless, the existence of these antagonist positions showcases the relevance within Marxism of the connection between systems thinking and the idea of categorizing materialist dialectic.

As we have seen, the numerous attempts by "Eastern" and "Western" Marxist thinkers to deal with the categories of materialist dialectic as

4. For an overview of the accounts of these and other philosophers see (Fleischer 1961; Planty–Bonjour 1965; Vogel 1988).
5. This is for instance the case of O. R. Gropp, who argues that such a system is possible only within the idealist Hegelian framework. See a reconstruction of his argumentation in (Rapp 1967, 102–105).

well as its systemic character were able to address various aspects of the problem(s). However, in most cases the connection between the systematicity of dialectic and the identification of its main categories seems to be restricted to some predetermined perspectives such as the logical aspects of dialectic as a method (based on Marx's critique of political economy) or—on the contrary—the formal ontological aspects considered as abstractions of all social reality. I argue, in accordance with (T_1), that the relationship between the systematicity of materialist dialectic and the elaboration of a system of its categories should rely on a wholistic conception of Marxism as a system. Unless we grasp Marxist systems thinking in its totality, it would be difficult to see the potentialities of unifying the various accounts mentioned above. The first step in this direction would be to focus on the systemic character of Marxism itself, i.e. to explore the different possibilities of conceptualizing Marxism as a system.

The Systematicity of Marxism

Marxism has been related to the systems paradigm in very different manners. Numerous thinkers have already acknowledged the systemic character of Marxism that Lenin once summarized through the concise formula: "*Marxism* is the system of Marx's views and teachings" (Lenin [1915] 1974, 50). Some interpreters, who focus primarily on the works of Marx and Engels, underline the systematicity of their achievements during the foundational phase of Marxism. Others, who consider the subsequent developments in Marxist thought during the 20th century, consolidate the thesis of the systemic character of Marxism through the writing of various schools and tendencies.

However, the determinations and the assessments of that systemic character vary according to the assumed interpretations of Marxism itself. Indeed, the question whether Marxism is a science, or a philosophy, or both, and the debates on the extent to which Marxism can be considered as an ideology, or as *Weltanschauung*, directly influence the different positions regarding the systematicity of Marxism. The denial of that systematicity corresponds to the adoption of further alternatives, as did the scientist J. B. S. Haldane by arguing that Marxism "is not primarily a system, but a method" (Haldane 1938, 17). On the contrary, I maintain that Marxism is indeed a system that can be considered according to—at least—three different perspectives (M_1), (M_2), and (M_3):

(M_1) From the perspective of the scientific disciplines that it entails, Marxism is the systemic unity of philosophy, political economy, and political theory. This view rests on Lenin's account of "the three sources

and the three component parts of Marxism," namely "German philosophy, English political economy and French socialism" (Lenin [1913] 1977, 23–24). As an oversimplified determination, one can state that this first possibility of a systemic interpretation of Marxism consists in considering it as the unity of philosophy, politics, and economics.[6]

(M_2) A second perspective would assume the distinction between two main parts of Marxism and present their unity as a system of interactions, the totality of which corresponds to Marxism. These two parts are historical materialism (HM) and dialectical materialism (DM). There are different possibilities to conceive of the relationships between HM and DM. As a prominent example, one can mention the conception of Louis Athusser, who—in presenting his notion of "epistemological break"—considers Marxism to be both a science and a philosophy and identifies the science (of history) with HM and the philosophy with DM (Althusser 2005, 33). This Althusserian claim stands in accordance with Stalin's view that "[h]istorical materialism is the extension of the principles of dialectical materialism to the study of social life" (Stalin 1949, 3). Consequently, the materialist conception of history was developed by Marx and Engels precisely through their *application* of the categories of materialist dialectic in the field of history.

(M_3) The third perspective concerns the relationship between theory and practice. According to this view Marxism expresses a unification of the theoretical and practical endeavors that aim at realizing the emancipation of mankind by means of a revolutionary transformation of the world. An illustration of this interpretation is offered by the communist philosopher Alain Badiou, as he—resting upon Lenin's account mentioned above—points out that what ensures the connections between philosophy, politics, and *science* within Marxism is precisely the "category of class" (Badiou 2016, 40–41). Although he asserts that Marxism is a thought (pensée), that transverses and unifies the three disciplines (Badiou 2016, 52), Badiou concludes his analysis by maintaining that Marxism is the constantly renewed invention of a practice of politics (Badiou 2016, 61).[7] This example is, of course, one of many possibilities to showcase the systemic character of the unity of theory and practice within Marxism.

6. In this sense, the contemporary trend of the so-called PPE-programs in Western universities should acknowledge that its real subject matter is nothing but Marxism.
7. In the French original: "le marxisme est l'invention constamment renouvelée d'une pratique de la politique."

Regarding this variety of interpretations, I assume an understanding of the systemic character of Marxism, i.e. of Marxism as a system, that equally takes (M_1), (M_2), and (M_3) into account. These three perspectives are the complementary subsystems of the general system of Marxism (M_S). In the formal language of set theory, this conception can be expressed as follows:

$$(M_S) = \{(M_1) \cup (M_2) \cup (M_3)\}$$

(M_S) is thus composed of interconnected subsystems, and each subsystem is itself a system that entails further subsystems. The most appropriate characterization of this conception was formulated by Hegel in (§15) of the *Encyclopedia of the Philosophical Sciences* (Part 1: Logic): "The whole thus presents itself as a circle of circles each of which is a necessary moment, so that the system of its distinctive elements makes up the idea in its entirety, which appears equally in each one of them" (Hegel [1817] 2010, 43).

To consider Marxism as a system of (sub-)systems in an analogous manner as Hegel's philosophical system is conceived of as a "circle of circles" would have a direct impact on various aspects of conceptualizing materialist dialectic. It has been truly observed that the very nature of materialist dialectic and its relation to Marxist theory is still a puzzle and that this is the case because of the unclarified concept of "category" and its role in the debates on the Marxian method (Heilgendorff 2023, 13). In addition, I argue that a decisive step towards adequate solutions to these problems consists in situating the analysis of the connections between the systematicity of materialist dialectic on the one hand, and its conceptualization as a system of categories on the other hand, within the suggested reading of Marxism as (M_S). This step must take the following two reflections into account, which–for obvious reasons–will be presented here merely as a concise programmatic sketch, although they definitely deserve a more extensive exposition:

(a) The transformation of systems thinking in general and of the systemic character of the categories in particular within the historical transition from German Idealism to Marxism:[8] The identification and the justification of the used philosophical (and scientific) categories is a common challenge for both the German idealist philosophers (especially

8. Within this historical transition, the Hegelian critique of Kant is particularly relevant. At that moment, the "dialectic of the system" shows clearly that system is not a mere subjective thought, but the "highest form of objectivity" (Nuzzo 2003, 44).

Kant and Hegel) and the Marxian project with all its subsequent (Marxist) interpreters. The problem of the derivation of the categories is in both cases closely related to the systematicity (and the scientificity) of the proposed theories. In Marxist philosophy, the undertaken efforts to elaborate systems of (categories of) materialist dialectic are confronted with the same kind of critique that once Kant and Hegel formulated against the philosophical history of the handed down categories: We cannot understand what thought is "without a concept of an 'architecture' in the representation of the determinations of thought" (Heilgendorff 2023, 31). In *Capital*, Marx's solution to the problem seems to follow the Hegelian pattern of a system of dialectical categories that are derived from each other. However, this Marxian system of categories is not reducible to the idealist realm of reason as in Hegel's system. It is the task of reconstructing the Marxian materialist and dialectic "architecture" that is often identified with the project of elaborating a system of categories of materialist dialectic. In this sense, the work of Soviet philosophers can be assessed in the light of that historical background, in which the problem of derivation of the categories in Kant, Hegel, and Marx constitutes a constant reference.

(b) The open character of Marxism as a system and the function of the category of praxis: With its major components (M_1), (M_2), and (M_3), the conception of Marxism as a "circle of circles" presents a fundamental difference in comparison to the Hegelian system. This difference consists in the open character of each subsystem of Marxism, and therefore of the entire system of Marxism (M_S). The openness of Marxism is ensured thanks to the constitutive and permanent relation to the ever-changing social reality. In accordance with the materialistic ground of Marxist theory, this admitted dependence on the evolving natural and social environment of mankind expresses itself through the special relevance of the category of praxis. As we will see in the last section, taking these elements into consideration is crucial for achieving the goal of an open categorization of materialist dialectic that can truly reflect the scientificity of Marxist systems thinking. It seems appropriate here to draw the attention to the different senses in which "open system" can be used. Based on the famous definition of von Bertalanffy, according to which an open system is "a system in exchange of matter with its environment" (von Bertalanffy 1968, 141), some bourgeois systems thinkers developed a theory of society that uses the distinction between system and environment to serve ideological anti-Marxist purposes. This is the case of N. Luhman, who—based on theoretical works on the decision

models of open systems—pursue a program of "stabilization of the social system through internal complexity reduction" (Warnke 1974, 90). This example recalls that although systematicity may appear as common ground for both Marxist thought and bourgeois systems thinking, there are substantial differences that must be thoroughly investigated.[9]

Marxist Systems Thinking Between Science and Philosophy

The understanding of Marxism as a system depends on the perspective from which the systematicity is conceived. In the following lines, I will start by exposing the relations between Marxist thought and "systemic philosophy," the latter being the type of philosophizing that makes its scientific character dependent on its commitment to systematicity. In a second step, I will attempt to present a multilayered conception of the systems paradigm, so that not only systemic philosophy can be localized within its broader context, but also modern approaches and disciplines such as systems science, systems theory, etc.

In today's philosophy of science, systematicity is increasingly acknowledged to be a basic criterion for scientificity. Especially in the context of demarcating science from non–science, it has been argued that *"[s]cientific knowledge differs from other kinds of knowledge, in particular from everyday knowledge, primarily by being more systematic*" (Hoyningen-Huene 2013, 25). However, this idea is the weak version of a much stronger claim that goes back to the days of classical German philosophy. Indeed, the idea of "system" is central to the very philosophical spirit of the so–called German Idealism.[10] Kant, Fichte, Schelling and Hegel consider systematicity as *the* necessary condition of scientificity. In the *Critique of Pure Reason* (A832/B860), Kant states clearly that "systematic unity is that which makes ordinary cognition into science, i.e., makes a system out of a mere aggregate of it" (Kant [1781/1787] 1998, 691). Hegel is even more clear and firm, as he declares in (§14) of his *Encyclopedia* (Part1: Logic): "A philosophizing *without a system* can be nothing scientific" (Hegel [1817] 2010, 43). Both the Kantian and the Hegelian philosophical systems famously have in common the development of systems of philosophical categories. Consequently, Marxism inherits from German Idealism not only the requirement of building a logical and coherent system as a condition and criterion for

9. For examples of these differences that are exposed within a Marxist-Leninist critique of bourgeois systems thinking, and for an analysis of the relations between (materialist) dialectic and systems thinking, see (Warnke 1977).

10. It is possible to track back the influence of the systems paradigm to the period of the "great philosophical systems" of Descartes, Spinoza, and Leibniz.

scientificity, but also the necessity of expressing this very requirement as a system of categories. The problem of explaining the derivation of the (philosophical) categories was intensively discussed within German classical philosophy. In direct relation to these discussions, the debate on the Marxist attempts to develop a system of categories of materialist dialectic must highlight the differences between the positions of Kant, Hegel and Marx.

To avoid any misunderstanding, one should assert that the Marxist conception of the categories cannot be reduced to the Kantian perspective, according to which categories are merely conditions for critical thought. The Kantian position was famously criticized by Hegel, whose deduction of the categories "is neither arbitrary nor subjective (it is not relative to the standpoint of individual thinkers or empirically specified group of thinkers)" (Longuenesse 2007, 6). The Marxian (and Marxist) position shares this Hegelian critique of Kant and goes further in criticizing Hegel's idealist account. The relevance of this crucial step resides in overcoming the limits of the Kantian and Hegelian consideration of the problem of categories as a "problem of knowledge" by addressing the aspects of "social reality" and its categories: This occurs above all thanks to Marx' materialist "new perspective on the problem of subsumption" and "[i]t is the introduction of historical openness that explodes the theoretical closure of totality which in Kant and Hegel's philosophies overdetermine the relations between subjective activity, actuality and form" (de Secilia 2025, 63). Hence, we can consider the Hegelian critique of Kant's subjectivism in general (see Sedgwick 2012) and his deduction of the categories in particular (see Houlgate 2015) as being merely the first stage of a development process leading to Marx's elaboration of dialectical and historical materialism. The following stage is nothing but the Marxian critique of Hegel's absolute idealism. Accordingly, we can agree with the observation of Lukács, who notices that "Marx's critique of Hegel is the direct continuation and extension of the criticism that Hegel himself levelled at Kant and Fichte" (Lukács [1923] 1971, 17).[11]

To the extent that Marxism, at least in its philosophical part, represents both a continuation and a transformation of basic ideas developed by German idealist philosophers, it is possible to assert that Marxism assumes the status of systematicity as necessary condition for scientificity. Consequently, it is not surprising that the constitutive role of the categories in the philosophical systems of Kant and Hegel was also

11. It is in this sense that one can read the thesis of Engels that [t]he German working–class movement is the heir of German classical philosophy" (Engels [1888] 2010b, 398).

adopted in Marxism. This occurred not only through the elaboration of the categories used for the critique of political economy in Marx' *Capital*, but also within the subsequent endeavors of Marxist philosophy to categorize materialist dialectic. While the issues of categorization will be addressed in the next section, it is worth noting how the systemic character of the Marxian critique of political economy is closely related to the elaboration of the modern systems paradigm and its development up to the present.

The Marxian project, as "a scientific system which attempts the structural—genetic analysis of capitalism" (Zelený 1980, 37), can be seen as a direct manifestation of the general idea of thinking in systems. This idea, that I call here the systems paradigm, characterizes the *Zeitgeist* of the 19th century: It has influenced very different thinkers, from Hegel and Comte to Darwin and Spencer, and attained its culmination with Marx and Marxism. In fact, the strong commitment of Marxist thought to systematicity is illustrated not only through the conceptions of (M_S), (M_1), (M_2), and (M_3) mentioned above, but also through the contents of the theoretical and practical contributions of Marx, Engels, and their subsequent followers.

Especially in the 20th century, the systems paradigm in general and Marxist systems thinking in particular had a far–reaching influence on the developments of both social and natural sciences. In his *Tektology*, Bogdanov draws the attention to the role of "*methodicalness* and *logical* coherence" as basic characterizations of the "scientific form of systematization," and he develops a set of reflections that can extend the efforts of systematization beyond the mere technical sciences (Bogdanov [1913–1917] 1996, 24). The work of Bogdanov, who "has a good claim to be regarded as the founder of system theory," is particularly significant: his *Tektology* is "not only anticipated and probably influenced the ideas of Ludwig von Bertalanffy […] but anticipated many of the ideas of the complexity theorists" (Gare 2000, 341). I think that it is not accurate to consider "Bogdanov, von Bertalanffy, and [Norbert] Wiener" as "the founding fathers of ST [Systems Thinking] (Jackson 2024, 24). Systems thinking is a broad paradigm that exists before these thinkers, who can be associated with the foundation of more specified applications of that paradigm, such as systems theory, systems science, cybernetics, and complexity theory.[12] In fact, they contributed to the establishment of

12. For a detailed account of these domains, see (Metcalf and Kauffmann 2021).

what Soviet sources call the "Systems Approach," which is "a methodological trend in science concerned with elaborating methods of research into and designing of complex objects–systems of different types and classes" (Frolov 1984, 413).

In relation to the foundational role of Bogdanov's work, one should recall that the remarkable flourishing in the Soviet Union of the applications of systems thinking was not isolated from the development of Soviet Marxist philosophy. "Since the 1960s, the scientific management of society (*naučnoe upravlenie obščtvom*)" has led to discussions that associated "the merging of cybernetics and systems theory with the guidance principles of Marxism–Leninism" (Susiluoto 1982, 30). Hence, one can assume that the Soviet debates on philosophical issues—and particularly on the categorization of materialist dialectic—actively contributed to advances in Soviet systems science research and vice versa.[13] Accordingly, Marxist systems thinking manifests itself not only in the different scientific disciplines and in the various branches of philosophy, but also in studying the inter–relations between philosophy and science.

One fundamental aspect can be considered as the unifying factor of these manifestations of Marxist systems thinking: It is the systemic character of dialectic itself. The Soviet sources define dialectic as the "science of the more general laws governing the development of nature, society, and thought" (Frolov 1984, 106). This definition that goes back to Engels' understanding of dialectic as "science of interconnections" (*Wissenschaft von den Zusammenhängen)* (Engels [1878] 2010a, 356) is contested by many Marxist scholars, who advance as opposite conception the interpretation of dialectic as a *method*, especially as developed in Marx's *Capital*. This methodological understanding is designated in today's research by the term "systematic dialectic" (Ninos 2023). The discussion of the arguments of these two accounts—and the exposition of my reasons for thinking that Engels' position is true—would surely exceed the scope of the present paper. Therefore, I content myself here with indicating that the systemic character of these two (and certainly other) conceptions of dialectic is closely related to their respective abilities to elaborate and organize philosophical and/or scientific categories. In fact, we can assume that in both cases—as well as in any scientific

13. The influence of Marxism on scientific inquiry goes actually far beyond the sole Soviet context. For example, "[i]n one of the foundational articles that launched complexity studies, physicist P. W. Anderson quoted Marx's observation that quantitative differences become qualitative differences" as summarizing his suggestion titled "More is different" (Lansing and Downey 2011, 597).

conceptualization in general—"[t]o be intelligibly and usefully managed, information must be systematized. To this End categories are an indispensable resource" (Grim and Rescher 2023, 1).

On the Categories of Materialist Dialectic

In the history of Marxist thought, there have been several attempts to systematize the concept of dialectic in general and materialist dialectic in particular. It is true that Marx himself did not have the opportunity to carry out such a systematic project. He did not even accomplish his intended "study of dialectical method" (Nesbit 2024, 24). Nevertheless, we find in Engels and Lenin the first endeavours to construct a systemic account of materialist dialectic that can be interpreted as the first steps of the categorization of materialist–dialectical thought. Indeed, one can consider Lenin's identification of 16 "elements of dialectic" (Lenin [1914] 1976, 220–222) as well as Engels' formulation of three laws of dialectics as representing the early phase of the Marxist research tradition on the categories of materialist dialectic. This tradition has had its peak in the debates of the 1950s and 1960s in Soviet philosophy, the main output of which will be addressed in this section. Before doing so, I suggest starting with a focus on the general laws of dialectics that Engels formulates in his *The Dialectic of Nature*. He introduced them as follows:

> It is, therefore, from the history of nature and human society that the laws of dialectics are abstracted. For they are nothing but the most general laws of these two stages of historical development, as well as of thought itself. And indeed, they can be reduced in the main to three: The law of transformation of quantity into quality and vice versa; The law of interpenetration of opposites; The law of the negation of the negation. (Engels [1878] 2010a, 356)

Engels combines here the historicity and the systematicity as the two necessary features of the scientific character of his proposition. The highest degree of generality results from considering both the natural and the societal stages of history as the sources from which the laws of dialectics are deduced. The aim of Engels is not "writing a handbook of dialectic" but rather "showing that the dialectical laws are real laws of development of nature and therefore are valid also for theoretical natural science" (Engels [1878] 2010a, 357). Engels thinks that "one needs to comprehend the results of natural science only dialectically" because it is the only way "to arrive at a 'system of nature' sufficient for our time" (Engels [1888] 2010b, 386). It is through this purpose that the crucial role of philosophy is revealed: In fact, the conception of a "collaboration

of philosophy with natural science" (Kangal 2020, 131) motivates Engels' formulation of the laws of dialectics and clearly indicates the influence of systems thinking on his account of the task of philosophy.

The relationships between categories and laws represent a prominent example of the theoretical issues that must be clarified. A law (of nature) is formulated by means of connections of concepts that mostly correspond to categories (speed, time, distance, etc.). Categories can be considered as fundamental concepts (*Grundbegriffe*), which reflect the most general and most essential aspects of reality, as well as the most relevant connections between the existing entities (Rosental and Schtraks 1959, 15). However, it is also possible to conceive of a law as a category in the sense of the conformity of something to the regularities of the objective world (lawfulness). An additional ambiguous issue is the determination of the relationships between categories and concepts. One can suggest that there is an interrelationship (*Wechselverhältnis*) between a category and a concept, so that a concept can exist only in categories and the categories can forms a unity only by means of their concept (Heilgendorff 2023, 141). These examples seem to indicate the necessity of clarifying the status of categories within Marxism, since this task is a prerequisite for any categorization attempt of materialist dialectic. The focus of the analysis on the conceptual level should not engender the impression of a relapse to the Kantian perspective: As we have seen, the Marxist position endorses the Hegelian critique of Kant according to which the subjective "I think" is not a sufficient foundation of systematicity.

Concerning the development paths of this Marxist position, a closer look at the various systems of categories developed by Marxist philosophers might deliver a concrete basis towards a better understanding of both "process and product," to use the words of (Grim and Rescher 2023, 4) for designating categorization and categories of materialist dialectic. The following table informs about some selected accounts:

Table 1. Selected examples of categories and categorizations in the 1950s Soviet philosophy, based on (Fleischer 1961).

Categories / Categorizations	Authors (Works)
Categories of Historical Materialism: *matter, motion, time, space, quality, quantity, inter–connection, contradiction, necessity (and chance), form and content, essence and appearance, possibility and actuality, etc.* ***Categories of Historical Materialism:*** *means of production, socio-economic formation, forces of production, base and superstructure, class, revolution, etc.*	Rozental' and Judin (Short Philosophical Dictionary 1938 [4th edition: Philosophical dictionary 1954])
Categories by which are expressed the basic laws of the dialectic: *quality, quantity, measure, contradiction, negation, etc.* ***Specific categories of the special sciences:*** *mass, matter, light, energy, atom, for physics; life, species, heredity, mutability, for biology.* ***Categories treated in detail:*** *phenomenon and essence, cause and effect, necessity and chance, law, content and form, possibility and actuality, singular, particular and universal, abstract and concrete, historical and logical.*	Rozental' and Štraks (Categories of Materialist Dialectic 1956)
Group 1_categories of substance (objects): nature, being, matter, phenomenon. **Group 2_attributive categories (qualities):** motion, change, development, space, time, objective–subjective, consciousness–thought. **Group 3_relative categories (relations):** necessity–chance, content–form, causality–finality, possibility–actuality, universal–particular–singular.	V. P. Tugarinov (The Inter–relationships of the Categories of Dialectical Materialism 1956)
Doctrine of Being: ***(1)*** *quality of things: being, non–being, becoming; time, space, motion; finite–infinite.* ***(2)*** *quantity of things: number, dimension and degree (of development), multiplicity, universality, quantitative infinity.* ***(3)*** *measure of things: measure as unity of the qualitative and quantitative, dialectic of qualitative–quantitative changes, gradualness and suddenness, nodal line of commensurability.* ***Doctrine of essence:*** ***(1)*** *essence: essence–appearance, law, thing and relation, contradiction–identity, difference, essential difference, opposition–unity, conflict of opposition.* ***(2)*** *phenomenon (relation) of things: substance–accident, base–resultant, cause–effect, inner–outer, form–content, reciprocity.* ***(3)*** *actuality: possibility and actuality, necessity and chance, negation and negation of negation, progressive development, the process of development of nature as a whole.*	E. P. Sitkovskij (Lenin on the Coincidence in Dialectical Materialism of Dialectic, Logic, and Theory of Knowledge 1956)

Doctrine of concept: *reflection theory, the basic forms of logical thought (concept, judgement, conclusion, proof, method), truth, practice as criterion of truth.*

Although these four examples might not adequately reflect the extent to which the Soviet debate on the categories is multifaceted and rich in content, one can use them to detect various useful observations, which would serve as starting points for detailed research. In fact, there is much to learn from the different possibilities to categorize materialist dialectics. The first example (of Rozental' and Judin) seems to rely on an interpretation of Marxism as a system that we have designated above with (M_2): a unity of dialectical materialism and historical materialism. The second example (of Rozental' and Štraks) draws attention to the particularly relevant distinction between the philosophical categories and the categories of the scientific disciplines. The third example (of Tugarinov, who was considered "the most important of contemporary Soviet categoricians" (Fleischer 1961, 66)) presents "original analyses" that can be built upon. The fourth example (of Sitkovskij) illustrates both the great influence of Hegel's logic on Soviet categoricians and the ability of the latter to transpose the Hegelian categories from their initial idealist context to the new elaborated system of categories of materialist dialectic.[14] Moreover, and as far as the categories themselves are concerned, it is worth noting that the dual or composite character of several recurrent categories (e.g. content and form, necessity and chance,[15] etc.) is a direct indication of the adoption of dialectical thought in conceptualizing them. Without extending the analysis to further details, I would like to pick up one aspect that I consider to be of particular significance, namely the distinction between philosophical categories and the categories of scientific disciplines.[16] I will focus now on the philosophical categories and their relations to Marxist systems thinking before considering the distinction itself in the next section.

A common feature of the above considered accounts—as representing an entire orientation in Soviet categories' research—is their manifest

14. However, some Soviet philosophers strongly opposed the attempts to "dialecticize the categories" and "hegelianize dialectical materialism", such as the professor Bakradze of the university of Tbilisi (Planty–Bonjour 1965, 60).

15. This category can have different formulations. There is even the case of considering "necessity and chance" (*Notwendigkeit und Zufall*) and "necessity and freedom" (*Notwendigkeit und Freiheit*) as two different categories (Bartsch and Klimaszewsky 1973, 173–177; 184–188).

16. This distinction may recall the opposition between DM and HM, which, however, can be overcome through the conception of Marxism as (M_2).

aspiration for a systematic all–encompassing conception that can effectively cover the *totality* of what there is. This meaning of systematicity seems to give a privileged status to philosophy in general (insofar as it is related to *world*views) and specifically to ontology (as concerned with the structure of being). In this sense, we can understand why most of Soviet categoricians focus on the "objective content, the inter–connections and relations of the examined categories," i.e. primarily "on the ontological aspects of the categories of dialectical materialism" (Stoljarow 1957, 672). The interpretation of Marxism as a system that lies behind this orientation reveals itself as a particular version of (M_1), i.e. Marxism as a unity of philosophy, politics, and economics, in which the fundamental subsystem is philosophy. Nevertheless, the primacy of ontology within this vision does not mean a neglect of epistemology: Both are necessary and complementary parts of the system of Marxist philosophy, in which thought is defined as "a process of reflection [*Widerspiegelung*] of the objective reality [Wirklichkeit] in the consciousness of the human being" (Stoljarow 1957, 673).

However, this complementarity of ontology and epistemology, as an expression of the systematicity of philosophy, seems to be hardly transposable into the systems of philosophical categories. For instance, it has been argued that the system character of philosophy—resting upon the two pillars of ontology and gnoseology—makes necessary the assumption of "one central category" or "one most general principle," from which all other categories, principles, and laws can be derived (Kocka 1964, 209). It is not evident that this requirement of *one* supreme category poses a necessary condition for an appropriate construction of the categorial system of materialist dialectic. Nevertheless, several Marxist thinkers agree on the fact that ssome categories seem to be more fundamental than the others. There are indeed concrete suggestions to consider one category as the most fundamental of materialist dialectic (and/or of dialectical materialism, as well as of dialectic in general). We have already seen that Badiou takes the "category of class" to be the decisive connecting element between the constitutive parts of Marxism as a system. I will mention two additional examples of this prioritizing of one category, without analyzing the exceptionality of the explanatory power of each case within a corresponding system of categories:

i. Reflection (*Widerspiegelung*) is considered by the German Marxist philosopher Hans Heinz Holz as being a fundamental category ("als Fundamentalkategorie") of dialectical materialism (Holz 2003, 43). This view lies at the core of Holz' conception of reflexive materialism.

ii. Following Lenin, who famously asserts that defining dialectics "as the doctrine of the unity of opposites [...] embodies the essence of dialectics" (Lenin [1914] 1976, 221), the Soviet philosopher Evald Ilyenkov describes contraction as "the real nucleus of dialectic, its central category" (Ilyenkov 2008, 320). This stands in full accordance with Marx's observation in *Capital* that the Hegelian conception of contradiction is "the source of all dialectic" (Marx [1867] 2010c, 592).

The question of determining the highest level in the hierarchy of the philosophical categories—as the constituting elements of the system of materialist dialectic—seems to be dependent on the criteria one admits for the very elaboration of that hierarchy. This is actually nothing but the problem of categorization itself: to determine the criteria according to which a given organization of the categories can be considered as the most appropriate, scientific, closest to the truth, etc. In the next section, I will tackle this problem of categorization within the context of—as I mentioned above—the relationships between philosophical categories and the categories of the scientific disciplines.

Open Categorization and the Primacy of Praxis

The relationships between the so–called "scientific categories" and the "philosophical categories" can be broadly described as follows: While the determination of the "system of scientific categories" enables us to "uncover the logic of development of any given science, the law–governed transformation of its conceptual build–up," the philosophical categories "help us to identify and synthesise the elements of world–view and methodology in scientific thought" (Spirkin, 1983, 63). Thus, the main difference between the two types of categories seems to concern the levels of generality and fundamentality, in the sense that connects philosophy of science to the specialized scientific disciplines. However, the systemic character of Marxism, especially in its disciplinary reading (M_1), by linking systematicity to scientificity, can imply that Marxist philosophy itself is a science. Only in this case, the boundaries between philosophical and scientific categories become blurry. For it would mean that what is philosophical in Marxism is necessarily scientific, but not every science adheres to the contents of Marxist philosophy.

Further, as we have seen in the previous section, there is a tendency among Marxist categoricians to focus on the philosophical (and above all on the ontological) categories of materialist dialectic. The mentioned examples are characterized by the search for a certain completeness or conclusiveness, which is taken to be a criterion for rigor and scientificity. Nevertheless, the determination of a fixed number of categories

can indicate a tendency towards opting for *closed* systems. This can be detected in the famous case of the 10 Aristotelian categories, and it can be also manifestly associated with Kant's table of categories,[17] as both cases share the self–understanding of being a "complete system."

On the contrary, I interpret the unfinished character of the myriad attempts by Marxist thinkers to categorize, i.e. to systematize materialist dialectic as a confirmation of the *openness* of Marxism as a system. Indeed, Marxism is an open system not only in the definitional sense given by von Bertalanffy but also as a systemic project with limitless development prospects. Resting on this assumption, I argue that an *open* categorization of materialist dialectic necessitates the following two main steps: (i) the development of a new, dialectical understanding of what a category is, and (ii) a conscious prioritization of the category of *praxis* as guiding principle.

i. The needed transformation of the conception of category starts by recalling the transition from their old metaphysical status as "given" to the new dialectical perspective that underlines constructability and agility. In fact, Engels distinguishes in his *Dialectic of Nature* between two philosophical tendencies, namely a metaphysical "with fixed categories" and a dialectical "with fluid categories" (Engels [1878] 2010a, 485).[18] The fluidity of the categories refers to the ability –among opposites pairs– that "one pole becomes transformed into the other," but this was unsatisfactory in the Hegelian case because "the categories appear as pre–existing" (ibid.). Engels uses the Hegelian categories after transforming their idealistic fluidity into a materialistic one: It is in this sense that one can interpret the "difficulty of figuring out the adopted and/or transformed meaning of these [Hegelian] categories in Engels's usage" (Kangal 2020, 134). This transformation consists in developing a *dynamic* system of categories as a reflection of the complex, ever–changing real world. In fact, if the concepts and categories are supposed to truly reflect the content and structure of the real objective world, and if the essential feature of that objective world is change and development, then the categories should be also subjected to change and development. The task of rethinking—and developing further—Engels' requirement of replacing the rigidity of the metaphysical categories with the fluidity of the dialectical categories is an open–ended task. It needs a collective

17. For an anlysis of Kant's "discovery" of his 12 categories and the "single transcendental principal" he derives them from, see (Chakrabarti 2024).

18. As representing the dialectical tendency, Engels mentions "Aristoteles and especially Hegel." For the relations between the systems of categories of the two philosophers, see (Trendelenburg 1846; King 2018).

and cooperative work between Marxist theorists and practitioners. As an example of promising starting points, one can bring up the new reading of Marx's conception of the categories as "thought determinations and fundamental determinations [*"Denk– wie Grundbestimmungen"]* of a substance that underlies the concept" (Heilgendorff 2023, 267).

ii. Secondly, one needs to assume *praxis* as the decisive orientation criterion in constructing the system of categories of materialist dialectic. It is true that the usage of the term "praxis" in Marxist philosophy is highly ambiguous (Wainwright 2022). Connected to that ambiguity is the plurality of issues that the consideration of praxis "as category of dialectical materialism" (Orudshew 1979, 114 sqq.) might give rise to. Nevertheless, I propose here to conceive of the category of praxis in the sense of being a criterion for truth: Although the validity of his classical understanding—going back to Marx's theses on Feuerbach[19]—is again the subject matter of controversies (Oittinen 2016), I argue that it is still useful to take it seriously. For instance, it is still possible to use its basic idea in the context of the problems of both the systematicity of categories and the scientificity of categorization. This might occur by following the position of Ilyenkov, who did not deny the importance of elaborating a *system* of categories of dialectical logic, but who stressed at the same time the necessity of going beyond that mere first step:

> The creation of a Logic understood as a system of categories, of course, constitutes only one stage. The next step would have to be the realization, actualization of the logical system in a concrete scientific investigation, because the end product of all work in the field of philosophical dialectics is the resolution of the concrete problems of concrete sciences. (Ilyenkov 2008, 370–371)

19. Marx underlines the relevance of practice not only in the famous eleventh thesis. In the first thesis he criticizes Feuerbach for conceiving and defining practice "only in its dirty-Jewish form of Appearence. He [Feuerbach] does not grasp the significance of 'revolutionary,' of practical-critical activity" (Marx [1845] 2010a, 3). An extensive analysis of the first thesis, in which the constitution of objects is at stake, would be of great interest not only for dealing with the problem(s) of systematicity and categorization, but also for elucidating the role of revolutionary praxis in the current context of an ongoing polycrisis. In fact, the unfolding of the Marxian conception of "revolutionary and practical-critical activity" refers not only to the scientific-critical analysis of capitalist society (by means of the critique of the categories of political economy) but also to the radical and real transformation of that society. It is precisely in this sense that Marx's *Capital* constitutes the "scientific basis for communism" (cf. Heilgendorff 2023, 265).

Thus, the practical orientation finds its concretization in the various application areas of "scientific investigation." The *raison d'être* of these investigations is nothing but to solve the problems that human beings are facing in all the domains. By linking the theoretical task of developing a system of categories to the praxis in the sense of solution–oriented scientific labour, Ilyenkov admits a noteworthy version of (M_3): Marxism as a system is for him the unification of the systemic categorization of materialist dialectic with the systematic endeavour towards the practical resolution of the problems of mankind.

This view is particularly relevant for coping with the challenges of our current epoch, in which the interconnections between the technical, social, economic, political, and ecological problems urge for developing systemic and effective responses. In this context, the efforts of Marxist categoricians to boost the *open* categorization of materialist dialectic should be strongly linked to the openness that characterizes the recent advances of the scientific disciplines. It is exactly within this kind of collaboration between philosophy and science that "[t]he C. [categories] of Marxist philosophy, as of any other science, do not constitute a closed, immutable system" (Frolov 1984, 59).

The connection between Marxist systems thinking and the various undertaken attempts to categorize materialist dialectic is a complex subject matter that should be further investigated by both philosophers and scientists. The multisided character of the topic represents a real challenge that imposes itself in addition to the difficulties of navigating through different theoretical tendencies that adopt different readings of Marx's works and consequently different conceptions of Marxism. In this sense, we hope that our suggestion of interpreting Marxism as (M_S), i.e. as a system of (sub-)systems, can contribute to advancing research by unifying the different efforts of Marxist thinkers, as it might point out their possible common categories. This might indicate the scientific paths towards a systematization of the theoretical efforts that do not omit the necessity of an effective revolutionary praxis.

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