**Methodological Individualism as Holism of the Parts**

**From Epistemology to Ontology**

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1. **The holism of parts**

Jan Smuts, South African Statesman, scientist, and philosopher, is referred to by his biographer (Crafford 1943, p. 11) as “the world’s leading holist”. Smuts introduced the term holism (from ὂλος = whole) in his work *Holism and Evolution* (1926/1927) in a different sense from that which later dominated the social sciences, and which will be identified in the following with causal holism.[[1]](#footnote-1) Smuts’ holism is particularly interesting to detail somewhat, even though he tends, in a questionable way, to make it an a priori principle of his metaphysics of evolution, underlying the dynamics of evolutionary creation based on an inherent tendency of natural entities to unite into wholes: “Holism is a real operative factor, a vera causa” (Smuts 1926/1927, p. 88). Smuts refers to the existence of entities or parts that exhibit certain properties and activities that are inherent to the whole they form and, therefore, cannot be described in terms of, entities and properties in an independent state: “The whole is in the parts and the parts are in the whole, and this synthesis of whole and parts is reflected in the holistic character of the functions of the parts as well as of the whole.” To this notion of ontological dependence of the parts with respect to the wholes they form, is added the idea, which is especially important, that the whole is not added to the parts but only characterizes their unity: “A whole is not some tertium quid over and above the parts which compose it; it is these parts in their intimate union and the new reactions and functions which result from that union” (Smuts 1926/1927, p. 130). For the same reasons that the whole is not something additional over and above its parts, the whole, Smuts (1926/1927, p. 125, p. 134) insists “does not act as a separate cause, distinct from its parts (…) holism is of the parts and acts through the parts (…) the causality of the whole (is) exhausted by the causal operation of its parts [so that there is nothing] over and above the influence of the parts which must be attributed to the whole as such”. Let us note with Smuts that this does not contradict the possibility of a central control, as is the case in organisms. Such control does not represent the action of the whole on the parts, but results from a differentiation of the functions of the parts.

According to Smuts, the creativeness of matter is limited to the transformation of new structures out of preexisting material units, while genuine creativity in the evolution of organisms involves qualities or properties that “are not mere reshufflings of characters which were there” but instead constitute irreducible entities and properties that combine and create specific wholes. In this regard, Smuts invokes the idea of “creative evolution” referring to the appearance of radically new entities and properties within the evolutionary process:

“The process of creative Evolution is not a mechanical rearrangement of old material; it involves the qualitatively new at every stage, from the most minute elements to the most complex structure. It is not merely the structure which is new and different from what has gone before, some of the materials are also new (…) There is the creation of the new variety or species (the new structure) ; there is the creation of new unit characters (parts of the structure) which justify the new species or variety ; and there is behind the new unit characters not mere re-arrangements of elements of old character units, but an integration of new materials or quality elements with the old elements in the formation of the new unit characters (…) If there is this evolution or making not only of new wholes or structures, but also of new quality elements therein, the whole fabric of Mechanism as ordinarily understood is shaken to its foundations” (Smuts 1926/1927, p. 137-9).

Although Smuts views holism as the fundamental creative factor in evolution, he also takes into account the role played by mutational processes in explaining the development of specific phenomena related to life and consciousness. He details various types of structures that he orders according to grading levels of binding intensity between their constituents, from the first mechanistic structures to different types of holistic structures. Consequently, the holistic character of wholes is defined by the activity of their parts and increases with their inner cooperation: natural, instinctual, and then, at the highest stage, conscious. Five stages are then essentially distinguished (Smuts 1926, p. 88 and p. 109). The first stage is related to the physical mechanism or is reduced to it: The parts of the structure have causal properties independent of the whole they form. The second stage is paradigmatically characterized by chemical structures, which represent creative syntheses with new qualitative elements. The third stage is that of functional structures in living organisms, whose unity intensifies in animals, with the appearance of a system of central control, regulation, and coordination of the parts. The fourth stage is that of the minds “or psychical organs where the Central Control acquires consciousness, freedom and creative power.” Finally, the sixth stage, the highest and most evolved structure in the universe, is that of the human personality, which as such constitutes the “part” of the society. Society does not act as a separate and distinct cause from its parts any more than holistic wholes do. Furthermore, it is not a unit as is a biological organism: The society or group is “holistic without being a whole” (Smuts 1926, p. 348). But as is the case in holistic wholes, the human personality is inseparable from society. The capacities that characterize it are inherently linked to the formation of human groups: “The individual becomes conscious of himself only in society and from knowing others like himself” (Smuts 1926, p. 234). Through their activities, which are inherent to their essential social nature, individuals develop social structures in the form of institutions of all sorts intended to provide intellectual and moral education, as well as the coordination of their actions and interactions.

*Holism and evolution* enjoyed a brief period of popularity, but its real contribution has been largely overlooked (see Poynton 1987, Jàros 2002). The vague notion associated with Smuts' concept of holism has its roots in Aristotle's reflections in the Metaphysics, according to which the whole, if it is not just a heap, is something "more than the sum of its parts". This understanding retains nothing of Smuts' original contribution, for it presupposes that the parts are to be considered as independent entities, transformed by their belonging to the whole, which leads to a dubious separation of the parts from the whole. Once we acknowledge with Smuts the intrinsic interdependence of the parts, there is no plausible reduction that would allow us to theorize the parts with properties independent of the whole.

Arthur Koestler (1978, p. 26), who considers the work as remarkable, blames its neglect by academic circles on the fact that it went against the spirit of the times. However, it should be noted that Smuts’ emergentist contemporaries, Samuel Alexander or Lloyd Morgan, whose philosophies of evolution were also opposed to prevailing reductionism, are better known and often cited in this regard. But Smuts’ conceptions differ from those of the emergentists. According to him, the creative force of evolution, the holistic “operative factor”, is the inherent tendency towards the union of parts, and not the emergence as such of new wholes from lower levels of organization. This difference is not minor, as Smuts’ holism focuses on the activity of parts, while emergentists focus on the organizational structures of wholes, by invoking a pyramidal scheme (Morgan 1923, p. 9) involving the levels of composition of “complexes” emerging at each level according to “progressively ascending grades”.[[2]](#footnote-2) In this regard, Smuts contends that emergentism is an inverted vision of preformism.[[3]](#footnote-3) Consequently, the omission of Smuts’ philosophical contribution may be explained not so much by his opposition to reductionism, but more precisely by the fact that his holism is based on the parts (those related to life and to consciousness implying intrinsic evolutionary creations). It broke more fundamentally with the spirit of the times than did emergentism and its pyramidal compositional scheme, ultimately built from elementary physical events.

It must be acknowledged that Smuts’ insistence on “holism” as such as the dynamic of evolution probably did not allow him to differentiate from other forms of holism. This may be confirmed by Karl Popper’s assertion attributing the popularity of historicism to the attraction of evolutionism, from which the great systems of evolutionary philosophy issued by “Bergson, Whitehead, Smuts and others” are presented as an emanation (Popper 1936/1957, p. 97). However, it is worth noting the change in Popper’s conceptions on this subject, as he will adopt from the 1960s onwards notions such as those of holistic structure and, above all, creative evolution.[[4]](#footnote-4) Lastly, it is worth questioning whether the term holism itself is more appropriate for the general qualification of systems that grant causal power to wholes, and whether it alone could justify the misunderstanding and neglect of the specificity of Smuts’ holism, which is “of the parts” and rejects the idea that the action of the whole can be added to that of the parts.

On the epistemological level, the activity of parts in Smuts marks from the outset an opposition to the Humean forms of explanation that involve only correlations between discrete particulars. Moreover, his opposition to reductionism[[5]](#footnote-5) derives from the fact that wholes are not explained by their parts with characteristics in an independent state, any more than the parts are explained by the wholes speculatively separated from them. In the following, I will argue that the compatibility of methodological individualism (MI) with the holism of parts, and correlatively, its impossible integration into the dominant physicalist frames of thought, can explain its assimilation to a form of reductionism which represents the alternative and opposite option to the forms of causal holism with which Smuts’ holism has been conflated.

In summary, holism in its original and forgotten sense is a “holism of the parts” which implies a non-positivist and non-reductionist epistemology. Holism of the parts refers to the appearance of new entities and properties in the course of evolution that tend to unite into new wholes. It evokes properties and activities of the parts that are inherent to the whole they form and prohibits the whole from acting as an added cause to the activity of the parts. The most evolved structure of the universe is, in this framework, represented by the human personality.

1. **Theoretical decomposition of a complex whole into basic units**

The classical scientific approach to decomposition of a complex whole into basic units has been applied in various fields, including psychology, where specific approaches have been based on the explicit identification of analytically constituted units.[[6]](#footnote-6) For example, Boris Sidis (1908), a now-forgotten psychologist, defines the percept as the "basic unit" in the perceptual process. In doing so, he challenges the legacy of classical empiricism, which does not differentiate qualitatively between sensations and ideas. Sidis likens the percept to a cell, as it "forms one organic whole" with its "constituent elements firmly integrated into a single living organization." This involves a specific form of perceptual consciousness making the percept irreducible to the sensory elements that compose it, and implying characteristics inherent to the whole perception process (Sidis 1908, p. 53). Similarly, psychologist Kurt Koffka (1935), in his *Principles of Gestalt Psychology*, contrasts between approaches to behavior conceived as physiological (molecular) processes composed of discrete or separate units, such as sensory contents in associationism or stimulus-response sequences in behaviorism, and (molar) approaches that focus on “interconnected groups or units”, where the phenomena of meaning and value can contribute to the psychological approach. On his part, the Russian developmental psychologist Lev Vygotsky (1934/1986) utilizes the paradigmatic example of the water molecule to illustrate his method of studying verbal thought. He defines this approach as breaking down a complex whole into basic units, which represent “living parts” that can no longer be broken down without losing their properties (such as H2O), and exhibit all the fundamental properties inherent in the whole. According to Vygotsky, the basic unit that encapsulates the simplest aspect of verbal thought as a whole is the internal aspect of the word, that is, its (subjective) meaning, which involves an entire act of thought.

In sociology and economics, the analytical decomposition of a social whole into basic units[[7]](#footnote-7) was made explicit in the works of Carl Menger (1883/1986), the first theorist of methodological individualism. According to Menger, empirical realism, which considers that phenomenal reality exists autonomously, cannot lead to exact laws. Theoretical analysis goes beyond phenomenal reality by isolating the subsystems studied and by bringing into play “the simplest and strictly typically conceived constitutive factors (susceptible of exact inquiry) of phenomena” (Menger 1883/1986, p. 113). These theoretical units are not supposed to be independent of the whole: “[the whole] cannot be imagined in its normal appearance and function without some essential part or other. Nor, conversely, can such a part be imagined in its normal nature and function when separated from the unit [the whole]. It is obvious that we have here a certain analogy between the nature and the function of natural organisms on the one hand and social structures on the other” (Menger 1883/1986, p. 130). In the same way, Ludwig von Mises (1949/1966, p. 51) explains that there is no precedence of the whole over its parts or of the parts over the whole: “Logically the notions of a whole and its parts are correlative”.

In this theoretical framework, social wholes and their parts do not refer to two interacting realities that can be separated by a speculative path but to relative constructs, as illustrated in the example of water and water molecules. Therefore, the reference to the parts of a whole do not involve any reduction, but rather characterize the proper approach of theoretical sciences:

“The charge of atomism in the above indicated sense of the word is [thus] a misunderstanding (…) Every theory (…) strives first and foremost to make us understand the complicated phenomena of the research field peculiar to it as the result of the coworking of the factors responsible for its origin. This genetic element is inseparable from the idea of theoretical sciences” (Menger 1883/1986, pp. 93-94).

Max Weber (1922/1958, p. 58) essentially conveys the same idea when he states that understanding sociology regards "the individual and their actions as the basic unit, or its 'atom'." Weber acknowledges that this analogy, which evokes the parallel between the physical and social sciences, is debatable, a connection also drawn by Menger, albeit with a hint of provocation concerning the accusation of atomism.[[8]](#footnote-8) This can be made clearer if the abstract scientific construct represented by the atom is recognized, which does not involve reductionism insofar as the atom properties are not assumed to be independent from the physical wholes under study. In this respect, Weber even criticizes the notion of interaction in Georg Simmel’s work, arguing that it assumes independent entities, which is not the case, even in the physical realm: “Gravitation is always reciprocal gravitation; not only the collision of two bodies moving in different directions but also the impact of a moving body upon a resting one affects both (by transmission of motion, alteration of speed and direction of kinetic energy, and generation of heat). Indeed, one can in general say that within the realm of physical reality an influence that is not somehow “reciprocal” in the strictest sense of the word and as a general phenomenon is scarcely conceivable (…) only with the greatest artificiality will one be able to conceptualize a pure “one-way” influence, i.e., an instance of one man being influenced by another where there is not some element of “interaction” (Weber 1908/1972, pp. 162-163). Popper (1957, p. 76) also asserts that the opposition between the ‘atomistic’ and the ‘Gestalt’ approaches is baseless, at least in atomic physics, because the study of particles systems is concerned with organized structures or wholes. Popper adds in note that “to the social scientist, such ideas as competition or division of labour should make it abundantly clear that an ‘atomistic’ or ‘individualistic’ approach in no way prevents us from recognizing that every individual interacts with all others.”

Correlatively, Weber defines human behavior as “action” only when individuals attach subjective meaning to it, and action as "social" when the meaning that orients it refers to the behavior of others. The basic units of Weber’s sociological approach, the individuals and their actions, cannot be broken down without losing the property of the individuals that is central to the approach - the capacity of understanding, which involves conscious processes.[[9]](#footnote-9) As we will see, this capacity is inherently tied to individuals' membership in social groups and relies on their handling of culturally formed tools of thought. In this regard, Max Weber (1922) highlights the importance of functional questioning in sociology, which starts from the "whole", characterizing typical orientations of actions of social actors in relation to a given institutional context. He also points out the significant misunderstanding in confusing individualistic method with individualistic valuation "in all possible senses".

In summary, the analytical decomposition of a complex whole into basic units has been favored by social scientists who support non-positivist and non-reductionist approaches in epistemology. In these theoretical perspectives which include methodological individualism, the units of analysis have properties inherent to their belonging to the whole, and they account for the phenomena that develop at the level of the whole they form. Therefore, these units do not exist in an independent or separate state, and the whole does not act as a cause superadded to the activity of the parts. When these conditions are met, the theoretical decomposition of a complex whole into basic units ontologically refers to a “holism of the parts”.

1. **Basic units and scientific realism: from epistemology to ontology**

Rom Harré (2006) explains that to understand the activities of the basic units distinguished in explanatory science, one must move beyond observable phenomena. This requires a commitment to scientific realism and exposes one to the difficulty of not transgressing Kant’s prohibition against using empirical concepts ‘constitutively’ beyond the limits of the observable. However, our conviction in the existence of an order in nature, which underlies the very idea of causation, tends to require the persistence of things beyond change, as the anthropological epistemology of Emile Meyerson (1908) maintains. This explains our belief in the action of persistent entities and powers whose variable arrangements can account for observable changes. Scientific causality implements these causal powers on theoretical grounds since, from the ontological point of view, we have no way of understanding how things ultimately act on each other, how “efficient” causality operates. Therefore, to understand the processes in question, it is necessary to break them down into theoretical components and properties, and to show how one can produce a given effect, in a given situation, by reassembling the components involved. It is assumed that these components, in their new arrangements, will behave in the same way as in the previous ones, in accordance with their "nature" (Cartwright 1999). Causal powers or capacities are dispositional properties of the entities involved, which scientists thus tend to interpret as real. In this respect they are not subjected to ceteris paribus conditions and continue to produce their effects in a trans-situational manner, interfering with the action of other factors or processes. In this sense, a form of causal realism underlies the “active”[[10]](#footnote-10) approaches in contemporary philosophy of science (which, nevertheless, represent a great diversity of ontological points of view), whose common claim is their opposition to Humean metaphysics where the interpretation of causal bonds is essentially descriptive, and where things have no inherent tendency to behave as they do, so that causal powers do not exist. Certain active approaches to causality thus legitimize the idea of generative mechanisms (Harré, 1970; Harré & Madden 1973, and for applications in sociology, e.g. Cherkaoui 2005), supposed to unearth the factors that fundamentally generate the phenomena to be explained.

As we have seen, Menger maintains that, to explain a given phenomenon, the goal of a theory is to account for “the coworking of the factors responsible for its origin,” which places the real at the horizon of the theoretical. Many commentators attribute this perspective to the ontological landscape of the Austrian school.[[11]](#footnote-11) Again, this can be clarified by the idea that, even if ontological reality is not directly accessible, theoretical science tends to rely on the notion that an inherent order in nature guides its development, and this is also reflected, for instance, in Friedrich Hayek’s (1952/1976, p. 173) statement: “We cannot regard the phenomenal world in any sense as more 'real' than the constructions of science: we must assume the existence of an objective world (or better, of an objective order of the events which we experience in their phenomenal order) towards the recognition of which the phenomenal order is merely a first approximation”.[[12]](#footnote-12)

In short, as science tends to approach genuine causal factors, it moves away from the phenomenal world and naive realism, and develops new models of interrelationships, where the characteristics of theoretical entities, defined as the basic units of analysis, imply trans-situational causal properties.

1. **MI’s principle of rationality and holism of parts**

Based on the preceding discussion, I propose to demonstrate that the principle of rationality— which broadly refers to the ability of social actors to give meaning to their actions— underpins two core stances of MI. The first stance is non-positivist, wherein MI pursues an explanatory objective in the sense of causal realism. The second is non-reductionist, positing that rationality is a causal power inherent to the social nature of individuals. This suggests that MI advocates for a form of “holism of the parts.” Let’s take a closer look at these two positions.

Rational capacity characterizes humanity since the beginnings of Western philosophy: Humanity is gifted with logos, that is, with speech, and with reason. In particular, human beings make use of an articulated language thanks to the recursive capacities of their thought, which underlies their faculties of abstraction and reasoning. This human capacity does not imply any normative conception of rationality, and it is not essentially of a logical or instrumental nature; rather it is a general capacity for understanding, that is, attributing meaning (Bulle 2022). The driving role of meaning in human reason is involved in the idea that motivations, or “good reasons” [[13]](#footnote-13) (abstractly reconstructed by the observer), explain actions. Understood in a broad way, rationality constitutes a causal power of a trans-situational nature, so the more the analysis tends to refer to such a trans-situational role freed from “ceteris paribus” conditions, the more it tends to causal realism.[[14]](#footnote-14)

The “understanding” approach of methodological individualism refers to this trans-situational nature of rationality, which accounts for the possibility of a relationship of understanding between the observer and the observed, beyond the situational differences that separate them. From this perspective, it assumes the possibility of understanding the influence of social actors’ situations on their actions by examining the meaning they attribute to them, and it identifies the "causes" of their actions with the reasons that drive them. This relation of understanding distinguishes the social sciences from the natural sciences, precisely when they both refer to generating causes. In the case of the social sciences, the causal power of the acting units at stake is not apprehended from the outside, and theoretically reconstructed from observational bases, but it is grasped from the inside. This is what Weber (1922/1968, p.15) expresses:

“We can accomplish something which is never accomplishable in the natural sciences, namely the subjective understanding of the action of the component individuals. The natural sciences on the other hand cannot do this, being limited to the formulation of causal uniformities in objects and events and the explanation of individual facts by applying them. We do not “understand” the behavior of cells, but can only observe the relevant functional relationships and generalize on the basis of these observations. This additional achievement of explanation by interpretive understanding as distinguished from external observation, is of course attained only at a price, the more hypothetical and fragmentary character of its results. Nevertheless, subjective understanding is the specific characteristic of sociological knowledge.”

This explains why interpretations invoking processes that, in principle, cannot serve as conscious motivations, leading to the failure of reference to the intertemporal continuity of individuals’ rational capacities, have less explanatory power according to the understanding approach of MI.[[15]](#footnote-15) It is the case for approaches that rely on internalized dispositions, mentalities, or the “class habitus” previously mentioned. But it is also the case for approaches that link human rational capacity to a given normative model, such as those developed by rational choice theories.[[16]](#footnote-16) These more or less general patterns of action are confined to a single kind of manifestation and are closer to empirical laws limited by ceteris paribus conditions.[[17]](#footnote-17)

Moreover, the rationality principle underpins a non-reductionist stance because it refers from the outset to a capacity of individuals inherent to their social being. The rational capacities of individuals are rooted in their social learning. They become effective through the internalization of meaning structures related to Popper's world 3. This world, as we know, refers to all the productions of the human mind in the form of thought contents (as distinct from thought processes), such as language, numerical systems, conceptual systems, etc., which are socially transmitted and developed.[[18]](#footnote-18) The reference to the reasons for individual actions implies taking into account this cultural and institutional learning that underlies the meaning they give to these actions. Even the self-controlled nature of individuals’ actions is inherent in their social participation, by virtue of the structured tools of thought socially transmitted which allow for this self-control (Vygotsky 1934/1986). Therefore, the social participation of individuals is an essential condition of their rational capacity and their causal power.

In contrast, it is when the principle of rationality is abandoned, because no situation seems to be able to justify the behavior of social actors on the basis of this principle, that the analysis resorts to reductionist explanations, referring to blind habits or automatisms, or other forms of physical state dominated by unconscious mechanisms of an organic nature, such as illness, nervousness, or madness. This can be seen, for example, in Weber (1903-1906/1975, p. 125), where he explains that if human action cannot be meaningfully understood, then it tends to become indistinguishable from actions carried out by inanimate objects, thereby referring to mechanical processes beyond the scope of understanding sociology: “[I]f human conduct cannot be interpreted in this way [meaningfully], it is no different from the fall of the boulder from the cliff. In other words, ‘incalculability’—in the sense of the non-satisfaction of the conditions for this type of interpretation—is the principle of the ‘madman’.”[[19]](#footnote-19)

It should be noted that even though Weber contrasts meaningful action with purely reactive, and thus, unconscious action, such meaningful action is usually not completely conscious. As regards imitation, for example, only mechanical behaviors have no meaningful orientation. But a meaning appears as soon as the very attachment to habits assumes a certain degree of self-consciousness, so that rationality in value is, for instance, involved. The same is true of traditional actions, which are not confined to thoughtless habits when they involve a subjectively perceived meaning, which, for example, refers to collective entities with normative authority.

In summary, the rational capacity of individuals is a general, trans-situational capacity inherent to their social being. As a trans-situational causal power, rationality involves a non-positivist stance, and as inherent to individuals’ social being, it involves a non-reductionist stance. Rationality is the fundamental property of the basic units defined by MI for the social sciences, the social actors, that makes MI consistent with the notion of holism of parts.

1. **The Role of Epistemology and Ontology in the Misunderstanding of MI**

The regularly stratified picture of reality based on compositional criteria that define successive autonomous “parts” and “wholes,” constitutes the ontological background of a large part of the work in the Anglo-Saxon physicalist tradition, and represents, as I will defend here, a major source of the misunderstandings developed about methodological individualism.

The characteristics of this layered representation can be described as follows.

1/ Levels are hierarchized in nature from most elementary to most complex structures.

2/ Wholes or entities at a given level Xn are structures composed of parts or entities of level Xn-1 whose properties are thus independent of their belonging to Xn and so on.[[20]](#footnote-20)

3/ Entities and properties in this layered representation of nature correspond to the entities and properties studied by the different sciences.[[21]](#footnote-21)

The non-reductionist physicalist perspectives assume that:

4/ Some structural systems have identical functional consequences while involving very different entities and properties at lower levels.

Such an assumption is at the basis of the notion of multiple-realization developed by contemporary non-reductionist physicalism.

Emergentists add the following condition which, we will see, tends to abandon the physicalist framework:

5/ Under certain conditions, phenomena of organization and complexity specific to wholes at level Xn exert a causal power on parts or entities at level Xn-1.

It is on such ontological bases, that a debate on reductionism developed in the twentieth century within analytic philosophy. At the heart of the opposition between the notions of micro(reduction) and emergence lies the issue of reducing entities and properties at Xn in terms of entities and properties at Xn-1.[[22]](#footnote-22)

The relevance of the layered model, referring to the physical constitution of things, is today questioned because it conflates issues of constitution with causal power issues.[[23]](#footnote-23) Such conflations are fostered by the mainstream stance in analytic philosophy, which associates a physicalist ontology with a principle of continuity established as a naturalistic quasi-dogma. This continuity principle involves the continuous constitution of things by physical components representing the building blocks of natural phenomena at inferior levels, united in wholes by organizational structures at superior levels. This representation originally opposed extra-natural factors introduced by metaphysical assumptions such as those derived from substance dualism, idealistic philosophies, or else vitalism.[[24]](#footnote-24) But its metaphysical limitations are reflected in Smuts’ (1926) statement about the role of naturalism in preventing any idea of radical novelty within natural processes: “Naturalism is wrong where it fails to recognize that there is creative evolution, and that real new entities have arisen in the universe, in addition to the physical conditions of the beginning” (Smuts 1926, p. 327).

*The bias of reductive physicalism on MI: The case of logical empiricism*

The layered representation of the world and science was promoted in the course of the twentieth century by the logical empiricists who influenced the developments of analytic philosophy. To understand this development of scientific thought, let us recall that logical empiricists distinguish only two categories of meaningful propositions: analytic propositions ‒ whose truth is exclusively based on their form and which are true or tautological, or false or contradictory ‒ and synthetic propositions ‒ whose truth is based on experience, and which are supposed to be validated by an empirical test. Any other kind of proposition is considered metaphysical. On these grounds, the role attributed to the entire philosophical enterprise is closely dependent on logic through strictly analytical work applied to language. Apart from the logical issues, the meaning of a proposition is entirely invested in the empirical field. A consequence is that all sciences share the same observational basis, which offers the possibility in principle of ultimately translating the different scientific languages into physical language (see Ayer 1959, and Kistler 2007, pp. 3-4). In this framework, the possibility of reductionism involved building bridges between sciences by semantically linking their worlds of discourse term by term, given their unity in principle. Hence the project of the unity of science that animated the philosophy of logical empiricism, which was engaged in a general program of inter-theoretical reduction, level by level, of all sciences to physics. This program was implicitly associated with a stratified ontology by levels of physical constitution. Contrary to their rejection of metaphysics, certain neopositivists tended to guarantee their reductionist project by referring to the ontological evolution of the physical world and of life:

“If we find that there was a time when a certain whole did not exist, and that things on a lower level came together to form that whole, it is very natural to suppose that the characteristics of the whole can be causally explained by reference to these earlier events and parts; and that the theory of these characteristics can be micro-reduced by a theory involving only characteristics of the parts.” (Oppenheim & Putnam 1958, p. 15).[[25]](#footnote-25)

Even when not referring to a global ontology, neopositivists considered the possibility, in principle, of systematically linking properties of entities at higher levels to those of their constituents in an independent state, thus pertaining to lower ontological levels (see for example Ernst Nagel, 1961/1979, p. 395).

It is interesting to note that the reductionist interpretations of MI in the above sense appeared in the period of influence of logical empiricism, while the issue of MI was lively debated in the social science scene in the context of Hayek’s and Popper’s critiques of historicism.[[26]](#footnote-26) The interpretive bias involved by the neopositivist representation manifests itself, for example, in May Brodbeck (1954, p. 141)’s feeling of inconsistency of MI when, in reaction to Hayek (s1952a) *The Counter-Revolution of Science*, she presents MI as an approach that is “reductionist in one sense, antireductionist in another”, because “the behavior of groups must be explained in terms of the behavior of individuals; but the psychology of individuals cannot be reduced to anything else”. This confirms the misunderstanding regarding the path followed by MI: that of the holism of parts. Indeed, MI opposes both causal holism and (micro)reductionism. For his part, Maurice Mandelbaum (1955, 1957), although a critical realist[[27]](#footnote-27) arguing against logical empiricism, interprets MI as an enterprise of “reduction of societal facts to facts concerning individual behavior”, which is also a form of inadequate translation of MI into the very language of logical empiricism.

In the same period, logical empiricists themselves tended to interpret MI from the perspective of their reductionist stance and, on this ground, opposed interpretive sociology in the Weberian sense of *Verstehen*.[[28]](#footnote-28) Unity of science implied the translation of mental data into observable behavioral terms by behaviorist psychology largely supported by neopositivists (Carnap et al., 1929/2010; Hempel, 1952/1965; Oppenheim & Putnam 1958). On this subject, Carl Hempel (1966: 110) refers the reader to Ernest Nagel (1961)’s “lucid” discussion of methodological individualism in his influential text on intertheoretical reduction, *The Structure of Science*. This text can shed light on MI’s interpretative drift in the reductionist direction.

Ernest Nagel correctly identifies methodological individualism as the approach in social science applied to the understanding of social phenomena from the intentional, meaningful, or subjective categories of human experience, which he opposes to “methodological collectivism” or “holism” (Nagel, 1961/1979, pp. 540-542), according to which (contrary to the holism of parts defined above) the whole acts as a separate cause, through the hypostasis of collective terms, or else, through the idea that social systems constitute “wholes” governed by sui generis macro-laws, etc. Nevertheless, Nagel reinterprets MI according to the logical-empiricist layered conception of the world and of science, where the parts of the wholes involved refer to entities with independent characteristics, by asserting that in MI:

“All the descriptive terms occurring in satisfactory explanations of social phenomena must belong to a special subclass of individual terms, namely, terms denoting ‘subjective’ or ‘psychological’ states of individual human beings. Methodological individualism thus subscribes to what is often advanced as a factual thesis (although it is perhaps better regarded as a program of research) concerning the *reducibility* of all statements about social phenomena to a special class of (‘psychological’) statements about individual human conduct” (Nagel, 1961/1979, pp. 541-542; see also Oppenheim & Putnam 1958, pp. 17-18).

This reductionist description of MI, essentially involving terms describing individual psychological states, is inappropriate, but it follows from a logical empiricist view of the structure of science. Since the general project of MI cannot satisfy the neopositivist ambitions for unity of science, involving the strictly empirical approach of the then in favor behaviorist psychology, Nagel deduces the limited interest of the associated research program. This is an important point, which may help us to better understand the difficulties of reception of MI in circles dominated by the premises of analytic philosophy rooted in these empirical-physicalist frameworks. Nagel (1961/1979, pp. 473-475) defends in substance that only individuals' overt behaviors really satisfy the requirements of scientific explanation, so that without denying the existence of subjective mental states, behaviorism represents a research program that "hopes to achieve a comprehensive system of explanation for human behavior through the 'reduction' of psychology to other sciences". Posterity has typically adhered to Nagel's reductionist definition of MI, but often overlooks his adequate comprehension of the organic link between MI and “understanding” interpretation, which, in reality, stands in opposition to reductionism. This can be explained by the lack of interest in conscious phenomena of the still dominant empirico-physicalist trends of the analytic philosophy of sciences.

As Alfred Schutz points out, Nagel’s reductionist framework of interpretation does not allow him to understand the specificity of the explanation in MI which refers to the causal role of reason, a role that the overt behavior approach cannot substitute for:

“Our authors are prevented from grasping the point of vital concern to social scientists by their basic philosophy of sensationalistic empiricism or logical positivism, which identifies experience with sensory observation (…) The identification of experience with sensory observation in general and of the experience of overt action in particular (and that is what Nagel proposes) excludes several dimensions of social reality from all possible inquiry” (Schutz 1954, pp. 261-262).

Schutz argues that social scientists cannot interpret social processes simply as chains of events connected by external links, with the sole aim of establishing regularities. Besides, the individuals of MI who are apprehended in the perspective of the Weberian *Verstehen* have an essentially social character:

“From the outset, we, the actors on the social scene, experience the world we live in as a world both of nature and of culture, not as a private but as an intersubjective one, that is, as a world common to all of us, either actually given or potentially accessible to everyone; and this involves intercommunication and language” (Schutz 1954, p. 261).

However, the reductionist interpretation of MI derived from neopositivism has persisted. It is found in Steven Lukes (1968, p. 120)’s influential article where MI is defined as the doctrine according to which “facts about society and social phenomena are to be explained solely in terms of facts about individuals” and in many other critical texts of MI in philosophy of social sciences. In Zahle and Collins’ (2014, p. 8) more recent book supposedly about the individualism-holism debate, MI is explicitly defined a model of inter-theoretic reduction where “individualist explanations involve individualist theories which contain descriptions of individuals only.”[[29]](#footnote-29) No reference is made in such definition to the criterion of subjectivity constitutive of MI, since its emergence with marginalist economics, but especially in the methodological developments of its major representatives in the social sciences.

*The bias of non-reductive physicalism on MI: The multiple-realizability argument*

Non-reductionist approaches to physicalism have been developed largely with the argument of multiple-realizability. This argument has been put forward particularly in the philosophy of mind. It is inspired by the computational metaphor and the analogy with the functional relationship between hardware and software: As long as certain computing principles are respected, the same program can be realized with different hardware supports, just as the same function (cognitive for example) can be realized in different physical systems (that is “multiple-realizability”) prohibiting the explanation of the functional properties of the wholes by those of their physical constituents, and thus posing a challenge to physicalist reductionism. Putnam (1967)’s multiple realizability argument is notoriously based on the observation that mental states, such as pain, can be achieved by different physical states of the nervous system in different types of organisms, so that the (mental) function involved has to be distinguished from the (physical) basis that realizes it, even if it is dependent on it, because this dependency is not strict. Organizational structures at higher levels are assumed to have explanatory power as long as the elements at lower levels are interchangeable with other components that meet the conditions required for the structures to play their role. This is in line with the physicalist conception of the natural and human world made of physical components structured at different levels. This representation explains the opposition between reductionist approaches, which defend that the components at a given level explain in principle the phenomena resulting from their interactions in complex wholes, and non-reductionist approaches which defend the relative autonomy of these wholes, and correlatively, the autonomy of special sciences with respect to physics.

I have discussed (with Denis Phan) elsewhere the multiple-realizability argument in relation to debates about the possible independence of analytical sociology from methodological individualism (see Bulle & Phan 2017). In essence, our argument is that there is explanatory complementarity between the structural generic properties (implemented by the multi-agent models favored by analytical sociology) and the semantic conditions of interpretation involved by the thematic conceptual research framework (MI for example). The structures have explanatory power in this respect which is of the order of partial causes, but the explanation, in order to be complete and to account for the generating mechanisms at work, must be based on an interpretative framework defined by the research, bringing into play the way in which the activities or causal powers of the entities involved (the individuals endowed with rational capacity in MI) underlie, and possibly condition, the structural logics highlighted.

*The Emergentist bias on MI: The Case of Critical Realism*

Contemporary emergentist conceptions are closely related to emergentist doctrines developed in the early 20th century (see Mclaughlin 1992), which raise similar problems. They assume that entities at level Xn-1 are endowed with new causal properties when participating in wholes at the next level Xn of the natural hierarchy, due to the constitutive role of structures that link them. Critical realists[[30]](#footnote-30) defend a form of emergentism, based on an ontology of causal powers, where autonomous and causally efficient wholes are supposed to emerge at different levels of organization and complexity. Social wholes are no exception. According to the contemporary critical realist perspective, individuals are situated at an ontological level inferior to that of social wholes (i.e., considered in an independent state), and emerge as social agents, formed and empowered by social structures, by virtue of the “relationally emergent properties of things” (Elder-Vass 2010). This attribution of proper causal power to social structures which acts on individual parts tends to reify them and commit “the fallacy of collectivism” as noted by Rom Harré and Charles Varela (1996): The thesis that social structures are not causal factors but (efficient) causal powers is a violation of the principle that causal power “is the activity of powerful particulars at work”. Critical realists’ holism may be qualified as causal insofar as the whole is supposed to act as a separate cause on its parts. It opposes individuals and social structures as two interacting ontological levels. Hence, the reductionist interpretation of MI which denies that social wholes act as separate causes.[[31]](#footnote-31) We have seen that this is a misconception because MI, consistent with holism of the parts, from the outset holds individuals to be constituent parts of social wholes whose action or causal power, referring to their rational capacity, is inherent to their social being.

In short, the physicalist ontology tends to support a layered conception of the world and science that confers an efficient causal power only to physical parts and, in the mainstream non-reductive approaches, an irreducible explanatory power to functional structures. Emergentist approaches that defend the existence of non-physical causal powers tend to depart from the physicalist framework, bringing into play the constitutive role that relations between entities have on their properties, as is the case with critical realism. MI has been misunderstood by both the reductionist and non-reductionist approaches developed within the framework of mainstream physicalism supported by analytical philosophy, as well as by emergentist approaches of critical realism. When it comes to the social world, all these approaches oppose individuals (assumed to have independent properties) and social structures as two separate levels of reality. Such metaphysics is incompatible with MI.

1. **From ontology to epistemology: the issue of creative evolution**

I have argued here that MI represents a social science method based on an analytical decomposition of wholes into basic units comparable to methods in other sciences, as is the case in various approaches of psychology. Such decomposition defines theoretical units that are active units involved in scientific explanation and whose properties or causal powers are most often hold as inherent to their belonging to the whole they form. According to MI, basic units of social sciences are social actors endowed with a general rational capacity which represents a trans-situational capacity to attribute meaning or, in other words, to understand. The rationality principle involved in MI assumes that the relevant subjective factors of individuals’ situations (involving internal structures of meaning) can be objectified, alongside external social features, to account for the reasons underlying their thoughts and actions. This principle justifies the understanding perspective of MI, that is, the ability of the interpreter to understand the motives of social actors by trying to grasp their situation as they perceive it, albeit in an abstract, ideal-typical way. This is possible because the interpreter is assumed to share the same fundamental rational capacity as the social actors. Even if reasons often recede into the unconscious, the observer can account for them on the basis of the implicit meaning they hold for the social actor. Moreover, the MI method is “individualist” in that the causality of social wholes is exhausted by the causal operation of their parts, the social actors. Consequently, MI represents a fundamentally non-positivist and non-reductionist methodological approach for the social sciences, which is consistent with an ontology referring to a holism of parts originally defined by Smuts (1926) according to which 1/ the properties and activities of the parts are inherent to their belonging to the whole they form, and 2/ the whole does not act as a separate cause distinct from its parts.

Additionally, I have argued that misunderstandings of MI in the philosophy of social sciences literature are rooted in epistemological and ontological issues. They can be illuminated by considering three alternatives concerning the relations of parts to wholes among theoretical constructs. These are the reductionist and non-reductionist physicalist approaches or emergentist alternatives on the one hand, and the holism of parts on the other. In explaining phenomena at level Xn, reductionist physicalists involve physical entities at level Xn-1, whereas non-reductionist physicalists and emergentists consider the causal power of wholes at level Xn. Proponents of these perspectives incorrectly assume that individuals in MI are endowed with independent characteristics from their belonging to social wholes. The holism of parts, which underpins the genuine ontological stance of MI, engages a fundamentally different approach that can be supported by the notion of creative evolution. Based on this notion, throughout evolution, the development of new causal capacities underlies the appearance of intrinsically new entities and properties forming new wholes. This is exemplified by the human rational capacity, which is one with human social being, opening a third path between reductionist and non-reductionist varieties of contemporary physicalism, or emergentist conceptions. According to this third path, the parts involved in MI have no separate existence from the social wholes (reductionism rejected) while the social wholes do not act as separate causes (causal holism rejected).

**References**

Abel, T. (1948). The Operation Called Verstehen. *American Journal of Sociology*, *54*(3), 211-218.

Ayer, A. J. ed. (1959). *Logical positivism*. New York: Free Press.

Bhaskar, R. (1979). *The Possibility of Naturalism*. Brighton: Humanities Press.

Bird A., Ellis, B., Sankey, H. (2012). *Properties, Powers and Structures: Issues in the Metaphysics of Realism*. London: Routledge

Bostaph, S. (1978). The methodological debate between Carl Menger and the German historicists, *Atlantic Economic Journal*, *6*(3), 3-16.

Boudon R. (1999/2001). *The Origin of Values: Sociology and Philosophy of Beliefs*. London: Routledge.

Bouvier, A. (2023). Methodological Individualism facing recent criticisms from Analytic Philosophy Artificial reconstructions and genuine controversies. This volume.

Brodbeck, M. (1954). On the Philosophy of the Social Sciences. *Philosophy of Science*, *21*(2), 140-156.

Bulle N., Phan D. (2017). Can analytical sociology do without methodological individualism? *Philosophy of the Social Sciences*, *47*(6), 379-409.

Bulle, N. (2018). Methodological Individualism as Anti-Reductionism. *Journal of Classical Sociology*, *19*(2), 161-184.

Bulle, N. (2021). Vygotsky versus Dewey on Mental Causation: The Core of Two Divergent Conceptions of Human Thought. *New Ideas in Psychology*, *63*(4): 100898.

Bulle, N. (2022). Rationality as a meta-analytical capacity of the human mind: From the social sciences to Gödel. *Philosophy of the Social Sciences*. <https://doi.org/10.1177/00483931221115345>

Bulle, N. (2023). *Methodological Individualism: Introduction and Founding Texts*. London: Routledge (open aceess, Forthcoming).

Bulle, N., Di Iorio, F. (2023). Methodological Individualism and Institutional Individualism: A Discussion with Joseph Agassi. This volume.

Bulle, N., Di Iorio, F. (2023). Methodological Individualism and Critical Realism: Questions for Margaret Archer. This volume.

Campagnolo, G. (2010). *Criticism of Classical Political Economy. Menger, Austrian Economics and the German Historical School*. London: Routledge.

Carnap, R., Hahn, H., Neurath, O. (1929/2012). Wissenschaftliche Weltauffassung – Der Wiener Kreis. In Friedrich Stadler and Thomas Uebel (Eds.) *Wissenschaftliche Weltauffassung. Der Wiener Kreis.* Reprint of original Edition with Translations (pp. 75-116). Vienna: Springer.

Cartwright, N. (1989). *Nature’s Capacities and their Measurement*. Oxford: Clarendon Press.

Cartwright, N. (1999). *The Dappled World. A Study of the Boundaries of Science*. Cambridge: Cambridge University Press.

Cherkaoui, M. (2005). *Invisible Codes: Essays on Generative Mechanisms*. Oxford: Bardwell Press,

Cowan, R. & Rizzo, M. (1996). The Genetic-Causal Tradition and Modern Economic Theory. *Kyklos*, *49*, 273-317.

Crafford, F. S. (1943). *Jan Smuts: A Biography*. Kessinger Publishing.

Craver, C. F., & Bechtel, W. (2007). Top-Down Causality without Top-Down Causes. *Biology and Philosophy*, *22*, 547–63.

Cubeddu, R. (1993). *The Philosophy of the Austrian School*. New York: Taylor and Francis.

Di Iorio, F. (2016). World 3 and Methodological individualism in Popper’s Thought. *Philosophy of the Social Sciences*, *46*(4), 352-374.

Di Iorio, F. (2023). Methodological Individualism and Reductionism. This volume.

Di Nuoscio, E. (2018). “On the Explanation of Human Action: ‘Good Reasons’, Critical Rationalism and Argumentation Theory”. In G. Bronner & F. Di Iorio (Eds). *The Mystery of Rationality: Mind, Beliefs and the Social Sciences* (pp. 37-52). New York: Springer.

Elder-Vass, D. (2010). *The Causal Power of Social Structures. Emergence, Structure and Agency.* Cambridge: Cambridge University Press.

Ellis, B. (2009). *The Metaphysics of Scientific Realism*. New York: Routledge.

Feuerhahn, W. Max Weber and understanding explanation. This volume.

Grassl, W., Smith, B. (1986). *Austrian Economics: Historical and Philosophical Background*. London: Croom Helm/Routledge.

Groff, R. (Ed.). (2008) *Revitalizing Causality: Realism about Causality in Philosophy and Social Science*. London: Routledge.

Harré, R. (1970). *The Principles of Scientific Thinking*. Chicago: The University of Chicago Press.

Harré, R., Madden, E. H. (1973). Natural powers and powerful natures. *Philosophy*, *48*(185), 209-230.

Harré,, H. R. & Varela, C.R. (1996). Conflicting Varieties of Realism: Causal Powers and the Problems of Social Structure. *Journal for the Theory of Social Behaviour*, *26*, 313–25.

Harré R. (2006). Un champ sémantique étendu pour les dispositions et le rôle fondationnel des pouvoirs causaux. In B. Gnassounou, M. Kistler (Eds) *Causes, pouvoirs, dispositions en philosophie* [C*auses, powers, dispositions in philosophy*] (pp. 119-133). Paris : Éditions de la rue d’Ulm/PUF.

Hayek, F. (1952a) *The Counter-Revolution of Science: studies on the abuse of reason*. New York: The Free Press.

Hayek, F. (1952b/1976). *The Sensory Order. An Inquiry into the Foundations of Theoretical Psychology*. Chicago: The University of Chicago press.

Hempel, C. G. (1952/1965). Typological methods in the natural and the social sciences. In Carl Hempel, *Aspects of Scientific Explanation and other Essays in the Philosophy of Science* (pp. 155-171). New York: The Free Press/Collier-MacMillan.

Hempel, C. G. (1966). *Philosophy of Natural Science*. Englewood Cliffs: Prentice-Hall.

Jaros, G. (2002). Holism Revisited: Its Principles 75 Years On, World Futures: *The Journal of General Evolution*, *58*(1), 13-32.

Kemeny, J., Oppenheim, P. (1956). On Reduction. *Philosophical Studies*, *7*(1-2), 6-19.

Kim, J. (2003). The American Origins of Philosophical Naturalism*. Journal of Philosophical Research* *28*(9999), 83-98.

Kistler, M. (2007). La réduction, l'émergence, l'unité de la science et les niveaux de réalité. Matière première, 67-97. ⟨halshs-00775613⟩

Koffka, K. (1935). *Principles of Gestalt psychology*. London: Routledge & Kegan Paul.

Koestler, A. (1978). *Janus: The summing up*. London: Picador.

Lukes, S. (1968). Methodological individualism reconsidered. *The British Journal of Sociology*, *19*(2), 119-129.

Machamer, P., Darden, L., Craver, C. F. (2000). Thinking about mechanisms. *Philosophy of Science*, *67*(1), 1-25.

Mandelbaum, M. (1955). Societal Facts, *British Journal of Sociology*, *6*, 305-317.

Mandelbaum, M. (1957). Societal Laws, *British Journal for the Philosophy of Science*, *8*, 211-224.

Marmodoro, A. (ed.) (2010). *The Metaphysics of Powers: Their Grounding and Their Manifestations*. London: Routledge.

Mclaughlin, B. P. (1992). The Rise and Fall of British Emergentism. In A. Beckermann, H. Flohr, & J. Kim (Eds) *Emergence or reduction? Essays on the Prospects of Nonreductive Physicalism* (pp. 49-93). Berlin: Walter de Gruyter.

Menger, C. (1883/1986). *Investigations into the Methods of the Social Sciences*. New York: New York University Press.

Mesure, S. (2023). Dignity and Axiological Rationality, The Legacy of Raymond Boudon. (This volume)

Meyerson, É. (1908). *Identité et Réalité*. Paris: Félix Alcan.

von Mises, L. (1949/1966). *Human Action. A Treatise on Economics*. Chicago: Contemporary Books.

Morgan, C. L. (1923). *Emergent Evolution*. Londres: Williams & Norgate.

Morin, J.-M. (2023). Ordinary Rationality Theory (ORT). According to Raymond Boudon. This volume.

Nagel, E. (1961/1979). The Structure of Science. Problems in the Logic of Scientific Explanation. Cambridge: Hackett Publishing Company.

Opp, K-D. (2023). Methodological Individualism and Micro-Macro Modeling. This volume.

Oppenheim, P., Putnam, H. (1958). The unity of science as a working hypothesis. In H. Feigl, M. Scriven, G. Maxwell (Eds)*. Concepts, Theories, and the Mind-Body Problem* (pp. 3-36). Minneapolis: University of Minnesota Press.

Phillips, D. C. (1976). *Holistic Thought in Social Science*. Stanford: Standford University Press.

Popper, K. (1957). *The Poverty of Historicism*. London: Routledge & Kegan Paul

Popper, K. (1965/1972). *Objective Knowledge*. Oxford: Clarendon Press.

Popper, K. (1978a). Natural Selection and the Emergence of Mind. *Dialectica*, *32*(3/4), 339-355.

Popper, K. (1978b). *Three World*. The Tanner Lecture on Human Values Delivered at The University of Michigan April 7, 1978.

Potochnik A., McGill, B. (2012). The limitations of hierarchical organization. *Philosophy of Science*, *79*(1), 120-140.

Poynton, J. C. (1987). Smuts’s Holism and Evolution Sixty Years On. *Transactions of the Royal Society of South Africa*, *46*(3), 181-189.

Putnam, H. (1967). Psychological Predicates. In W. H. Capitan & D. D. Merrill (Eds) *Art, Mind, and Religion* (pp. 37-48). Pittsburgh: University of Pittsburgh Press.

Ramström, G. (2018/2023). The Analytical Micro–Macro Relationship in Social Science and Its Implications for the Individualism-Holism Debate. *Philosophy of the Social Sciences*, *48*(5), 474–500, reprinted in this volume.

Schutz, A. (1954). Concept and Theory Formation in the Social Sciences. *The Journal of Philosophy*, *51*(9), 257-273.

Sidis, B. (1908). *Psychological Review*, *15*(1), 44-68.

Smith, B. (1990). Aristotle, Menger, Mises: An Essay in the Metaphysics of Economics. In B. Caldwell (Ed.) *Carl Menger and His Legacy in Economics* (pp. 263-288). Durham/London: Duke University Press.

Smuts, J. C. (1926). *Holism and Evolution*. New York: The Macmillan Company.

Uebel, T. (2010). Opposition to Verstehen in Orthodox Logical Empiricism. In U. Feest (Ed.) *Historical Perspectives on Erklären and Verstehen* (pp. 291-310). New York: Springer.

Vygotsky, L. S. (1934/1986). *Thought and Language*. Cambridge: MIT Press.

Weber, M. (1903-1906/1975). *Roscher and Knies and the Logical Problems of Historical Economics.* New York: The Free Press.

Weber, M. (1908/1972). Georg simmel as sociologist. Social Research *39*(1), 155-163.

Weber, M. (1922?/1981). Some Categories of Interpretive Sociology. *The Sociological Quarterly*, *22*, 151-180

Weber, M. (1922/1968) *Economy and Society:* *An Outline of Interpretive Sociology*. Berkeley: University of California Press.

Weber, M. (1922/1958). *From Max Weber:* *Essays in Sociology*. In H. H. Gerth & C. Wright Mills. Oxford: Oxford University Press.

Weber, M. (1922/1949). *The Methodology of the Social Sciences*. Translated and edited by Edward A. Shils and Henry A. Finch. Glencoe: The Free Press.

Zahle, J. & Collin, F. (eds). (2014). *Rethinking the Individualism-Holism Debate: Essays in the Philosophy of Science.* Dordrecht: Springer.

1. Two broad forms of causal holism can be distinguished here. The first form considers the causal capacity of wholes to act on their parts in such a way that the parts respond to logics defined at the whole level (e.g., through the notion of spirit of the people in certain 19th century historicist approaches, or the notion of function in various forms of functionalism in the social sciences). The second form, a more sophisticated version of the first, attributes causal power to the relational or organizational structures characterizing the arrangement of the parts. These structures may determine the specific causal properties of the parts (e.g., through the neo-Marxist notion of class habitus). [↑](#footnote-ref-1)
2. “Each higher entity in the ascending series is an emergent ‘complex’ of many entities of lower grades, within which a new kind of relatedness gives integral unity” (Morgan, 1923, p. 10). [↑](#footnote-ref-2)
3. See his commentary on Lloyd Morgan (1923) in the second edition (Smuts 1926/1927, p. 330) published one year after the first. [↑](#footnote-ref-3)
4. Creative evolution refers to the chance-like character of mutations and natural selection, underlying the creation of intrinsically new entities and properties within nature (Popper 1978a, p. 352). [↑](#footnote-ref-4)
5. The microreduction of one theory by another mainly refers to the idea that the entities, properties and explanations of one theory can be accounted for by a more fundamental theory. See the section below 5.1. [↑](#footnote-ref-5)
6. It should be noted here that a whole literature associated with holism in various, often “strong” or “causal”, forms (i.e., hegelianism, historicism, organicism, functionalism, etc.) uses the concept of analysis critically in a reductionist sense to express something quite different - a mere decomposition or “dissection” of a whole into elementary components, endowed with characteristics in a state independent of the whole. See in particular D. C. Phillips (1976) who refers to this literature and maintains the confusion regarding the meaning of “analysis” in science. [↑](#footnote-ref-6)
7. Gustav Ramström (2018/2023) discusses the fact that in the social sciences the micro-macro link is an analytical type of relationship. [↑](#footnote-ref-7)
8. Nevertheless, Weber criticizes the conclusions drawn by Menger from the theoretical approach to economics: “In the further course of our discussion, we shall frequently refer to this distinction [between the theoretical (exact) and the empirical-realistic], whose significance for the methodology of economics was to a certain extent already (as will be noted later) recognized by Menger, although his conclusions were in part incorrect.” (Weber, 1903/1906/1975, note p. 4). Especially, Weber disputes the idea that social phenomena could be explained from abstract theories developed within social sciences, as if they would “contain the true reality of the object.” Weber emphasizes that they merely provide heuristic devices for understanding them: “This procedure gives rise to no methodological doubts so long as we clearly keep in mind that ideal-typical developmental constructs and history are to be sharply distinguished from each other, and that the construct here is no more than the means for explicitly and validly imputing an historical event to its real causes while eliminating those which on the basis of our present knowledge seem possible” (Weber 1922/1949, 101-102). [↑](#footnote-ref-8)
9. Let us note the proximity of the respective approaches of Weber and Vygotsky here (cf. Bulle 2018 and Bulle 2021): Both refer to the role of consciousness and the notion of meaning, the subjective meaning of words in Vygotsky, and the subjective meaning of actions in Weber. [↑](#footnote-ref-9)
10. Active epistemologies involving “activities” (Machamer, Darden & Craver, 2000), “capacities” (Cartwright, 1989), or “causal powers”, and their opposition to “passive” approaches involving laws or counterfactual considerations (see for example: Bird, Ellis & Sankey, 2012; Ellis, 2009; Marmodoro, 2010). [↑](#footnote-ref-10)
11. For further references on this subject see Bostaph, 1978; Campagnolo, 2010; Cowan and Rizzo 1996; Cubeddu, 1993; Grassl & Smith, 1986; and Smith, 1990. [↑](#footnote-ref-11)
12. It is not sufficient, as some forms of pragmatic neo-Kantianism suggest, to merely assign theoretical concepts an “as if” regulatory role over empirical data. These theoretical concepts should aim to model real properties, going beyond observable data. Although Weber’s idealizations may have had a regulatory function in the study of observable phenomena, it is likely that his central reference to the rational capacity of individuals is intended to serve explanation insofar as it tends to represent a genuine human capacity. [↑](#footnote-ref-12)
13. On “good reasons” in Boudon’s work, see especially Jean-Michel Morin (2023, this volume) and Di Nuoscio (2018). [↑](#footnote-ref-13)
14. In terms of human rationality, progress has been made in moving away from instrumental-computational models and toward the concept of axiological rationality (Boudon, 1999/2001; see also the article by Sylvie Mesure 2023, in this volume). [↑](#footnote-ref-14)
15. On MI and understanding sociology see Bulle (2023, forthcoming) and Feuerhahn (2023, this volume). [↑](#footnote-ref-15)
16. But these may be enlarged (see Opp 2023, this volume). [↑](#footnote-ref-16)
17. This is why, for instance, Cartwright’s epistemology is based on capacities, not dispositions which tend to refer to definite schemes of action. [↑](#footnote-ref-17)
18. Popper’s world 3 comprises intersubjective, objectifiable structures of meaning that have their own existence but no inherent causal action. This action is always mediated by individuals' understanding: "This influence is, to the best of my knowledge, always indirect. World 3 theories and world 3 plans and programs of action must always be grasped or understood by a mind before they lead to human actions, and to changes in our physical environment" (Popper 1978b, p. 164). For more on world 3 and MI, see Di Iorio (2016) and the discussion between Bulle, Di Iorio, and Joseph Agassi (2023, this volume), especially Popper (1965/1972; 1978b). [↑](#footnote-ref-18)
19. To complete Weber’s argument: “Whenever our search for historical knowledge leads us to focus on behaviour that is “irrational” in the sense of being inaccessible to interpretation, our need for causal [explanation] will indeed, as a rule, have to be content with having a “conception” of [that behaviour] on the basis of the nomological knowledge of, say, psychopathology or similar sciences, just like [having a “conception” of] the pattern of those rock fragments” Weber (1903-1906/1975, p. 44). [↑](#footnote-ref-19)
20. “Anything of a given level except the lowest must possess a decomposition into things belonging to the next lower level” (Oppenheim & Putnam 1958, p. 9). [↑](#footnote-ref-20)
21. “The idea of reductive levels employed in our discussion suggests what may plausibly be regarded as a natural order of sciences.” (Oppenheim & Putnam 1958, p.28). [↑](#footnote-ref-21)
22. For an account and a critical discussion of emergentists’ claims in the first half of the twentieth century, see for instance Nagel (1961, pp. 336-397). [↑](#footnote-ref-22)
23. See especially, for instance, Craver (2007) and Potochnik & McGill (2012). [↑](#footnote-ref-23)
24. See in particular Kim (2003). [↑](#footnote-ref-24)
25. See also Kemeny & Oppenheim 1956; Nagel 1961. [↑](#footnote-ref-25)
26. The “atomistic” interpretation, in the reductionist sense, is of course ancient (see Menger above who refers to it) but with related epistemological foundations, derived from Humeanism. [↑](#footnote-ref-26)
27. On critical realism, see below. [↑](#footnote-ref-27)
28. See in particular Abel (1948), Hempel (1952b/1965) and, for a general perspective, Uebel (2010). [↑](#footnote-ref-28)
29. For a discussion of contemporary fallacies regarding methodological individualism within analytic philosophy, see Alban Bouvier (2023, this volume) and Di Iorio (2023, this volume). [↑](#footnote-ref-29)
30. Critical realism has the interest of discussing the necessity of a form of realism to justify the idea that the human mind can build knowledge of an independent reality. It was originally developed by Roy Wood Sellars (father of Wilfrid Sellars) whose work is largely neglected today, so much so that contemporary proponents of critical realism generally make no mention of it (Groff 2008 is an exception). [↑](#footnote-ref-30)
31. See Bhaskar (1979), p. 26, and the discussion of critical realism of Di Iorio and I (2023, this volume). [↑](#footnote-ref-31)