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ORIGINAL ARTICLE

Culture and cognition: the Durkheimian principle of sui generis synthesis vs. cognitive-based models of culture

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Abstract
Cultural sociology must catch up in taking seriously recent initiatives in the sociology of culture and cognition, represented by the works of Omar Lizardo, John Levi Martin, Stephen Vaisey, and others. However, aiming at progress in cultural analysis, these theories are partly driven by an epistemic logic alien to cultural theorizing, making the very concept of culture redundant. To identify this anti-cultural strain within the ongoing cognitive turn in sociology, I propose an ideal-typical model—'the informational theory of communication,' which reduces culture to information. Although many cognitive scientists and sociologists of culture and cognition are aware of the limitations and counter-productivity of this model, and it might not exist in a pure form, I argue that, first, it is still clearly traceable in many of their arguments, and, second, that it can be seen as a cultural logic underlying a substantial part of their arguments. I posit that replacing this logic of explanation with the Durkheimian model of sui generis synthesis, the concept of emergence, and the idea of 'boundary conditions' not only allows us to integrate the insights of cognitive science into sociology, but also opens a way for sociology to contribute to the cognitive sciences.

Keywords Culture · Cognition · Durkheim · Emergence · Sui generis synthesis · Boundary conditions

Introduction

The good old debates on culture, with their longstanding tensions and oppositions and unhurried, solid dynamics, have been recently challenged by a new flow of criticism, originating from the side of the sociology of culture and cognition. This

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criticism emerges from recent developments in cognitive science and neuroscience, and uses the field of cognitive cultural sociology, launched almost half a century ago by Aaron Cicourel, Eviatar Zerubavel, and others, as a mediating sub-field. Thus, if, originally, the link between culture and cognition has been seen as a way to trace cultural influence within a profoundly individual realm, Omar Lizardo, John Levi Martin, Stephen Vaisey, and other sociologists of cognition and culture, who have substantially developed further the theses introduced two decades earlier by Paul DiMaggio, have overturned this move, claiming that firm knowledge on cognition is able to change the understanding of the very concept of culture and eventually the very landscape of sociology.

The claim has been largely acknowledged as a novelty and a serious event in sociological theory, but, surprisingly, not in cultural sociology, ostensibly the primary audience for this appeal. It has taken a decade for cultural sociologists to begin addressing the challenge. Recent articles by Michèle Lamont and her colleagues and by Matthew Norton are the first to address it directly (Lamont et al. 2017; Norton 2018), followed by other contributions (see, for example, Kurakin 2019).[1]

It is difficult to argue against the great value of new knowledge on cognition for sociology in general and for cultural sociology in particular. Indeed, from the very beginning, even the classics of the discipline did not deny the importance of what they knew about mind and cognition for sociology, trying to include available knowledge in their sociological theories. For example, Émile Durkheim, who is often (and mistakenly (Bellah 1973)) associated with anti-psychologism, created his own anthropological picture of the human being, which he called 'homo duplex' (Durkheim 1973), and placed the substance of cognition, which he called 'individual representations,' at the core of his theory. The most theoretically loaded parts of *The Elementary Forms of Religious Life* sometimes refer to how human cognition operates with ideas of opposite modalities (Durkheim 1995, pp. 37–38). Finally, he devotes one of his most important works to a focused analysis of the relationships between states of individual minds with their physical substrates on the one hand and with the social on the other hand (Durkheim 1974). Nowadays, when, thanks to developments in neuroscience and cognitive psychology, we have considerably greater and more reliable knowledge on cognition than the classics did, it is hardly doubtful that sociologists must make use of it.

However, how to integrate knowledge on cognition, gleaned from neuroscience and cognitive psychology, into sociological theory is a serious epistemological problem. In science, knowledge cannot simply be added one to another. In this article, I argue, that by integrating developments in cognitive science into cultural sociology in a non-problematic and 'intuitive' way, some culture and cognition theorists tend

[1] Interestingly enough, the recent claims and arguments by the sociologists of culture and cognition had been largely anticipated by Paul DiMaggio and his renowned article, 'Culture and Cognition' (DiMaggio 1997). However, although this voice has been heard, the core of the discipline did not recognize it as a 'game-changer.' For example, the widely known book *Cultural Theory: An Introduction* by Smith and Riley (2009), which has been through two editions and provides a representative landscape of the field, and serves as a handbook for teaching cultural sociology at various universities, does not recognize this cognitivist call as an important event within cultural sociology.

to ignore the constitutive features of culture, driven by conceptual models and arguments alien to cultural theorizing.

There is an epistemological gap between meaning-centered conceptualizations of culture, typical of cultural theories, and those that emerge in a spontaneous way within (or driven by) cognitive science. What is the most important trait of culture from the point of view of cultural sociology? The full answer to this question would indeed be quite disputable, so, I propose a minimal one, a statement, which, if not supported, makes even using the term culture meaningless. Culture is a realm that enables processes of communication and meaning-making, rather than a class of objects that transfer these interactions between already defined self-existent individuals.[2] In other words, culture is not a thing, but rather a way to see things. It is a very special epistemic view on how human beings interact, and, by extension, that which is the most specific and important in human nature.[3] It is only if we take this fact into account, a notorious lack of certainty in definitions of culture (Martin 2010; Patterson 2014), otherwise absurd, falls into place. Culture is rather a category than a notion; it sets the paradigm, defined as a result of the entire development of the argument.[4] Hence, natural-science style definitions, which typically localize an object in the context of other already defined objects, cannot adequately define culture.

What theorists of cognition often do, instead, is try to resettle conceptually what cultural theorists call culture into a different frame of reference, one constituted by the unquestionable existence of such objects as brains and neurons and their known functionality. Such a conceptual move is epistemologically incorrect. When, for example, cultural sociologists treat a particular object, such as the guillotine (Smith 2003), or an event, such as Watergate (Alexander 1988), as cultural entities, this

[2] I argue that this is the most important trait of culture, at least for sociology. I cannot defend this position fully in the scope of this article. I will thus limit myself to a brief reference to the classics of sociology that have set the agenda for the discipline, and to those contemporary versions of cultural sociology that explicitly support this vision. Indeed, Max Weber, following Neo-Kantianism, saw meanings as a separate sphere, mediating connections with the realm of values. Georg Simmel, in his formula of culture as 'the path of the soul to itself' presented it as related to alienation from the spirit sphere, whose separateness is constitutive for meaning-making (Simmel 1997, p. 55). Émile Durkheim, who had rarely used the notion of culture but nonetheless became one of the most important figures for cultural sociology, insisted on the autonomy of culture from cognition in the most explicit and consistent way (Durkheim 1974). Finally, such approaches as the 'strong program' in cultural sociology put the principle of the autonomy of culture at the heart of the theory (Alexander and Smith 2003).

[3] For example, cultural theorists often draw a gap between human beings and animals, because culture is a constitutive condition for human existence, absent in animal world. Whereas for the followers of the cognitive sciences this difference is quantitative and not qualitative: as long as animals have neurons of similar functionality, it is assumed that the basic processes are the same, and that one could talk about animal cultures. Quantitative difference can only become qualitative difference if we see (human) culture as a special realm with its own features, and not just a set of means of communication.

[4] Consider, for example, the structure of the argument and the composition of the 'manifesto' of the 'strong program' in cultural sociology (Alexander and Smith 2003). Some might argue that the authors neglect to provide a strict definition of culture, which could hardly be true given the role culture plays in the entire theory. What we see instead is a series of distinctions, constituting a specific way to see culture, which, as a whole, results in building a concept of autonomous culture as an internal environment of action, seen as a system.

nomination only makes sense within wider assumptions about culture: that it is a realm structured by sacred/profane codes, and that violating this structure leads to pollution, etc. Otherwise, calling them culture simply would not mean anything substantial. If theorists of cognition try to resettle this variety of objects, pre-defined by cultural theorists as cultural, into a new frame of reference, dominated by known facts on cognition and the brain, they in fact run the risk of dealing with a subtle disjunction of what different people know about the corresponding objects and events.[5]

This conceptual move is counter-productive, because cultural objects are perspective-specific; they only have epistemic value within a 'cultural' perspective, in the same way economic objects do [consider Marx's statement that the economic value of a table cannot be grasped by its chemical analysis (Marx 2010, pp. 18–28)]. It does not make sense, then, to try and define culture in an ostensive way—it is as fruitless as trying to define the value of a financial stock as an isolated object available for perception, apart from the economic system as a specific realm.

To bring another illustration of the irrelevance of such an approach to culture, let us draw a parallel. Imagine if positivists decided to redefine the notion of 'God,' borrowed from theological theories or from the practice of believers, without denying its existence. Based on current usage, they might define it, for example, as a personality who fulfills inquiries, which would further lead them to recognizing a wide range of subjects, such as concierges or couriers, as gods. What this bizarre parallel provides us on our way back to culture is the following proposition—*culture and cognition scholars should either use culture in the context of cultural theories in which it only makes sense, as a relatively autonomous realm, or rather deny the very existence of such a thing and eliminate culture as a concept*.

I argue that this implicit epistemological trick is responsible for the entirely unnecessary tension between 'culturalists' and 'cognitivists,' and if we find an appropriate way to introduce discoveries from cognitive science into cultural sociology, it will be mutually beneficial.

To do so, we, first, must know what exactly is problematic and conflictual about the argument, and second, we must formulate an epistemologically appropriate model. In the following section, I introduce an ideal-typical model, which I call the 'informational theory of communication' and illustrate how it operates in the work of sociologists of culture and cognition. I further appeal to the Durkheimian model of the sui generis synthesis and show its commonalities with conceptions of emergentism. These two models set the stage, and after describing them, I turn to some particular effects of the informational theory of communication that it exerts upon reasoning about culture both implicitly and explicitly, among which I point at the 'ostensive illusion'—a type of reasoning based on the reification of culture and the logic of discovery, and the implied principle of homology between culture and cognition (the 'homology pitfall'). These effects exemplify epistemologically naïve

[5] My argument here closely follows Durkheim's argument in *The Elementary Forms of Religious Life*, where he asserts that categories and notions are not mere generalizations of individual representations, pointing out that the general does not contain anything that the particular does not (Durkheim 1995, p. 434).

and incorrect ways to integrate knowledge on cognition into cultural sociology. To overcome these difficulties, I appeal in the final section to the concept of boundary conditions, which allows us to integrate explanations of culture and cognition.

The informational theory of communication as an ideal type

To put it simply, a commonsense vision of cognition and culture pictures self-existent people who communicate through the exchange of words, ideas, and objects. Communication is secondary and derives from intentions, needs, and urges. The wisdom of cognitive science develops this picture further, by decomposing people into their parts (brains, bodies, neurons) and sometimes by complementing with additional objects, such as material things and texts. But when it comes to communication, the general picture can (though does not necessarily have to!) remain the same: communication is simply an exchange between ontologically solid entities, be it individual humans or their elements.

A cultural-sociological approach draws the opposite picture. Culture is constitutive (and thereby primary) to human beings and their parts; it is a more or less autonomous realm, which cannot indeed exist in the absence of people and their cognitions, but is not reducible to the contents of their minds. Clifford Geertz offers one version of such reasoning by insisting that it is not that well-developed human brains gained the capacity to communicate with each other on an advanced level as the result of evolution, so that they created culture; instead, both culture and the brain co-constitute one another [culture is an 'ingredient,' not an 'accessory,' to human thought (Geertz 1973, p. 83)]. Importantly, this emergent realm of culture is seen not as merely an analytically arbitrary selection of a range of elements otherwise isolated from one another, but as a 'complex whole' (Tylor 1871, p. 1).

One way to conceptualize this difference in approaches to culture and cognition is to appeal to the ideal types developed by Robert Craig in his renowned article 'Communication Theory as a Field.' He outlines a major distinction between transmissive and constitutive models of communication: 'According to the conventional transmission concept, communication is a process of sending and receiving messages or transferring information from one mind to another' (Craig 1999, p. 125). Constitutive models, in contrast, recognize a much wider range of the aspects of communication, such as, for example, the constitution and reconstitution of social order (Craig 1999, p. 128). Craig points to ritual as a paradigm for this kind of model (Craig 1999, p. 124), and describes several such models. As for the transmission models, they are mainly represented by the 'cybernetic' or 'informational' model of communication.

The 'informational theory of communication,' as I will call it, implies that any process of communication must be seen as an exchange of information. This vision presents any social interaction as an interchange of certain messages between addressers and addressees. These addressers and addressees, whether machines or lived organisms, are fully developed entities, capable of exchanging messages. Messages contain logically organized content, which might be stored and transferred; this content is information, containing a certain (quantifiable) number of

distinctions. The meaning of the message is the derivate of its effects, or, in other words, its function. The information is governed by a formal logic, it is objective and transitive. This vision powerfully contributes to a commonsense vision of cognition, sometimes explicitly, sometimes implicitly; it is so well-developed and wide-penetrating that it shapes both scientific and lay thinking, bringing a rich apparatus of metaphors and analogies (for one, notice how often we use cybernetic metaphors, describing our own behavior). The important thing is that it makes the notion of culture virtually redundant.

The informational theory of communication popularized by the development of technology (and especially by the dominance of the 'finite state machine' model) and partly by semiotics, has distorted views of social communication, spreading both into the social sciences and into common sense. Craig claims that the informational or cybernetic model of communication emerged in the middle of the twentieth century, starting from works of Norbert Wiener, Alan Turing, John von Neumann, and Claude Shannon, 'extend[ing] to current theories in areas as diverse as systems and information science, *cognitive science* and artificial intelligence, functionalist social theory, network analysis, and the Batesonian school of interpersonal communication' (Craig 1999, p. 141 *italics added*).

The model maintains its domination in these fields in spite of extensive criticism. For example, Craig mentions that researchers 'traced its origins to 18th-century empiricism, with its individualistic and ultimately solipsistic assumptions' and some 'argued that the transmission model is philosophically flawed, fraught with paradox, and ideologically backward, and that it should at least be supplemented, if not entirely supplanted, by a model that conceptualizes communication as a constitutive process that produces and reproduces shared meaning' (Craig 1999, p. 125). Cognitive science, which at least in the earlier stages of development was very close to the science of artificial intelligence, to a considerable degree bears its heritage up to the present moment—in spite of the well-acknowledged limitations of this model.

The centrality of the theory of information within the so-called 'traditional cognitivism'—a core approach within cognitive science that has become a major source of inspiration for the theories of culture and cognition—is explicitly acknowledged by both its advocates and its critics. For example, Albert Newen, Shaun Gallagher, and Leon De Bruin insist that 'the representational and computational model' of cognition, which pictures it as 'a kind of information processing', lies in the foundation of the traditional cognitive science (Newen et al. 2018, p. 5). They criticize it from the positions of the '4E' approach to cognition,[6] which presents a set of challenges against the traditional cognitivism based on the assumptions of the 'embodied,' 'embedded,' 'extended,' and 'enacted' features of cognition. In turn,

[6] The term '4E' emerged around 2006–2007 within the debates led by Shaun Gallagher, Richard Menary and their colleagues (Eck and Turner 2019, p. 160; Newen et al. 2018, p. 16), as an integrated and fundamental criticism of the traditional cognitivism. 4E framework is based on previous research in evolutionary biology, psychology and neuroscience and their philosophical interpretations; is develops a set of heterogeneous and sometimes mutually inconsistent (Menary 2010, pp. 459–460; Newen et al. 2018, pp. 4–6) arguments with a criticism of the 'internalism' and 'intracranialism'—the assumptions that cognition basically takes place within the brain.

counter-criticism raised by the supporters of the traditional cognitivism does not deny that the focus on the manipulation of information lies in the core of the approach (Adams and Aizawa 2010). Instead, they point out that the same is true for at least some of the advocates of the extended cognition model, such as, for example, Edwin Hutchins, who created an influential theory of distributed cognition (Hutchins 1995). Thus they use the fact that some 4E proponents themselves theorize cognition in terms of information processing as direct evidence that these alleged critics of traditional cognitivism in fact remain within its broader framework (Adams and Aizawa 2010, p. 580). This shows that in spite of the influence of anti-internalism in cognitive science and sociology, 'the cognitivist explanatory programme is still very much alive and kicking' (Menary 2010, p. 461). The question of whether the 4E framework is revisionary enough to constitute a clear break from traditional cognitivism remains debatable (Herschbach 2018).

In other words, cognitivism, which in its original form was 'wired' by the informational theory of communication, continues to be imbricated in that burdensome legacy. Importantly, I do not insist that the informational theory of communication is an inevitable part of the sociology of culture and cognition. Quite the opposite, I argue that this sociological approach must recognize the threat and eliminate explicit or implicit parts of this argument, to construct an efficient bridge between sociology and cognitive science. For this reason, I approach the informational theory of communication as an ideal type, a system of ideas and arguments with its own 'logic,' the elements of which may be found within the arguments of sociologists of culture and cognition. I also do not insist that the informational theory of communication is traceable in every existing cognitive theory. Rather, I try to show why there is a tendency for the informational theory of communication to become an implicit 'logic' behind their arguments, and that, in spite of the awareness among some cognitive scientists about the drawbacks of the cybernetic metaphor, it is clearly traceable in many works of sociologists of culture and cognitions.

Illustrations from the works of sociologists of culture and cognition

If we take the classic 1997 article by Paul DiMaggio as a starting point for the 'cognitive turn' in the sociology of culture, the informational theory of communication is already clearly traceable in his formulations. However, it is combined with a wider vision of culture. Thus, although 'schemata,' the central category in his approach, comprise predominantly an 'information-processing mechanism' (DiMaggio 1997, p. 269), he admits, 'Culture inheres not in the information, nor in the schemata, nor in the symbolic universe, but in the interactions among them' (DiMaggio 1997, p. 274).

In the works of later sociologists of cognition and culture, however, informational theory becomes more salient. Thus, the most important theorists of this approach routinely treat culture as 'cultural information' (Vaisey 2008, p. 606), 'cultural information (or values, or codes)' (Lizardo and Strand 2010, p. 208), addressing culture as 'content' and 'information,' which must be stored, presumably in the human mind (Vaisey and Valentino 2018; Wood et al. 2018). This is equally true for enthusiasts of

the cognitive turn in anthropology, widely cited by sociologists of culture and cognition and often seen by them as their 'predecessors.' For example, Maurice Bloch uses the term 'information' or 'chunks of information' again and again, addressing culture in contexts like the 'transmission of information between individuals' (Bloch 2012). The same is highly typical for those important to the development of the cognitive turn in anthropology and often cited by sociologists of culture and cognition, such as Roy D'Andrade, Claudia Strauss, and Naomi Quinn (D'Andrade 1995; Strauss and Quinn 1997). Cognition, in turn, operates presumably with information, so that the adjectives 'cognitive' and 'informational' become nearly synonymous and might even be combined through a dash [see, for example, the 'cognitive-informational' aspects in the acquisition of learning (Lizardo 2007, p. 328)]. Thus, even if these theorists do not accept the informational theory of communication in its entirety, they in fact equate culture to information.

Moving deeper into the structure of the argument, the presuppositions of the informational theory of communication may be seen not only in these descriptions of 'static' entities, such as states of individual minds, but also in cultural processes. Thus, they tend to describe these processes in full concordance with the structure of the cybernetic chain. For example, they describe engaging a person with culture as the 'storage, transmission and reproduction of cultural information' (Lizardo and Strand 2010, p. 222) or show 'how human beings perceive, acquire, store, retrieve, and act on the symbolic information that surrounds them every day' (Vaisey 2008, p. 604). These examples, the list of which could easily be substantially extended, show that even if sociologists of culture and cognition are well aware of the limitations of the cybernetic metaphor, they are still strongly affected by it, using the very term 'information' when they talk about culture.

Sometimes such a perspective is reflected not only in the direct equation of culture with information, but also in typical arguments representing the deeper logic of cybernetic thinking. One of these is an epistemic argument, sometimes called the 'imitation game.' Alan Turing established the 'imitation game' as the main guide and criterion for practical success in cybernetic endeavors, which since then has been driving the development of cybernetic technologies; an early illustration is the Turing test. This principle is often seen as a reason to believe that if an algorithm enables the behavior of a program, similar to the behavior of some empirical object, then this algorithm represents the nature of this object and the laws behind it. This belief, for example, underlies the entire sphere of artificial intelligence, because it is assumed that if a program perfectly imitates the human brain, then the principles of its operation represent the principles in the operation of the human mind. When John Levi Martin analyzes the consequences of the thesis of cognitive limitation for the sociology of culture, he not only presents cognition operating with culture by means of informational processing, but also reproduces the logic of the 'imitation game.' Thus, when Martin justifies his statement that simply constituted actors are able to engage in complex behavior, he illustrates it in a similar manner, referring to 'coastlines [which] look incredibly complex and intricate, but [can] be easily simulated with a three-line computer program' (Martin 2010, p. 229). In other words, the informational theory of communication is not alien to cultural reasoning on cognition, and is a part of background imagination, shaping its arguments.

Most of the works by sociologists of culture and cognition do not explicitly aim toward a 'revolutionary' change in the sociology of culture. However, at times, such perspectives are clearly drawn. In his presentation at the section on culture and cognition at the Eastern Sociological Society in 2014, Omar Lizardo suggested that the 'cultural turn' should lead to a transformation of the entire discipline of sociology into a branch of cognitive social science (Lizardo 2014). In his work, Lizardo does not openly appeal to any cybernetic metaphors. However, a very similar statement, made by Stephen Vaisey and Lauren Valentino in their recent work, is connected to the informational theory of communication in a more explicit way. The resolute idea of 'strategic assimilation' proposed by Vaisey and Valentino, suggests that 'wherever and whenever sociologists can use the language of JDM, they should do so' (Vaisey and Valentino 2018, p. 137). Judgement and decision-making (JDM) studies, a disciplinary field closely related to game theory and artificial intelligence studies, embody the statements of the informational theory of communication in the most consistent way.

The influence of the informational theory of communication to a certain extent affects not only those cognitive sociologists who aim toward the most decisive changes within cultural sociology, but also the most culturally sensitive cognitive sociologists, such as Eviatar Zerubavel and Karen Cerulo. Thus, for example, the tables of contents in several books on the sociology of culture and cognition are reminiscent of the logic and sequence of processing information in a cybernetic chain: from processes anticipating the transfer of the message, such as attention and perception; to primary message processing, such as classification and categorization; to more complex forms of processing information, such as integration, representation, and metaphorization; to the problems of storage and retrieval (Brekhus 2015; Cerulo 2002; Zerubavel 1997). This arrangement does not make these theorists explicit proponents of the informational theory of communication, but shows at least a partial intuitive fit of the structure of their arguments with this model.

Durkheim's principle of sui generis synthesis and emergentism

Now that I have highlighted elements of the informational theory of communication within the works of sociologists of culture and cognition, it is time to discuss an alternative. Following the typology of Robert Craig, ritual is the most powerful paradigm opposed to cybernetic models of communication. Émile Durkheim, whose works put ritual at the center of sociological thinking on culture, provides us with the most appropriate resource—the concept of the sui generis synthesis.

Durkheim describes the principle of the sui generis synthesis in a wide range of his works (Durkheim 1982, 1974, 1995). According to this principle, culture (or 'collective representations' in Durkheim's own terms, who did not use the term 'culture' too often) emerges from the substrate of cognition ('individual representations'), resulting in a special kind of synthesis, originative for social life. Cognition for culture is, thus, the *substratum*; culture cannot exist in its absence, but its principles and laws are ultimately non-deducible from the principles and laws of cognition. Effectively, this principle unhinges the direct and

straightforward connection between the realms of culture and cognition; however, it maintains the ability (and even unavoidability) for powerful mutual (though asymmetric) influence.

One of the central criticisms of cultural sociology from the cognitivist perspective is its alleged ignorance of cognition. Being partly true in general, this is not completely the case even when it comes to Durkheim himself, who created an explicit model of the human being, which he called 'homo duplex.' Beginning with his early work on the interrelation between individual representations (i.e., states of cognition) and collective representations (i.e., culture) (Durkheim 1974), he contributed to addressing the problem of the nature of humanity and eventually summarized his vision of the sociologically relevant cognitive construction of the human mind in his later work about the dualism of human nature (Durkheim 1973).

This duality of the human being represents two basic levels of the nature of humanity—social and individual, and the relations between those levels are described through the principle of the sui generis synthesis: culture emerges from the substratum of individual cognition and material environments to shape reality on its own. This process is reflected multiple times in the writings of Durkheim, and in the most detailed way in earlier work about collective and individual representations (Durkheim 1974). He maintains this argument throughout his writings. Here, I illustrate it through the following passage from the conclusion to *The Elementary Forms of Religious Life* (Durkheim 1995, p. 428):

> [C]ollective consciousness is something other than a mere epiphenomenon of its morphological base, just as individual consciousness is something other than a mere product of the nervous system. If collective consciousness is to appear, a sui generis synthesis of individual consciousnesses must occur. The product of this synthesis is a whole world of feelings, ideas, and images that follow their own laws once they are born. They mutually attract one another, repel one another, fuse together, subdivide, and proliferate; and none of these combinations is directly commanded and necessitated by the state of the underlying reality. Indeed, the life thus unleashed enjoys such great independence that it sometimes plays about in forms that have no aim or utility of any kind, but only for the pleasure of affirming itself.

Although Durkheim devotes much effort to describe how this 'synthesis,' which provides total heterogeneity between culture and cognition, works, he supposes that his explanation still must be grounded in a philosophical decision, beyond the reach of sociology. Thus, in his earlier work, he directly addresses 'metaphysics' as a source of the solution to come (Durkheim 1974). An obvious candidate for this 'metaphysical' role is the idea of 'emergentism.' Robert Keith Sawyer claims that the concept of emergence is the key to Durkheimian thought (Sawyer 2002). The emergentist vision is, thus, that culture is the result of emergence; in other words, it depends upon its substratum, but upward causation, for example, from cognition to culture, does not occur, whereas downward causation, from culture to cognition and individual action, does (Sawyer 2002). For example, nobody is capable of creating a language, but existing language powerfully affects the way individuals think and communicate.

This principle, if followed, allows us to connect knowledge about cognition to existing cultural theories without dismantling them. The power of the sui generis principle and the idea of emergentism is that they allow us to overcome a counter-productive pseudo-dilemma between naïve versions of physicalism with their stakes on 'ostensive' objects on the one hand, and most radical versions of dualism, detaching the ephemeral sphere of culture from anything tangible, on the other.

The informational theory of communication serves the former option. Thus, neuroscience, cognitive psychology, and some recent works in cognitive sociology reveal the complicated relationship between different subjects and objects, participating in cultural processes. One may recall, for example, works on mirror neurons, which reveal the astonishing physical mechanisms accompanying and facilitating communication (Lizardo 2007), or the epistemological significance of the body and emotions, which participate in any cognitive and cultural activity (Ignatow 2007). In turn, Matthew Norton has developed the 'circulatory model of culture,' which depicts cognition and its environments as dynamically interacting in the process of meaning-making (Norton 2018). What these and other works picture is a wide range of subjects and objects related to culture, and we sometimes see how they operate and how the elementary relationships among some of them are shaped. The important part, however, is to assume how culture is being shaped by, or emerges from, these elements and their relationships. The informational theory of communication imposes its own decision, implying that all the relationships among these solid and observable entities are basically informational exchanges. We then must focus on the addressers and the addressees, or senders and receivers (Wood et al. 2018, p. 250), and study these flows of messages. Culture thus becomes an excessive umbrella-notion for these heterogeneous processes.

The radical 'duality' pole, on the other hand, simply ignores what is happening at the level of cognition.

What the sui generis principle and the idea of emergentism propose instead is seeing culture as a separate 'level,' not directly reducible to what is happening at other levels (and, first of all, at the level of cognition), but substantially dependent upon those processes. Importantly, what I have claimed so far leaves room for at least two conflicting philosophical solutions. One of them is non-reductive physicalism, obviously more attractive for cognitive scientists, and represented by versions of 'weak emergentism' (Clayton 2006). Non-reductive physicalism confirms that there exist only entities recognizable and able to be studied through natural science. So, in principle, there *are* direct upward causations between cognition (and some other objects) and culture, but these causations are so complicated and inextricable, that in most cases it is simply impossible and meaningless to study them. Instead, we must study cultural pseudo-entities and how they interact. One of the versions of this option is represented by Sawyer's theory, which depicts the process of upward causation by means of the principles of 'multiple realizability' and 'wild disjunction' (Sawyer 2001).

However, 'strong emergentism,' which claims that genuinely novel entities result from the process of emergence, and upper causation is impossible, is also an option that does not undermine any knowledge from cognitive science, and does admit that what is happening at the level of cognition powerfully affects culture and cultural

processes. I do not aim in this paper to assert the priority of weak or strong emergentism for cultural sociology; such as assessment is a topic for future research.

What is important here is the fact that the proposed turn from the informational theory of communication to emergentism in general and Durkheim's sui generis principle in particular by no means undermines the importance of neuroscience and cognitive science for sociology; it prescribes another logic for the integration of cognitive science knowledge into sociology.

How the informational theory of communication affects arguments in the sociology of culture and cognition

The informational theory of communication is a powerfully convincing system of arguments, which represents itself both at the explicit level of theory, and at the implicit level of imagination. There is a large literature (mostly represented by the philosophy of technology sub-field) on how influential the cybernetic metaphor in fact is, and about its remarkable ability to structure theories, imagination, common sense, institutions, and practices [for just a few among the many, see (Ihde 2000, 1979; Weizenbaum 1976; Wiener 1963)].

Thinking of culture through the lenses of information is intuitively plausible because many of our commonsense intuitions are shaped within the multiple practices, structured by technology, which all contemporary people participate in. Overall, the informational theory of communication infuses the arguments of sociologists of culture at least in three ways: through common sense thinking, through theoretical arguments directly borrowed from the cybernetic paradigm, and through mediating 'conceptual drivers'—self-obvious or at least plausible ideas that affect the construction of arguments. It is often impossible to distinguish between the roles of each of these three scenarios in real cases, as they are all indeed interrelated. However, I will briefly introduce two of the mechanisms, operating in the latter scenario, which I call the 'ostensive illusion' and the 'homology pitfall.'

The ostensive illusion

The persistent urge to localize culture, which I mention above, might be seen as a part of the naturalistic scientism paradigm for dealing with the objects under study in the logic of *discovery*. Thus, for example, when we hear that scholars have found a gene responsible for the development of some disease, it is implied that the very act of localizing it to a substantial extent contains an explanation of the nature of the disease. The cause is literally *found*. Sociologists of culture and cognition tend to follow the same pattern studying culture, as if localizing culture simultaneously implied an understanding of how it works. I propose to call this urge the '*ostensive illusion.*'

This 'topographic' strategy of investigation, in which all entities, causes, and factors are supposed to be physically localized, most likely stems from early physicalism, such as the Laplace illusion, which pictures a world that can be exhaustively

described by information on the locations and velocities of all existing particles. This illusion perfectly matches the epistemic priority cognitive scientists and their sociological followers sometimes attach to the knowledge on neurons and neural pathways, which, being discovered, promise to explain all the higher-level processes they are involved in. However, the price to pay for this pact with Laplace's demon is an outdated and indefensible early-empiricist philosophy behind these arguments.

Not surprisingly, the importance of localization is a distinctive feature of traditional cognitivism. David Eck and Stephen Turner refer to it while criticizing 'boxology'—a core cognitivist approach to modeling the mind, which presupposes the existence of innate modules, often thought of as 'boxes,' with a concrete functionality; such that any cognitive functions might be directly attributed to localized parts of the brain, for example, during fMRI experiments. 'Localizing enhances plausibility,' point out Eck and Turner (Eck and Turner 2019, p. 158). In turn, proponents of the 4E framework notice that, from a standard viewpoint shaped by traditional cognitivists, their own arguments about embodied cognition might seem to 'turn the "what" question into the "where" question, so that the answer to the question about the nature of cognition is first of all about location: precisely where is cognition located?' (Newen et al. 2018, p. 8). However, Newen, Gallagher and De Bruin claim that this is a superficial reading: '[f]rom the perspective of the 4E's … the question of location is less critical' (Newen et al. 2018, pp. 8–9). This shows that, although the arguments about the crucial role of the extracranial world in shaping of cognition are well known to the culture and cognition scholars, their theorizing often remains shaped by the traditional, pre-4E cognitivism.

Similarly to 4E approaches casting doubts on the importance of localizing cognition, Durkheim's principle of the sui generis synthesis makes the ostensive move of localizing culture secondary, if not redundant. Thus, individual cognition is indeed an indispensable prerequisite for cultural life, and Durkheim often addresses some of its features to see how exactly it conditions the development of cultural forms.[7] Admittedly, cultural sociology might gain explanatory potential out of knowledge about the basic features of cultural sites and carriers, with the debates on materiality as the best example. However, this inquiry carries the risk of being misleading, if we follow the ostensive illusion and suggest that locating culture allows us to actually find and explain it.

The homology pitfall

One way to disregard culture is to claim it is in fact something else, a solid reality that stands behind the ephemeral entities that we mistakenly confer with realness and call culture. I call the idea that there must be direct homology between forms of cognition and forms of culture, instead of more complex forms of mutual

[7] To bring a single example: 'The mind experiences deep repugnance about mingling, even simple contact, between the corresponding things, because the notion of the sacred is always and everywhere separate from the notion of the profane in man's mind, and because we imagine a kind of logical void between them' (Durkheim 1995, p. 37).

conditioning, the '*homology pitfall*.' To be sure, this commonsense principle is not exclusive of the issues of culture and cognition. This epistemological fallacy extends to any relationship between the tangible and the intangible, the known and the unknown or less known, if it seems plausible that the former and the latter are somehow related. The homology pitfall principle predicts that an existing epistemic void tends to be filled by analogy; it is plausible merely because homology is the simplest option of the correspondence. If most of what we know about A is that it is somehow interrelated with B, and we know the structure of B, we tend to think that A has the same structure. Roughly speaking, if we know something firmly, we tend to think it explains everything simply by analogy.

There are multiple examples of such a fallacy in the history of science. An example from physics is the discovery of the Coulomb's law. Otto Sibum has empirically proven that Coulomb could not possibly induce his law empirically (as he claimed he did), because the Faraday cage, which could only allow for obtaining interpretable data in such an experiment, had been invented only a half a century later (Sibum 2008, 2012). Instead, Coulomb followed the 'homology pitfall,' assuming that electromagnetic force must follow the pattern of the gravitational force previously discovered by Newton. He thus streamlined his empirical data so that the electrostatic force was inversely proportional to square of the distance between electrically charged particles. In other words, following Sibum, Coulomb must have assumed that there was a homology between what has been already known and treated as the landmark of contemporary physics (the law of gravitation), and what was unknown (the law of electrostatic force). Luckily for Coulomb, in his case, that was a correct guess, which does not, however, cancel the wrongness of the implicit presupposition.

In the sociology of culture and cognition, this principle often leads to the translation of the principles of cognition, discovered within cognitive psychology and neuroscience, to culture. Obviously, culture powerfully affects cognition and cognition powerfully affects culture, but there is no reasonable basis to suppose that there must be a homology between cognition and culture.

The ostensive illusion and the homology pitfall in the sociology of culture and cognition

The sociologists of culture and cognition have posited several statements of fundamental importance for cultural theory, with a reference to empirical knowledge gained in such fields as neuroscience and cognitive psychology. I summarize those that might be affected by the homology pitfall and the ostensive illusion.

Culture must return down to earth, to the level of tangible (cognitive) facts

This basic motive closely follows the logic of the 'ostensive illusion,' setting an epistemic environment that prioritizes knowledge based on actual physical observation. The time has come, sociologists of culture and cognition insist, to stop imagining an 'other-worldly' realm of culture with its own principles and laws, and focus instead on the careful and proven facts about cognition and its interactions with outward

things. According to this line of reasoning, the most important tasks to solve are the following.

Location(s) of culture

Although some sociologists of culture and cognition agree that there are multiple loci of culture, cognition and, more specifically, the brain, is seen as the primary location of culture. Instead of intangible 'ether'[8] (such as, for example, Durkheim's 'collective conscience'), they prefer to situate culture and meaning in immediately perceivable individual sensations, which, on top of that, seem to be reducible to neurons, objects from the perfectly scientific and measurable micro-world of the brain. The bits of experience and schemata that organize them, which have come to be seen as meanings (Lizardo and Strand 2010; Wood et al. 2018)—the content of culture—are both located primarily in the brain. This conceptual move follows the 'ostensive illusion' in the most explicit way.

Levi Martin, for example, disrupts the Durkheimian vision of rituals as revivifications of culture in favor of a scientifically established principle of the operation of memory, which he calls 'use it or lose it': rituals, he argues, are needed so that we do not simply forget culture (which, thus, resides in the brain) (Martin 2010, pp. 232–33). By doing so, he localizes culture not only in space but also in time: '[T]here is no clear reason to think that "culture" exists in some stable form in-between such reconstitutions' (Martin 2010, p. 233).

The fact that within the strong program and similar branches of cultural sociology, the question of the location of culture is not prioritized[9] seems to contribute to this urge to localize culture, driven by cognitive science. For example, in discussing the difference between the old and new types of theorizing in sociology, Omar Lizardo exemplifies the latter through the problem of the 'location of culture' (Lizardo 2018), obviously seeing it as the most productive direction of inquiry, and leaving the lack of certainty on where exactly culture is situated to outdated cultural theorizing.

[8] The question of situating of culture is one of the aspects of the criticism lately becoming prominent, which suggests that cultural sociologists do their research without defining what culture is. Thus, for example, Levi Martin begins his famous article with the statement: 'The sociology of culture has happily been able to get by without any strict definition of culture…' (Martin 2010, p. 228). This problem is also mentioned multiple times by Lizardo, who welcomes Isaac Reed's powerful inquiry into the meanings of culture in cultural sociology, which he has undertaken in a recent book on sociological theory (Lizardo 2018; Reed 2017).

[9] A very important exception is the work of Matthew Norton, one of the few cultural sociologists who directly addresses the cognitivist challenge. Seeking a compromise between systemic and pragmatic views of culture, he has developed the 'circulatory model of culture,' driven by the theory of distributed cognition, which follows the logic of the informational theory of communication [see, for example, his comparison of the 'informational properties of the social environment' with the 'informational properties of mind' (Norton 2018, p. 19) and his discussion of 'information storage, processing, accessibility, and dissemination' (Norton 2018, p. 18)]. The ostensive illusion presents itself in this work through a research strategy, which puts the stakes on the localization of the complex dynamics of the processes between cognition and its environments. These multiple flows of information, localized by Norton, are supposed to exhaustively describe culture.

Types of culture

If the brain is the major location of culture and meaning, then one should dig deeper and specify *the types of culture and how they work*. In this conceptual move, the ostensive illusion connects with and results in the homology pitfall, which leads to a direct application of the knowledge on the structure of cognition to the realm of culture.

Personal culture

Following this line of reasoning, Patterson, Lizardo, and some others have introduced the notion of 'personal culture'[10] (Lizardo 2017; Patterson 2014; Wood et al. 2018). This concept reflects an ostensive vision of 'culture in the brain,' and effectively rejects a vision of culture as an inner environment of social action (Alexander and Smith 2001). Importantly, personal culture is dealt with as an attribute of a person, like socio-economic status; culture is acquired and stored by a person (Lizardo 2017, pp. 92–93), like a sort of property. Vaisey and Miles, in turn, theorize culture in much the same way, when they advertise the psychological models created by Shalom Schwartz and Jonathan Haidt for measuring 'personal moral culture' (Vaisey and Miles 2014). Similarly, Vaisey and Valentino propose that cultural sociology has been integrated into (if not entirely become a part of) judgement and decision-making studies (Vaisey and Valentino 2018).

Although this vision of culture is not particularly new and notions such as 'cultural capital' have been routinely deployed within sociology in the form of a personal attribute, the difference in the way the concepts are constructed is indicative: where Bourdieu sees a social form shaped by culture—a capital, Lizardo, Vaisey and others see culture per se. The radicalization of an approach among recent sociologists of culture and cognition can also be easily seen in comparison with DiMaggio's classic article: if DiMaggio only insists that 'culture is *also* manifest in people's heads' (DiMaggio, 1997, p. 272: *italics added*), sociologists of culture and cognition often imply that it is primarily located there. Here, localization of cognitive processes becomes the source for a typology of culture.

Two systems of cognition

Perhaps the most empirically proven concept with which sociologists of culture and cognition equip themselves is the division between fast and slow, automatic and deliberate, or hot and cold thinking, often illustrated by the metaphor of an elephant and its rider. The cognitivist and neuroscientific premise that there seem to be two cognitive systems responsible for the operation of the human brain, sometimes called 'System 1' and 'System 2', and popularized by Nobel Prize laureate Daniel

[10] Vaisey uses a similar notion of 'personal moral culture' (Vaisey and Miles 2014); both Lizardo and Vaisey follow their predecessors in cognitive anthropology, which use similar notions [such as, for example, 'intrapersonal culture' (Strauss and Quinn 1997)].

Kahneman (2011), has been enthusiastically integrated by sociologists of cognition and culture and reflected in a number of theories and arguments. These findings are indeed of crucial importance for cultural sociology; however, nothing proves why structures of cognition must clone themselves in the sphere of culture.

DiMaggio: schemata. To start with an early attempt to bring this cognitive-based division into cultural sociology, one should note the seminal work of DiMaggio, who proposed to follow Roy D'Andrade in distinguishing between automatic and deliberate cognition (DiMaggio 1997, pp. 264, 269–272). The main takeaway for cultural sociologists, proposed by DiMaggio in this context, is the notion of 'schemata,' which he defines as 'both representations of knowledge and information-processing mechanisms' (DiMaggio 1997, p. 269). Psychological knowledge on schemata, he insists, is central to sociological interest because it promises to reveal 'how culture works' based on automatic cognition (DiMaggio 1997, p. 269).

Vaisey: dual model. Vaisey, in turn, creates a dual model, which draws upon knowledge about the two systems of cognition by distinguishing between 'discursive' and 'practical' modes of culture and cognition. This distinction leads him to an allied criticism of toolkit theory, and to a series of methodological implications (Vaisey 2009). His model emphasizes 'moral intuitions,' arguably neglected in cultural sociology, and calls for giving more attention to the motivation of action instead of 'post hoc sense making.'

Lizardo: Nondeclarative culture. According to Lizardo, personal culture is composed of 'declarative' and 'nondeclarative' culture, wherein 'nondeclarative culture' is claimed to be virtually ignored or at best confused with 'declarative culture' in structuralist cultural-sociological programs (Lizardo 2017). In developing his argument, Lizardo not only provides analyses of how existing cultural theories (such as Bourdieusian theory, the toolkit perspective, and the strong program) deal with these two forms of personal culture and 'public culture,' but also asserts the existence of a 'principle of correspondence between the mode of exposure and the mode of encoding' (Lizardo 2017, p. 97). This principle allows him to gain certain explanatory power and, in particular, to propose a solution to the 'achievement-aspiration paradox' in the sociology of education, which has not been solved by existing cultural and inequality theories.

In all these theories, it is implied that 'traditional' cultural approaches do not have capacity to deal with the 'elephant' part of sense-making. These theorists inherently suppose that culture as such must be divided in the exactly the same way as cognition, and that the principles and mechanisms behind how different parts of culture operate must be as different as the two types of cognition. This 'homology pitfall'—an implied statement about the *homology between culture and cognition*—is one of the most confusing tendencies existing, to a greater or lesser extent, in many versions of the sociology of culture and cognition.

The works on types of culture and on the dual model undoubtedly open up important dimensions of the debate about culture. However, I argue that we should not follow the homology pitfall and readily imply that fast and slow mechanisms of cognition must necessarily reveal themselves in creating the corresponding spheres of culture, such as 'discursive' and 'practical' or 'declarative' and 'nondeclarative' types of culture. Even if this division bears some resemblance to oppositions known

among students of culture, such as structural and pragmatic approaches to culture (Sewell 2005, pp. 162–164), it does not necessarily mean that these heterogeneous distinctions are the same or that one of them explains the other.

Boundary conditions as a principle of interrelation between culture and cognition

The problem with the informational theory of communication as an implicit model of culture and cognition is that it leads to connecting knowledge on cognition to theorizing on culture in a non-problematic and an incorrect way, which eventually makes the very notion of culture redundant.[11] If we want to integrate the findings of the cognitive sciences and neuroscience to sociology while taking culture seriously, we must build an explicit model of how culture and cognition are interrelated. I argue that Durkheim's principle of the sui generis synthesis and the idea of emergentism pave the way for this integration. If cognition is seen as a substrate of culture, and if culture emerges as the result of a synthesis, relations between the former and the latter present themselves less straightforward and avoid direct reduction of one to another. Theories of emergentism introduce the basic notions of such relationships, first of all, downward causation, which implies the formative influence of an upper level (culture) upon a lower level (cognition) and upward causation, which is either not possible in a form of direct causation ('strong emergentism') or so complicated that it virtually cannot be traced ('weak emergentism'). Yet, this theorization leaves largely obscure the lineaments of the 'emergence' of culture out of cognition and other ingredients, and provides us little idea of how we should integrate knowledge on the laws of cognition into the sphere of culture.

The notion of the 'boundary conditions' existing in physics offers us an essential clue about how processes and laws from different epistemic levels may be combined within the same 'set of equations' that collect our knowledge on a certain segment of life. Michael Polanyi, whose works on emergentism in the 1960 s and 70 s were, as Philip Clayton introduces them, a 'lone voice crying in the wilderness' before the 'rebirth' of emergentism a couple of decades later (Clayton 2006, p. 15), exports this notion in the most consistent way. He notes that in all the physical processes we observe, the laws of physics are mediated by boundary conditions, which set the limits and accustom their actual effects (Polanyi 1968). Thus, for example, a machine runs based on the laws of physics, but one cannot possibly describe its behavior out of those laws, because its operations are largely defined by the design, harnessing physical and chemical processes. The reason, Polanyi insists, is that all machines and organisms operate under the 'dual control' of processes at some lower

[11] I argue that this strategy of multidisciplinary integration is both incorrect and incompatible with taking culture seriously. However, these are two different statements. Formally speaking, the former is stronger; however, under the conditions of a conceptual plurality within the discipline of sociology, the latter seems to be more telling for any student of culture holding a certain conceptual position.

level and boundary conditions, which refer to higher-level principles.[12] This dual control of basic processes operating under the design of emerging higher-level principles is a universal principle, which operates at all the levels of observable reality, which, thus, can be seen as consisting of a series of emerging levels. Polanyi exemplifies this principle with a hierarchy of levels comprising a spoken literary composition; from a voice to a vocabulary, from a vocabulary to a grammar, from a grammar to a style, and from a style to the ideas of the composition (Polanyi 1968, pp. 1310–1311).

If we apply this level structure to the problem of culture and cognition, we can see social life as a system under dual control, shaped by the laws of cognition and cultural designs. One of the immediate implications of this picture is the obvious wrongness of the 'homology pitfall,' because laws concerning processes at the lower level by no means shape boundary conditions; as Polanyi puts it, boundary conditions 'transcend' lower level processes: '… the operations of a higher level cannot be accounted for by the laws governing its particulars on the next-lower level. You cannot derive a vocabulary from phonetics; you cannot derive grammar from a vocabulary; a correct use of grammar does not account for good style; and a good style does not supply the content of a piece of prose' (Polanyi 1968, p. 1311). Hence, one should approach the laws of cognition differently when applying them to understanding of culture.

In fact, the renowned work of Roman Jakobson on the aphasic disorders (Jakobson 1971) can be seen as a work employing the model of boundary conditions for studying culture and cognition. It shows how changes in the cognitive abilities of a person affect meaning-making and, in particular, the human ability to deal with metaphors and metonymies. Importantly, this work avoids physicalism, and thus seriously affects cultural theory without facing any resistance based on its alleged reductionism.

Culture thus should be seen as emergent from cognition and other constituents, an idea that fully corresponds to Durkheim's sui generis principle.[13] It is not determined by those but rather 'evokes,' to use Polanyi's term, from them; or, as Daniel Paksi, a commenter on Polanyi's 'Life's Irreducible Structure,' puts it: 'Higher level emergent boundary conditions do not work on their own, that is, against their material conditions but on the contrary: they lean on their material conditions and work by them in full accordance' (Paksi 2014, p. 14). This reading raises the philosophical stakes, because '[t]he concept of boundary conditions establishes the possibility

[12] To be sure, the very idea that there is something more than mere covering laws to be considered when building an explanation in the natural sciences had not been new at the time Polanyi wrote about it; for example, Carl Hempel and Paul Oppenheim, who, incidentally, were fierce opponents of emergentism theories, called the design of an actual situation we observe 'antecedent conditions' and included them in the explanans (Hempel and Oppenheim 1948). However, Michael Polanyi might be the first who shifted the focus and saw boundary conditions as something equally important as laws for the explanation.

[13] Daniel Paksi specifies that some of the several authors who took over the concept of boundary conditions from physics used the notion of 'constraint' instead (Paksi 2014, p. 6). This notion evokes an important parallel with Durkheim, who established his early conceptions of the social based on the same concept: a social fact seen as a thing exerts a constraint upon the individual (Durkheim 1982).

of a new, non-physicalist but non-dualist, philosophical understanding of life and human culture' (Paksi 2014, p. 5).

Importantly, both in physics and in the life sciences, locating the lower-level process and the boundary condition is a matter of a researcher's focus, resembling the figure and ground problem. Similar to the well-known, and quite relevant in this context, Aristotelian principle of the basic distinction between form and matter, which, being consequentially applied at each next level, allowed Aristotle to develop his four-fold theory of causes, what is a boundary condition at one level becomes a lower-level process at another.

The two layers composing the 'dual control' are not symmetrical, though, not only in terms of the direction of causation, but also in terms of the basic epistemic operations. When we approach a lower-level reality, we focus on general principles, whereas when we look at the upper level—boundary conditions—we focus on unique and arbitrary particularities.[14] In the former case, we describe general mechanisms and principles, and in the latter case on stories, situations, and patterns. This focus fits many existing studies: scholars of cognition mostly examine how human cognition operates in principle, whereas for cultural sociologists, interpretive work on concrete meanings is the crucial part of explanation (Reed 2011, pp. 89–121). As Michèle Lamont and her colleagues put it: '[U]niversal cognitive processes are shaped by the specific cultural repertoires provided by the social environment' (Lamont et al. 2017, p. 866).

It is crucial to note that, for the most part (though not exclusively), cultural sociology cares about concrete interpretations of historically specific, contextually dependent, and situational processes and entities; cultural structures, thus, can be seen as boundary conditions, designing what is happening in the social life, whereas cognitive processes, which these boundary conditions harness, define limits, levels, and proportions of what can possibly happen—along with the laws of physics, the biological characteristics of human bodies, etc.

In other words, an important trait of cultural sociology, common among many of its versions, is a primary focus on specific cultural matters par excellence—as opposed to the universal formal principles that frame them. A good cultural analysis necessarily digs deep into details, into particular cultural substances; that is where the Geertzean principle of 'thick description,' which has been long recognized as a genuine virtue of cultural analysis, emerges. The principles that stand behind cognitive processes, which undoubtedly are of crucial importance for cultural processes, are parts of the 'form,' the background that affects cultural matter, but they cannot substitute as the principal subject of cultural-sociological inquiry. Cognitive neuroscience has nothing to tell us about cultural substance; it describes processes and mechanisms ultimately neutral to its substance.

Because the whole subject of boundary conditions, as we have seen, is a matter of researcher focus, in principle, one could be interested not in boundary conditions, but rather in processes, which occur at a lower level. Correspondingly, Polanyi introduces two types of boundary conditions. He distinguishes between the 'test-tube'

[14] This closely corresponds to Heinrich Rickert's 'idiographic' type of explanation (Rickert 1962).

type of boundaries, or passive boundaries, which basically provide limits for some situation that, for example, may allow us to observe the work of chemical laws, and the 'machine-like' type of boundary conditions, the active ones that actually harness lower-level laws. 'All communications form a machine type of boundary, and these boundaries form a whole hierarchy of consecutive levels of action. <…> At all these stages we are interested in the boundaries imposed by a comprehensive restrictive power, rather than in the principles harnessed by them' (Polanyi 1968, p. 1308). Obviously, in cultural sociology, we deal with cultural structures as machine-type boundary conditions and cognitive processes as lower-level universal principles, focusing on the former, whereas in settings like the 'trolley problem,' morality and culture work as test-tube boundary conditions and we focus on the latter.

How would the entire scheme appear if we are interested in cultural processes as general principles, and not as particular meanings? Without going into detail, I will just make a suggestion by pointing at a peculiar aspect of Durkheim's theory, which introduces ambiguity about the order of the levels. I refer to Durkheim's famous maxim, 'social facts as things' (Durkheim 1982). Importantly, 'things' here stand for an objective reality that shows resistance to our wills and thus abolishes the arbitrariness of consciousness. In Polanyi's terms, cognition as a boundary condition still cannot determine physical matter. If, following Durkheim, the social (and, hence, culture as the realm of collective representations) exhibits features of the thing to cognition, in an inverted perspective, cognition might be seen as upper level (boundary conditions), and culture in the aspect of its general principles, as lower level. In other words, if Durkheim is correct in pointing to the duality of the social, which, on the one hand, transcends above the individual, but, on the other hand, exhibits the features of the things (i.e., lower level reality) as opposed to the human cognition, then this shift in perspective is an essential option to consider, especially considering that Durkheim himself was mostly interested in the general principles of the social rather than in describing particular forms of life.

In this inverted order of the levels, cognition must obviously be seen as a boundary condition of the test-tube type. In other words, to learn about the general principles of culture, such as the nature of binaries or narratives, we must consider the laws of cognition as static initial conditions, which define the ranges of the possible.[15] Culture as a system is clearly conditioned by its material and other circumstances, including cognitive ones, as might be evidenced by countless examples. For instance, human bodies and their relative fragility affect the entire semantics of handling bodies and interpersonal relations, as well as the semantics of bodily violations. They create affordances for various cultural principles, such as the role of pain in rituals, law, morality, and other segments of meaning-making. The basic fact of

[15] DiMaggio proposes a strategy for proving cultural-sociological assumptions with cognitivist knowledge, which clearly fits the concept of test-tube boundary conditions: 'It is crucial, then, to evaluate our assumptions (or adjudicate differences among them) by microtranslating presuppositions <···> to the cognitive level and assessing their consistency with results of empirical research on cognition' (DiMaggio 1997, p. 266).

human mortality conditions inheritance laws and the culture of property, along with their constitutive role for the economy, as well as inequality.

The same connections can be traced in detail as regards knowledge from cognitive science: because the features of cognition obviously affect culture, its forms and their dynamics are even stronger than the physical/corporeal conditions I mention above. The concept of boundary conditions, thus, promises a fruitful solution to the epistemic problem of the integration of knowledge from the cognitive sciences into sociology.

Conclusion

The cognitive challenge in cultural sociology brings a dilemma.

On the one hand, the current prevalence of the sub-discipline of cultural sociology, and especially its growing role in sociological theory, can only be backed by the special conceptual promise of culture. If there is a developed and growing field of the sociology of culture, rather than, for example, the sociology of information or even the sociology of communication, it is only because it is implied that culture plays a primary constitutive role for the main subject of sociology as a discipline. If this promise is valid, then the integration of new knowledge from cognitive science must take culture seriously and avoid the alien logic of the informational theory of communication, along with its mediating mechanisms, such as the ostensive illusion and the homology pitfall.

On the other hand, if the epistemic priority of culture in explaining social life and its conceptual self-sufficiency is overestimated, and if new developments in the cognitive sciences and neuroscience can effectively bypass it in explaining social life, in a nutshell, if culture is basically a bunch of informational flows, then we should simply eliminate culture as a category of sociological analysis, substituting it with the actual causes of social events. In this case, cognitive sociology must find a more appropriate sub-field for its initiatives than the sociology of culture.

My basic claim in this paper is that this dilemma must be recognized and solved. And while I obviously support the former of the aforementioned options, I do not specifically aim to prove its rightness in this paper, so, the latter remains an option.

The targets of my criticism are not theories of culture and cognition, but the ideal-typical core of the argument, the informational theory of communication, which, to a certain extent—more in some cases and less in others—shapes their reasoning. In this paper, I have tried to explicate the substance and the consequences of this ideal-typical model, and to show the disadvantages of such a move. I suggest that this model contradicts the most important part of cultural theorizing. I have demonstrated that the informational theory of communication powerfully affects many of the developments of culture and cognition theorists, often in an implicit way. In most cases, it is not an explicit position, and it is not an indispensable feature of these theories.

I argue that for the mutual benefit of cultural sociology and cognitive science, first, cultural sociology must recognize the recent developments of cultural cognitive

sociologists as a challenge to be addressed in a productive way—and thus to avoid the threat of neglect of its important impetus, and second—to avoid the counter-productive, one-sided, and epistemologically naïve reshaping of cultural concepts led by ideas about cognition—and thus to avoid prospective nullification of most of the developments in cultural theory. Although many cognitive scientists and sociologists of culture and cognition are aware of the limitations and counter-productivity of the dominance of the cybernetic metaphor, it is still clearly traceable in many of their arguments. It can be seen as a cultural logic of their arguments: as a Weberian ideal type, which might not exist in its pure form, it nevertheless helps to reveal an important tendency.

I argue further that replacing this logic with the Durkheimian model of the sui generis synthesis not only allows us to use the insights of cognitive science in sociology in a more productive way, but also opens a way for sociology to contribute to the cognitive sciences. A key philosophical resource on this path is emergentism, which transforms the old Durkheim's principle into contemporary terms. The epistemologically naïve and straightforward way of introducing facts and ideas from cognitive science into cultural sociology, driven by the informational theory of communication, is often mediated by such epistemic fallacies as the 'ostensive illusion' and the 'homology pitfall,' which give the unfounded priority to tangible objects and the idea of universal affinity, respectively.

The Durkheimian model bears an important resemblance to the most trenchant and advanced criticisms waged against traditional cognitivism from within its own boundaries by the 4E framework. Thus, the Durkheimian theory of the ritual, which reveals how social interaction shapes thought, closely approximates the 'integrativism' of some of the 4E approaches: e.g., enactivism (De Jaegher et al. 2010) and 'cognitive integration' (Menary 2018), among others. Yet, in spite of their common rejections of sovereigntist conceptions of the human, Durkheimian sociology and 4E approaches stem from incongruent roots. As Eck and Turner rightly mention, '[t]he idea of a society as an extended cognitive system … removes the explanatory burden from "the social"'—no matter if the latter is represented by culture, power, collective structures, belief or habitus (Eck and Turner 2019, p. 164). Sociology and 4E develop from alien philosophical grounds; in fact, emergentism seems to be one of the few accounts where they can meet (another option being pragmatism, which does not fit the Durkheimian approach but is powerful in sociology). The benefit of the Durkheimian approach is that it proposes a cohesive explanatory scheme, whereas 4E still primarily focuses on points of criticism and thus remains a heterogeneous project, the major message of which is to challenge traditional cognitivism. However, the rapid development and impressive heuristic power of 4E might prove to be a generative source for Durkheimian cultural sociology.

To better integrate knowledge on cognition into cultural sociology, I appeal to the idea of boundary conditions, borrowed by Polanyi and others from physics, which aims to integrate knowledge about lower-level and higher-level processes into one 'system of equations.' Following this model, culture should be seen as active boundary conditions, which harness processes running at the level of cognition and its basic environments. In line with the principles of emergentism, this model excludes direct causation from the level of cognition to the level of culture,

and, correspondingly, a direct transfer of the features, types, and laws of cognition to the realm of culture. Instead, because culture leans on cognition and emerges from cognition and its environments, the laws and mechanisms of cognition, discovered within neuroscience, should be seriously considered by students of culture so that any cultural theory is consistent with them. Cultural sociologists should aim to reveal exactly which mechanisms of cognition the cultural structures they study are concerned with, lean upon, and harness within the framework of 'dual control' proposed by Polanyi.

Among other things, the approach I develop in this article might solve one of the most substantial, unresolved difficulties faced by the 4E approach. There are ongoing debates on how the components of extended cognition are interrelated; e.g., whether dependencies between them are causal or constitutive, and how, exactly, this distinction can be grounded (Newen et al. 2018, pp. 7–8). The notion of the constitutive role of the components of cognition became a target of severe criticism from the advocates of traditional cognitivism, labeled by Frederick Adams and Kenneth Aizawa as the 'coupling-constitution fallacy' (Adams and Aizawa 2010). Abandoning the notion of constitutive dependency would entail the loss of up to a half of the E's in the 4E approach. The notion of emergence provides a well-grounded alternative to simple causation. If the components of cognition are fused within a Durkheimian sui generis synthesis, they are constitutive, and not causal.[16] Emergence transcends direct causation and thereby resolves the possibility of conflating constitutive elements with causal conditions, an issue that besets the 4E anti-internalist approach.

The emerging debate between theorists of culture and cognition and more traditional cultural sociologists is so important because it provides an opportunity for the durably frozen discussion between the natural sciences and the humanities, offering a chance to build a bridge over the 'great divide' (Alexander 2019). There are well-elaborated reasons there is nothing to discuss (Hempel and Oppenheim 1948; Winch 1958), which makes this opportunity especially valuable. But this emerging dialogue is fragile. The debate will immediately vanish as soon as the dialogue turns into an attempt to colonize one discipline by the other, even if such an attempt is implicit at its early stages. As soon as the dialogue explicitly turns into epistemic aggression, its status immediately downgrades into one of the multiple and fruitless variations of 'the two cultures' academic wars (Alexander 2019; Snow 1962).

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[16] Here I do not discuss the fact that from the perspective of cultural sociology this synthesis results in the emergence of culture; 4E approaches would rather call it extended cognition.

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