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Sociology at the individual level, psychologies and neurosciences

Bernard Lahire
L'École Normale Supérieure de Lyon, Lyon, France

Abstract
The French sociological tradition has long regarded the 'individual' as a reality situated outside its area of intellection and investigation. According to Durkheim, the individual is a psychological object *par excellence*. Sociology has thus long favored the study of collectives (groups, classes, categories, institutions, microcosms), suggesting that the individual was a reality which, in itself, fell short of the social. The article discusses a method from the mid-1990s of researching sociology at an individual scale. This approach is essentially embedded in the French sociological tradition, from Durkheim to Bourdieu via Halbwachs, despite the inflections and criticisms it might have of this tradition, while also drawing on the main theoretical knowledge of Norbert Elias' relational and process-focused sociology. From empirical realization in methodological and theoretical reflexivity, this research program has progressed in dialog with various types of scientific knowledge more classically oriented toward the individual and their mental realities, such as cultural psychology, psychoanalysis, cognitive psychology or the neurosciences.

Keywords
contextualist, dispositionalist, neurosciences, psychology, sociology at the individual level

Dispositionalist-contextualist sociology on an individual scale has not always been a well-understood or well-perceived project. The French sociological tradition has long regarded the 'individual' as a reality situated outside its area of intellection and

Corresponding author:
Bernard Lahire, L'École Normale Supérieure de Lyon, Site Descartes, 15 parvis René Descartes, 69007 Lyon, France.
Email: Bernard.Lahire@ens-lyon.fr

investigation. According to Durkheim, the individual is a psychological object *par excellence*. His reasoning seems relentless/intractable: the individual is only one part of a whole, that is, the social (society or group); the whole is more than the sum of its parts, therefore, the parts are not themselves social.[1] Sociology has largely functioned on this understanding since Durkheim, chasing away any deviation considered to be psychologizing.[2] The discipline has thus long favored the study of collectives (groups, classes, categories, institutions, microcosms), suggesting that the individual was a reality which, in itself, fell short of the social. The group or the collective for sociology, the individual for psychology: the division seemed clear and passed as pure common sense.

However, without realizing it and especially without accounting for all its theoretical implications, sociologists have gradually become as interested in socialized individuals as such, and in terms of their actions, as they are in social groups, social structures or the institutions in which these individuals participate. Case studies, portraits, life stories or biographical approaches have made it possible to scrutinize individual singularities without losing sight of the objective of explaining the social through the social (Bertaux, 1977; 2005; Elias, 1991a; Peneff, 1997; Thomas and Znaniecki, 1958 [1919]).[3]

In order to properly address my research questions (i.e., understand the statistically improbable cases of academic achievement among the working class, to grasp the intra-individual variations of cultural practices and preferences, to shed light upon the creative practices of a single writer or to sociologically interpret oneiric productions), my research agenda has required me to develop a sociology at an individual scale, as of the mid-1990s. This approach is essentially embedded in the French sociological tradition, from Durkheim to Bourdieu via Halbwachs, despite the inflections and criticisms it might have of this tradition, while also drawing on the main theoretical knowledge of Norbert Elias' relational and process-focused sociology. From empirical realization in methodological and theoretical reflexivity, this research program has progressed in dialog with various types of scientific knowledge more classically/traditionally oriented toward the individual and their mental realities, such as cultural psychology, psychoanalysis, cognitive psychology or the neurosciences. This article aims to present this research program and the stakes of this form of sociology at the individual level, highlighting its relationship with different aspects of the psychological and cognitive sciences.

Is sociology at the individual level possible?

The individual and the collective

Any change in the scale of observation and any redefinition of one's research objects cannot avoid triggering a series of questions and concerns. Is not the individual the realm/domain of different psychologies (experimental cognitive psychology, social psychology, differential psychology, cultural psychology or psychoanalysis)? Is sociology not obliged to deal exclusively with collective realities, that is, where individuals disappear as singular social beings for the sake of aggregates, groups, organizations, fields, interactions frameworks, and so forth?

The prevailing image of sociology as a 'generalist science' of society, of collectives, and social groups or, worse, as a 'science of averages', that is incapable of accounting for individual singularities, has its roots in the Durkheimian conception of a strict division between the collective consciousness and individual consciousness. The separation within each individual of two 'beings' or two 'groups of states of consciousness' (Durkheim, 1987: 330), individual and collective, was initially intended to demarcate sociology from psychology as 'the science of the mental individual' (Durkheim, 1981: 17) and to prevent the social sciences from any form of reductionism of the social to the psychological.

With more sociological audacity, however, in 1900, Durkheim wrote that 'psychology too is destined to be at least partly renewed' under the influence of sociological research, 'for if social phenomena penetrate the individual from the outside, there is a whole domain of individual consciousness which depends partly on social causes, which psychology cannot ignore without becoming unintelligible' (Durkheim, 1975: 35, n 5). In 1908, again, he claimed that 'all sociology is psychology, but a psychology *sui generis*' and that 'this psychology is destined . . . to renew a great many problems presently raised by a purely individual psychology and even, as a consequence, by the theory of knowledge' (Durkheim, 1975: 61).

Fundamentally, sociology 'itself results in a psychology', but a psychology which Durkheim judged in 1909 to be 'more concrete and complex than that practiced by pure psychologists' of his time (Durkheim, 1975: 185). With his students (Mauss and Halbwachs, in particular), he did not hesitate to speak of 'psychological sociology', of 'sociopsychology' or of 'collective psychology' to designate the research direction, which he felt would position the researcher at the place where the boundary between psychological and sociological disciplines would disappear.

With regard to psychology, it is throughout the twentieth century that we have witnessed a historical rapprochement with the human and social sciences (anthropology and sociology) and the emergence of a historical and cultural psychology.[4] The psychologists belonging to these disciplinary currents intended to fully integrate the cultural dimension (which varies according to the historical period, the group and the context in which individuals live) into the traditional fields of study (study of language development, cognition, perception, memorization, etc.): 'The whole history of transcultural psychology can be seen as a long struggle to put back together what had been separated as a result of the division of the humanities into the social sciences and the humanities' (Cole, 1996: 327–8).

In the same way, in developing my *dispositionalist-contextualist sociology on an individual scale*, I endeavored a critical re-appropriation of Pierre Bourdieu's theory of habitus, which aims to open the mysterious and sealed boxes that sociologists were content to simply evoke when speaking of schema, of disposition,[5] of mental or cognitive structures, of habitus, etc.[6] This sociology, like historical and cultural psychology, remains anchored in its discipline: neither for this sociology nor for this psychology, is there a question of an interdisciplinary rapprochement or of a multidisciplinary practice. The two approaches converge, however, in their theoretical views and epistemological orientations: they agree on the cultural (or social) nature of mental and behavioral structures and aim to grasp some of the social, historical, geographical and cultural

variations rather than emphasizing the universal character of human characteristics, as might be done in the field of biology or in the neurosciences.

These congruencies and convergences remind us that the boundary between the field of sociology and the field of psychology has constantly/continuously been displaced/shifted throughout the history of the disciplines. To take just one emblematic example, while Erving Goffman is nowadays canonized as a widely recognized sociologist, he was nonetheless seen in his early days – in the late 1950s – as a researcher with a very 'social psychological' profile (Winkin, 1988: 87), because he was interested in inter-individual interactions or relationships between individuals and social situations, and not in groups and the relations between groups. Why can something, which was understood at a given period as being 'social psychology' be perceived at another moment in time, as being at the heart of the discipline of sociology? The evolution of conceptions regarding what is sociological and what is not raises the delicate issue of defining the 'social', or, more precisely, the question of the scientific struggles over the monopoly of the legitimate definition of the 'social'.

What is an individual for the sociologist?

First, sociology starts from the premise that an individual would not be what he/she is, with his/her tastes and disgusts, ways of speaking, thinking or acting without all of the experiences that he/she has lived with other individuals since birth. Sociology thus distinguishes itself from all other ways of thinking that isolate the individual (and their psyche) from the social world viewed as an external reality. The 'systems of classical philosophers' consider man as 'a subject viewed apart from all those around him and separate from his connections with them' (Halbwachs, 2015: 48).

An individual can be defined sociologically by the multiplicity and complexity of his/her socializing experiences. No person can ever be characterized by a single feature (for example, being a low skilled worker or a manager in a large company). Thus, a worker is not only a worker, but also a man or a woman, possessing (or not) a diploma of a particular kind, belonging to a given generation, participating in political, sporting, religious, cultural activities, and so on. Moreover, this complexity of social belongings or of the social places held by individuals in different groups or institutions is deployed over time: the same worker may thus have also been a single child, the class representative at school, a choirboy, an athlete as an adolescent, an agricultural worker, a trade unionist, and so on. Each group or institution belonged to contributes to the forging of specific ways of seeing, feeling or acting, and the combination of all these harmonious or contradictory experiences makes up the (relative) singularity of each individual. Because these 'influences' begin before an individual is old enough to be aware of them, and because these same influences are so numerous that their provenance can no longer be identified, the individual ends up taking for personal desires what was actually imprinted on him/her by these multiple experiences, of which he/she was never the master. Once again, Halbwachs is the one who can best help us to understand the indivisibility of each individual's psychic and social situation: it is, he argues, 'this set of social influences that permeates us from the very awakening of our consciousness without us suspecting it', which makes us 'accustomed to confusing them with ourselves' (Halbwachs, 2015: 50).

The metaphor of the 'social in a folded or unfolded form' (Lahire, 2013) can be useful here. For example, when a sociologist studies Protestantism, describes its properties or relevant traits, analyses the functioning of its institutions, the attitudes, ethos or values attached to it, he/she is talking about a phenomenon that has affected millions of individuals in history, ordinary Protestants, ascetics or famous theologians, all differently engaged in, and more or less strongly defined by, their confessional belonging. Therefore, to speak of 'Protestantism' amounts to a formidable (and quite legitimate) abstraction from these thousands or millions of ways of living Protestantism, and making it live. The necessarily ideal-typical description (in Max Weber's sense) of a Protestant culture or ethic is a de-individualized, de-singularized, de-particularized depiction which, nevertheless, inevitably draws on the traces of multiple activities and actions, of individual, particular, or singular representations. And the same reasoning applies equally to class cultures, to the school system, to the state, etc.; that is to say, to this set of macro-social objects involving a multitude of individual actors, to which the social sciences have made us accustomed. Through historical, statistical or ethnographic reconstructions, sociologists thus regularly perform abstract summations, which transcend each individual case and do not allow themselves to be locked into any particular case. Yet, in an integrated state, the social world lives in a way that is not unfolded and abstract, but folded, namely, under the form of nuanced and concrete combinations of multiple dispositions that are seen, felt and acted upon. Each individual is in a way the repository of dispositions that are the product of her or his multiple socializing experiences in various collectives, more or less lasting and intense, from the most micro to the most macro.

In this folded version of social reality at the individual scale, the individual is not reducible to his/her Protestantism, class belonging, level of culture or gender. The individual is defined by all of his/her relations, commitments, belongings and properties, past and present. Within each individual, some elements and dimensions of his/her culture (used in the broad sense of the term), which are generally studied separately by social scientists, are synthesized or struggle against one another, are combined or contradict one other, are harmoniously articulated or coexist more or less peacefully. The social realities of each individual do not respect the scientific-institutional divisions, and it is the same individual who is at once a man, the son of a worker and a worker himself, a scholar, a Catholic, and so forth. After unfolding the social, it may sometimes be useful to re-fold it through an analysis of individuals in their relative singularity.

An individual is therefore a social reality characterized by the complexity of his/her heritage of dispositions, a complexity manifested in the variation of his/her behaviors observable in the different fields of practice, or micro-contexts, within which the individual embeds his/her actions.

Individual singularity

Constituting the individual as a legitimate sociological object leads one to redefine the 'social', and in particular to acknowledge that the so-called 'social' reality cannot be reduced to that of groups or classes. As soon as one refers to the existence of 'social differences', indeed, most sociologists would think quite spontaneously of discrepancies between social classes or between groups. We would be less likely to think of the socially

constructed gender differences, or differences between generations, which are often differences between different states of the social world and between different conditions of socialization of individuals. But mental or behavioral differences between two singular individuals from the same social milieu, or better still, from the same family, would almost never be spontaneously understood as social differences, in the sense that these differences would be socially generated by differentiated social (socializing) experiences. Similarly, it is rather rare to consider social reality through the lens of the variations in the behaviors of one individual, according to the social situations in which he/she is immersed.

However, if we do not want to suggest that differences between individuals, or even the different behaviors one individual might have, are not socially generated, and consequently that these variations fall outside the field of sociological intellection, it is important to emphasize that social reality cannot be reduced to social relations between groups and, in particular, to socio-professional, socio-economic or socio-cultural differences.

Therefore, by taking the individual actor as an object of research, I do not intend to take the individual as the ultimate unit or the logical atom of all analysis, in the manner of atomist individualism. Nor do I intend to confer on all actors 'autonomy' and 'rationality', placing the same rudimentary psychological traits at the origin of all their practices. Each individual is what his/her many social experiences have made of him/her. Far from being the most elementary unit in sociology, the individual is undoubtedly the most complex social reality to be apprehended. And we understand that sociology could not begin with the analysis of such complex compounds, of more or less heterogeneous social experiences, that constitute individuals. Fundamentally, contrary to what atomistic conceptions may lead us to believe, it is less complex to study social universes, social groups, institutions or frameworks of interaction than individual cases. Individuals have travelled through the past and are constantly moving through multiple social contexts (e.g., universes, institutions, groups or situations); they carry with them all the experiences (not always compatible, and sometimes clearly contradictory) that they have experienced in multiple contexts.

Plural actors and the variety of their contexts of action

It is rare to find sociological research that has as its objective to 'follow' one actor (and not globally the same group of actors) through the different situations of his/her life (different domains of existence or different types of interaction). Studying actors in particular scenes, we are led to deduce, from the analysis of behaviors observed in these particular scenes, a series of general dispositions, habitus, worldviews or general relations to the world. However, the study of observable behaviors in limited and determined circumstances does not allow such general and abusive deductions.

A dispositionalist and contextualist sociology of action at the individual level implies, as a consequence, new methodological tools.[7] In order to grasp the internal complexity of the actors, we must equip ourselves with the methodological tools that will allow us to directly observe or to indirectly reconstruct (through various sources, including long and repeated interviews) the variation of individual behaviors according to social contexts.

Only these methodological devices make it possible to assess the extent to which certain dispositions are transferable from one situation to another, while others are not, as well as to assess the degree of heterogeneity or homogeneity in the inheritance of dispositions incorporated by actors during their socialization. While direct observation of behaviors is still the most relevant/suitable method, it is rarely entirely possible insofar as 'following' actors in their different life situations would be both cumbersome and ethically problematic. But interviews and archival research can also reveal a multitude of small contradictions, and some behavioral heterogeneities that go unnoticed by the actors themselves.

The issue is not only to compare practices, manners, attitudes, behaviors, and so forth, of the same actors in their diverse social worlds, such as the workplace, with family, in school, in the neighborhood, at church, in political organizations or as part of their leisure and cultural worlds, but also to differentiate situations within these larger domains. It is common for sociologists to study the behavior of actors within a single field of activity (sociology of the family, sociology of the school, sociology of work, sociology of religion, etc.). The individual actor is then always situated within a single social scene. Actors are, as the case may be, employees, pupils, parents of a pupil, fathers or mothers within a family, husbands or wives, voters, readers, and so forth. It is rare for sociologists to compare the same participants in two different scenes, even though this is quite common for sociologists who attempt to grasp the phenomena of cultural contradictions or differences. The sociology of education, for example, is accustomed to this type of comparison: between family educational practices and school practices, between popular knowledge and school knowledge, between language practices within a peer group and school language practices, or between modes of exercising authority at school and by parents. Even if these studies generally place emphasis on one scene over another (family or school), they constitute a first step toward a sociological approach at the level of individuals and of their specific complexity. This being said, it remains difficult to find studies that have systematically 'observed' the same actors on more than two scenes.

This is precisely what I aimed to do in my work on cultural practices among the French (Lahire, 2004), which at the same time criticizes, integrates and generalizes the model developed by the US sociologist of culture, Richard A. Peterson (1992), highlighting that the intra-individual variations of cultural behaviors are the product of the interaction between, on the one hand, the plurality of dispositions and embodied cultural skills (assuming the plurality of socializing cultural experiences), and, on the other hand, the diversity of cultural contexts (cultural domains or sub-domains, relational contexts or circumstances of the practice) in which individuals are required to make choices, to engage in practices, to consume, or to appreciate, etc. The origin and logic of such variations are therefore fully social.

Why sociologize the individual?

The very logic of research leads to conceptualizing the individual as a legitimate object of the social sciences. When one is led to study *the singular behavior of a particular individual* rather than *the collective behaviors of individuals taken as members of groups*, *communities or classes*, one can no longer content oneself with describing and

analyzing reality in broad outline. Trying to understand the nature of the work of a given artist or writer (Bourdieu, 2013; Elias, 1991a; Lahire, 2010), the statistically unlikely achievements or academic failures of particular students (Henri-Panabière, 2010; Lahire, 1995), how a person is drawn into crime or to attempt to commit suicide, or the singular destiny of an individual, with all of the compulsory steps and surprising bifurcations and ruptures (Denave, 2015), requires one to enter into the complexity of both the dispositional and the contextual determinations.

Hume, dispositionalist sociology, psychoanalysis and experimental cognitive psychology

Dispositionalist sociology seeks to uncover the incorporated past of individuals. The exact nature of this past becomes embodied; the question of the constitution, reinforcement or adjustment of schemes or dispositions over the course of a series of more or less coherent socializing experiences; the manner in which these schemes or dispositions become practices; the unconscious character of this embodied past; these are questions of prime interest for the dispositional sociologist. Nonetheless, these questions are not unrelated to issues specific to psychoanalysis or experimental cognitive psychology.

Human practices are haunted by schemes or dispositions that testify to a past, 'sedimented' within the socialized body. In order to truly understand these practices, we therefore need to look beneath a given behavior for the historically-biographically constituted structures that manifest themselves through this behavior. The structures that govern the production of behaviors (acts or forms of expression) pre-exist the analyst's examination, and are the products of an incorporated history. These are schemata or dispositions internalized by individuals.

The concepts of 'scheme' or 'disposition' – but also a whole series of other concepts, such as 'structure' – are a real challenge to positivism, since positivism requires *seeing* things before accepting their existence. Schemes or dispositions are realities that cannot be observed directly, but that we must assume they are active (in the sense of an active agent) in order to explain the coherence of what we observe. For example, an ascetic disposition can be manifest in a past relationship to school work, in the present relationship to work, in the ways the family budget is managed, in choices of sports and in the manner in which the sports are practiced, and so forth. Arguing that nobody has ever observed a disposition or a scheme as a means of refuting dispositionalism is a grossly positivist error. No dispositionalist has ever claimed that dispositions are observable. What is observable are the effects dispositions produce in practices and representations.[8]

Sigmund Freud also defended an implicit dispositionalist line of reasoning when he distinguished 'latent thoughts' or 'latent content' in dreams from 'manifest thoughts' or 'manifest content' (2007 [1914]). The notion of 'latency' also exists only virtually, as a would-be reality that is not manifest but potentially manifestable. The conceptual status of the unconscious is thus close to that of the disposition: it is an embodied past that structures actual practices but which manifests itself only on given occasions or in given circumstances.

Modes of updating the embodied past

Freud distinguished two ways in which the embodied past could 'return' to the present: the first is conscious remembrance (memory); the second consists of the lived repetition of a (relational or affective) scheme, which refers to non-conscious actualization of incorporated dispositions in the context of psychoanalysis (with the phenomenon of 'transference' to the analyst) or in everyday life. This distinction is fundamental and must be kept in mind in order to avoid reducing the return of the past into the present to memory alone, or to avoid speaking of habits through the language of memory; this is what Piaget did when he wrote that 'the child is first limited to applying the schemas he knows . . . the issue being to remember these schemes at the right time and to adapt them to the current situation' (1978: 201). One does not 'remember' a cognitive or sensory-motor schema the way one recalls a past event. Memory-habit, as Bergson said, has nothing to do with memory-proper (in French, *mémoire-souvenir*): 'Habit rather than memory, [memory-habit] plays our past experience, but does not evoke its image' (Bergson, 1908: 164). It is a 'memory of the body' that shows itself in the ways of being and doing, but not in 'memory images'.

The second mode is the most crucial in order to understand that individuals are constantly replaying scenes they have lived in the past, without knowing that they are replaying them. They adopt the same attitudes, return to the same positions or the same postures, act or react in the same ways and sometimes produce the same effects. Through involuntary memory, as an 'acting force', the past takes the form of dispositions and therefore resurfaces not only as memories of acts, words, feelings or circumstantial thoughts. The incorporated past acts upon our perceptions, our representations, our affects or our actions without our being aware of this. It was Hume who stressed that our 'past experience' acts on the mind in such an 'insensitive' way that it can completely escape our consciousness. And it is indeed a memory without 'memories' that is at stake when a person 'interrupts his journey when a river crosses his path', as '[he] can predict the consequences of proceeding forward', thanks to the practical knowledge provided by past experience:

> But can we think, that on this occasion he reflects on any past experience, and calls to remembrance instances, that he has seen or heard of, in order to discover the effects of water on animal bodies? No surely; this is not the method in which he proceeds in his reasoning. The idea of sinking is so closely linked with that of water, and the idea of suffocating with that of sinking, that the mind makes the transition without the assistance of the memory. The custom operates before we have time for reflexion. (Hume, 1978 [1738]: 103–4)

Whether the past returns to the mode of 'it reminds me this' or of 'it pushes me to act, think, or feel like this', it is the present situations that either open or close the possibilities of a reactivation of our embodied past. The embodied past and present contexts never exist one without the other. At every moment, we perceive the situations in which we are immersed from the standpoint of what our embodied past has taught us to perceive; at every given moment, the situations we are presented with, and which we do not all control, reactivate our embodied past without any conscious decision being taken.

The statistical brain or the practical anticipation

The neurosciences, on the other hand, face the same types of questions through their own means. They find the same kinds of problems on which Humean philosophy or dispositionalist sociology, among others, have incessantly worked. Human beings are beings of experience, who constantly rely, without knowing it, on their past experiences in order to act in the present. They give meaning to what they see and hear, according to what they have lived in the past, and unconsciously anticipate things to come on the basis of their incorporated past: words that ought to be said, gestures that ought to be made, events that will occur, and so forth.

The Bayesian brain,[9] or the statistical brain, is the theoretical framework which guides much cognitive psychology research on perception, language and action. It is a model that considers the brain a complex system of unconscious probabilistic calculations. Everything happens as though the brain were making permanent wagers that what happens or will happen is only the prolongation of internalized past experiences; he/she 'uses the past to predict the present' (Dehaene, 2012). It could be said that fundamentally, the set of unconscious probabilistic calculations performed by the brain are commonly called intuition, or the meaning of the game. 'The hypothesis of the "Bayesian brain"', the cognitive psychologist Stanislas Dehaene writes:

> postulates that our brain infers, based on sensory inputs, an internal model of the external world. In turn, this internal model can be used to create expectations/(expected outcomes) of sensory inputs. This hypothesis of predictive coding assumes that the brain permanently generates such expected outcomes, and generates a signal of surprise or error when these predictions are violated by unexpected sensory inputs. (Dehaene, 2012)

These advances in neurosciences show that at every given moment the thin stream of conscious operations conceals a multiplicity of operations or unconscious calculations, which interpret sensory information, making some of these operations resurface in the conscious space. 'Obviously', Dehaene writes, 'an enormous number of calculations are made without our knowledge, in order to assemble the scene being played before our eyes and our ears, and which we mistakenly take as a mere given of our senses' (2014: 95). But as this set of operations being processed within us remains inaccessible to our consciousness, we subjectively think that the only intellectual effort that our brain performs occurs in the moments when we are engaged in an arduous intellectual task. And even in these moments of intense intellectual effort, as would be in the case of solving a mathematical problem, unconscious operations are still at work:

> At any moment, without us being aware of it, our visual system solves pattern recognition problems that exceed all of our current software computing programmes. We rely on the extraordinary computational power of the unconscious whenever we try to solve mathematical problems. (Dehaene, 2014: 125)

Dehaene puts forward the sociopolitical metaphor to evoke this imbalance between the conscious tip of the iceberg and the immense unconscious mass immersed below:

> Modern cognitive psychology thus considers access to consciousness as a 'central bottleneck', a 'second stage of treatment', or a VIP lounge where only a few lucky guests are invited. Another metaphor emerged in the 1960s and 1970s. This one compared consciousness to a 'central supervisory system', a powerful board of directors that controls the flow of information in the brain. (Dehaene, 2014: 231)

But, one could ask: how can all these calculations lead to a relatively coherent and stable structure of the world? The answer lies, in my opinion, in the very structure of the world itself (physical as well as social). These calculations are practical anticipations, pre-reflexive or non-conscious predictions, based on a relatively coherent series of past experiences internalized by individuals, and which dispositionalist sociology calls dispositions. In the philosophical debates between the most radical empiricists (Berkeley) and the apriorists (Kant), the apriorists objected to their opponents' arguments, suggesting that if we did not have a pre-structured mind, the multitude of experiences we live among would make structured perceptions and structured representations of the world impossible. The solution to the problem raised by these debates would thus lie in the existence of innate structures of perception and representation that preexist all experience.

What the apriorists and the empiricists forget is that the world is always already structured and that the brain is able to detect the regularities or recurrences with which it is confronted. These regularities or recurrences can be social (the way in which one interacts with another) or physical (natural phenomena). Human beings, thanks to the abilities of their brains, are able to deduce mental and behavioral regularities from the regularity of the world:

> From birth, the brain is bombarded with information about the world. Years of interaction with a structured environment allow the brain to collect a great deal of statistics on the frequency with which different sensations occur either simultaneously or in close succession. With experience, learning dedicates sets of specific neurons to the recurrent combinations that characterize familiar objects. Once established, these neuronal assemblies remain selective, even during general anesthesia – manifest evidence that this form of binding does not require consciousness. (Dehaene, 2014: 96)

What we have in ourselves is not a mind which is pre-structured prior to all experience, but a brain awaiting to be structured by its experiences of the world. What this means is that a human brain is made to look for relatively invariant structures, forms, and realities in the world. The brain can take all imaginable forms possible, as long as there are identifiable forms. 'Unbeknownst to us, our brain acts constantly as a statistician looking for the slightest regularity hidden behind data which seems random to us. This statistical learning operates relentlessly, including while we sleep' (Dehaene, 2014: 121).

The dispositions or schemes that sociology identifies thus have neuronal foundations and the neurosciences are now taking them as a research object and objectifying them:

> Even before our birth, our neurons adapt themselves to the external statistics of the world by modifying their synapses. The hundreds of thousands of billions of synapses that dot our

> cortex latently keep track of our entire life. Millions of synapses are made and are broken down every day, especially during the first years of life, when our brain adapts to its environment … Cumulated, all this information ends up laying the foundations of a rich intuition of the world. In the visual areas, our cortical connections accumulate statistics on the combinations of features and colors that make up images. In the auditory and motor regions there is an unconscious intuition of music: years of piano practice lead to detectable changes in the gray matter density. (Dehaene, 2014: 268)

The contribution of neuroscience reinforces sociological dispositionalism (which is based on very different methods, such as long interviews and observations): the brain detects patterns in a structured environment (through forms of social life, laws of physics and biology, and so forth) and internalizes them under the form of schemes or dispositions which function in the manner of practical anticipations. This is what we will address now.

The internalization of the regularities of experience

Sociological dispositionalism has its roots in Aristotle's philosophical reflections on virtue and in those of David Hume on understanding. But these philosophical reflections are now being confirmed by the research of psychologists working on infants and parent–child interactions.

First of all, Aristotle tells us in essence that it is by multiplying acts of a certain kind that one acquires a certain power to act in numerous other future situations. Thus, he distinguishes what is given to us by nature and what we must acquire:

> Again, of all the things that come to us by nature we first acquire the potentiality and later exhibit the activity (this is plain in the case of the senses; for it was not by often seeing or often hearing that we acquired these senses, but on the contrary we had them before we used them, and did not come to have them by using them). The virtues, on the other hand, we acquire by first exercising them, as is the case for the arts as well. For the things we have to learn before we can do them, we learn them by doing them, e.g. men become builders by building and sitar players by playing the sitar; so too we become just by doing just acts, temperate by doing temperate acts, brave by doing brave acts.
>
> This is confirmed by what happens in states; for legislators make the citizens good by forming habits in them. (Aristotle, 1959)

In his *Treatise on Human Nature*, David Hume (1995) emphasizes the importance of our experiences, which, when they are repeated, create mental habits and work, in practice, as pre-reflexive expectations of forthcoming phenomena. Fire is *associated*, in the mind of one who has already experienced it, with heat and the very possibility of being burned, just as water is *associated* with the impossibility of breathing under water. Contact with these elements entails immediate attitudes of prudence or fear. Anyone who has experienced fire or water has been able to observe the same phenomena each time, and ends up anticipating, without calculation or reflection, the effects of contact with these elements.

It is, therefore, on the basis of repeated experiences that a disposition or a scheme is gradually formed through habit. And it is this disposition or scheme that allows the perceiving and acting individuals to unconsciously project the internalized product of their past experiences into the future, assuming that 'the future will be in conformity with the past' (Hume, 1995: 205). Whether it involves types of interaction with people, objects or animals, types of behavior, moral, cultural, aesthetic or political attitudes, modes of exercising authority or reasoning, the individual incorporates multiple habits which are constantly adjusted and combined in practice with one another. Faced with this or that situation, individuals act or react according to what they immediately believe to recognize of the expectations related to the situation, and according to their past experiences. Present action is full of an entire embodied past.

As with the Humean philosophy of experience, the sociologist's dispositionalist vocabulary carries the idea of recurrence, relative repetition, of a series, or a class of events. The brain of an individual detects patterns because there are objective (physical as well as social) regularities in the world to be detected. It is because parents have a certain *style* of behavior and certain *habits* that children can internalize abstracts of experiences, in the form of *schemas* or embodied *dispositions*, producing the practical anticipation and projection of the product of past experiences on a present situation. Regularity is as much part of the individual's external world as it is within each individual.

From my point of view, when it focuses on the internalization of conflicts or relations between parents and children, psychology is a detailed sociology of the processes of embodiment or internalization. Jean Laplanche and Jean-Baptiste Pontalis wrote that the concept of internalization in psychoanalysis refers to the 'process by which intersubjective relations are transformed into intra-subjective relations (internalization of a conflict, of an interdiction, etc.)':

> We speak of internalization when the process is about *relationships*. For example, the relationship of authority between the father and the child is internalized in the relation of the superego with the ego. This process presupposes a structural differentiation within the psyche such that relations and conflicts can be experienced at the intrapsychic level. (Laplanche and Pontalis, 1990: 206)

But processes of internalization are as much the objects of affection, perception, representation or action schemas as they are of relational schemas.[10]

The example of the relations between anxious or depressed mothers and their newborn babies, evoked by the psychoanalyst and developmental psychologist Martin Dornes, tells us about how patterns of action and reaction develop in children through repeated interactions with their mothers. The infant is typically an actor who is particularly dependent on the present situation and does not have the weight of a heavy past. The infant is the pragmatists' actor *par excellence*, an actor who is infinitely more sensitive to contextual determinations and, in this case, to interactional determinations, because his/her dispositional bases are comparatively unsolidified: 'The infant is not resentful', Dornes explains,

> and in fact cannot be resentful because his/her affective state depends on the current interactional reality, and the change of this reality also changes his/her affective situation. Because offended adults can constantly fantasize or reimagine the offending situation, they can also maintain a sense of offense or revenge independently or beyond such situations. (Dornes, 2002: 49)

Infants do not speak and do not have the ability to observe or analyze an adult, but internalize the anxieties of their mothers by reacting to their behaviors through their interactions:

> A mother can have, for example a conscious or unconscious fantasy that her infant might die of starvation. The infant cannot understand this fantasy even if it was communicated to him/her. What the infant understands, however, is the following: in order to control her anxiety over her infant's starvation, the mother will feed her infant on any occasion, opportune or inopportune (see examples in Cramer, 1987). The compulsion to feed then permeates the interaction to which the infant reacts aversively. The infant will choke, vomit, refuse to eat, in other words, take the path of starvation and realize, or 'introject', the mother's fantasy. Early introjection therefore means that the parents' fantasies and affects are communicated through interactional correlates and that, in this way, they are understood by the child. 'Introjection' in newborns is not an intentional, active psychic process in which a foreign psychic content is introduced; it is a rehearsal, an assimilation of the expressive correlates of parental fantasies, or a reaction to these fantasies. (Dornes, 2002: 38–9)

As a result, the infant finally refuses to eat, in order to resist the overeating provided by his/her mother, and thereby confirming her fear.

Similarly, in cases of depressed mothers who have delayed motricity, sad face expressions, sluggish bodies and sullen voices, newborns interactively synchronize themselves with their mother's behavior and eventually end up internalizing the signs of the depressive state:

> After initial and tenacious efforts to re-normalize his/her mother's behavior – they smile even more, vocalize more and generally intensify their offers of interaction – the infant withdraws from the interaction. His/her eyes lose their sheen, the breathing becomes flat. Some infants simply remain in this state; others start screaming; others remain at the stage of breaking any visual contact. In most cases, a state of withdrawal finally follows the simulated depression of the mother. (Dornes, 2002: 55–6)

In some cases, when the infant's attempts to 'revive' his/her mother are successful, the infant may deduce that he/she must remain active, seductive and attractive to avoid the devitalization of the mother and continue to receive attention and feel loved (Dornes, 2002: 69–70). Some dispositions and schemas of behavior are thus transmitted through the adoption of the parents' 'slowed affective-motor interaction style', if it becomes chronic: 'An "introjection" of the depression occurs at the behavioral and corporal levels' (Dornes, 2002: 56). And by the ninth month, the baby is able to link his/her reactions to others on the basis of the interactional habits he/she formed with his/her parents.

The work of a researcher such as Daniel Stern, who combines psychoanalysis and developmental psychology, indirectly confirms the hypothesis of a Bayesian brain, a detector of regularities or invariants:

> One of the fundamental tendencies of the psyche that the infant readily shows is the tendency to introduce an order into the world by searching for invariants. A structure in which each successive variation is both familiar (the part that is repeated) and original (the part that is novel) is ideal to teach the baby to identify interpersonal invariants. (Stern, 1989: 102)

Stern also showed that repeated interactions between the mother and the child enable the child to correctly anticipate the actions of the mother and which behaviors to adopt: 'This generalized memory is a personal and individualized anticipation of the way things will likely take place over a succession of moments' (Stern, 1989: 129–30).

For example, mealtimes are rituals that undergo minor variations, allowing the baby to store in his/her memory not all the particular mealtime episodes, but the 'prototype of a breast-feeding episode', that is a sort of 'average experience', or the invariant structure constructed little by little from the relatively coherent series of breast-feeding episodes. What the infant interiorizes, therefore, are schemas or interaction patterns, not the multitude of interactions that actually took place. Each 'schema-of-being-with'[11] involves actions, sensations, visual perceptions, and affects and forms a whole that the baby masters practically, through the body. Babies do not recall past situations, but 'rather, they signal *through their behavior alone* that something has been stored in the past, something that affects current behavior' (Dornes, 2002: 292). And Stern also shows that the more frequently a type of interaction or situation repeats itself, the more the prototype reinforces itself, and the more difficult it is for the child to incorporate changes in this behavior: 'The more the experience is important', Stern writes, 'the more the impact and change brought about by any particular isolated episode will be weak. History increases inertia' (1989: 151).

Conclusion

In this article, I have explained how, through sociological research practice that is open to psychology and the neurosciences, mutual scientific enrichment can occur, without losing one's disciplinary soul, and without feeling wronged by any form of reductionism. To conclude, I will briefly recount the origin of the aforementioned obstacles and the progressive conditions to overcome them. Being reflexive on the conditions of one's scientific training should be a prerequisite for any researcher. All true scientific progress requires advancing *with* but also *against* one's background. And it is only through becoming aware of what leads us to think in a certain way that we will be able to free ourselves from our background when it proves necessary.

When I began my studies in sociology in France in the early 1980s, the division of scientific work had already reached a very advanced stage, and I learned, as did all the students of my generation, to be wary of two scientific disciplines. These disciplines, in the eyes of our teachers, represented a serious danger to sociology: biology (the absolute

repulsion of the time being Edward Osborne Wilson's sociobiology, closely followed by attempts to explain behaviors through genetics) and psychology (whatever its nature). 'Naturalizing the social world' (and, in some cases, 'medicalizing' it) or 'psychologizing the social world' were two currents that a sociologist worthy of the name absolutely had to avoid. This mistrust was a sign of successful professional socialization and logically led to a fairly clear mono-disciplinary focus: each discipline has the right to develop its specific point of view and must defend itself against any attempt to 'reduce' its research objects to competing disciplinary perspectives. All this resembled in essence a sort of corporatist defense, both institutional and cognitive.

However, a series of elements, of very different orders, have contributed to the calling into question of this mistrust and this corporatism. Among the multiplicity of causes underlying this change in perspective, I mention a few: a personal interest in questions relating to the social fabric of individuals, which also led me to read both cultural, historical or cognitive psychology as well as psychoanalysis; the shock caused by reading of Norbert Elias (whose works were only just being discovered by French sociologists at the end of the 1980s), who not only skillfully articulated history, sociology and psychoanalysis in his research on the civilization process (Elias, 1973; 2003), but also asserted that it had always seemed impossible for him to do sociology without knowing how the human body worked (he had begun his studies in medicine), in particular, the brain and the nervous system (Elias, 1991b); the discrete remarks of Pierre Bourdieu regarding the relationship between the workings of the brain, revealed by the neurosciences, and the mechanisms of socialization studied by sociologists,[12] or the need to combine psychoanalysis and sociology in order to better understand social facts;[13] a personal scientific curiosity for the history of science that has led me to observe that the vast majority of the most significant scientific advances have been made by researchers open to the work of different disciplines (drawing on concepts, reasoning, methods, points of view, attitudes toward the problems they had to solve); and, last but not least, a critical reflection which has continued to assert itself during my research on the multiple problematic effects of the division of scientific work (Lahire, 2012).[14]

All these elements, and probably many others, which the failings of my memory prevent me from restoring, have progressively led me to question the strict disciplinary measures that our predecessors imposed on us, in order to try to establish bridges between disciplines, or to think of research objects as a sociologist while taking into account the perspective developed by related or very distant disciplines in the space of scientific disciplines,[15] either because these disciplines make it possible to name phenomena or processes more explicitly and clearly than in the humanities and social sciences (take, for example, the concepts of inter- and intra-individual variations, which I borrowed from differential psychology, or the concepts of the unconscious taken from psychoanalysis or neuroscience), or because these disciplines confirm, from another point of view and with other methods, scientific results obtained with methods specific to the social sciences, or again because getting to know these disciplines in the long run enables us to synthesize some results that are otherwise dispersed, or, finally, because the attitude of the most scientifically creative and fertile researchers, whatever the discipline they belong to, can be very inspiring for others.

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Notes

1. On the logic and limits of this reasoning, see Lahire (2013: 59–113).
2. Durkheim's scientific victory over his opponents at the time, and especially over Gabriel Tarde, who advocated an 'inter-mental psychology', is essentially due to the extraordinary theoretical-empirical fecundity of Durkheim and his followers (Célestin Bouglé, Paul Fauconnet, Maurice Halbwachs, Marcel Mauss and François Simiand, to name only the most famous). Similarly, the more recent scientific victory of Pierre Bourdieu (who can be considered one of the distant descendants of Durkheim) over his opponents who were defending a 'methodological individualism' (Raymond Boudon in particular), has quite an obvious scientific foundation, if we consider the sociological production of these competing programs.
3. We should also mention the role played by the American anthropological movement called 'Culture and Personality', with Abram Kardiner (1891–1981) and Cora Alice Du Bois (1903–91), who inspired sociologists and anthropologists, such as Roger Bastide (1898–1974) or Georges Devereux (1908–85), and the psychoanalyst Erich Fromm (1900–80), who all combined sociology or Marxism and psychoanalysis.
4. Such as the work of Jerôme S. Bruner, Michael Cole, Ignace Meyerson, Richard Shweder, Lev S. Vygotski, and Henri Wallon.
5. A 'disposition' is in a sense a general and flexible habit, which is acquired through the repetition (never identical) of relatively similar experiences.
6. This dispositionalist and contextualist sociology at the individual level does not presuppose either the systematic and coherent nature of the set of embodied dispositions; nor the sustainability and transferability of all the dispositions; this sociology gives a role to the present context of action in the interpretation of practices (Lahire, 1998; 2002; 2004; 2012; 2013).
7. The methodological approach which consists of recording intra-individual variations finds support in the work of the American sociolinguist William Labov (1972) and of French 'differentialist' psychologists (Huteau, 1985; 1995, Loarer, Chartier, Huteau and Lautrey, 1995).
8. This is how the American anthropologist Ralph Linton argued about the interest of the concept of 'personality' (or of 'structure of personality') (Linton, 1945).
9. The word 'Bayesian' comes from the name of the British mathematician Thomas Bayes (1702–61), who conducted research on probabilities. On the use of this theoretical model for understanding human cognitive mechanisms, I refer to Xu and Tenenbaum (2007), Perfors, Tenenbaum, Griffiths and Xu (2011) and Kersten, Mamassian and Yuille (2004).

10. It is regrettable that authors from different disciplines (sociology, anthropology, experimental psychology, psychoanalysis, neurosciences) have contributed by their disparate vocabulary (introjection, internalization, assimilation, incorporation, subjectivation, subjective appropriation, mentalization) to conceal the common processes they sought to bring these things to light.
11. In English in the original text.
12. 'When it comes to living beings, denying the existence of acquired dispositions amounts to denying the existence of learning as a selective and lasting transformation of the body which is realized by strengthening or weakening the synaptic connections' (Bourdieu, 1997: 163).
13. According to Bourdieu (1997: 198–9):

> Sociology and psychoanalysis should unite their efforts (but it would be necessary for them to overcome their mutual prejudices) to analyze the genesis of the investment in a field of social relations, thus constituted as an object of interest and of concern, in which the child is increasingly involved and which constitutes the paradigm and also the principle of investment in the social game.

14. It goes without saying that all the elements of my scientific biography, with its singularities, nevertheless relate to collective facts that are quite objectivable, as they are historically located in the 1990s: the irresistible rise of neurosciences and cognitive sciences; the growing dissatisfaction felt in the social sciences about the hyper-specialization of researchers; the translation into French of several important works by Norbert Elias; the limitations, collectively perceived, of a routine use of the notion of habitus; and the willingness to question its definition as well as to test a certain number of points taken for granted (in particular, the transferability and durability of the schemes or dispositions), etc.
15. This constitutes my recent research on dreams (Lahire, 2018).

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Author biography

Bernard Lahire is Professor of Sociology at the École Normale Supérieure de Lyon, France, and a senior member of the Institut Universitaire de France. He has published twenty books, among which are *The Plural Actor* (Polity Press, 2010) and *This Is Not Just a Painting: Essay on Art, Domination, Magic and the Sacred* (Polity Press, 2019). He was awarded the CNRS Silver Medal for the human and social sciences in 2012.