
The Lost Bridge: The Neurosociological Imperative and the Recovery of Social Theory

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ABSTRACT

This article contends that the current epistemological crisis within sociology is the result of a deliberate biological amnesia that has distanced social theory from its material foundations. I propose that the development of a robust neurosociology represents more than an interdisciplinary expansion, serving instead as a foundational reconstruction of social theory itself. By examining the suppressed neural intuitions found in the works of classical figures like Herbert Spencer, Simon Patten, and Charles Ellwood, this analysis reveals a theoretical lineage that implicitly recognized the necessity of a biological substrate for sociality. The paper specifically redefines Spencer as an early complexity scientist and highlights Patten's anticipation of connectionist learning models. A central contribution is the introduction of physical plausibility as a new gold standard, asserting that sociological concepts are only valid if they remain compatible with the known architecture of the human brain. Ultimately, by recovering the lost bridge between neural plasticity and social structure, sociology can move beyond descriptive metaphors and reclaim its role as an explanatory science of the social universe.

Keywords: *neurosociology, social theory, Herbert Spencer, physical plausibility, social evolution, biological amnesia, connectionism, mirror neurons.*

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INTRODUCTION

This article argues that the epistemological crisis of contemporary sociology stems from a deliberate ‘biological amnesia.’ I propose that establishing a robust neurosociology is not merely an interdisciplinary expansion but a foundational reconstruction of social theory itself. By revisiting the suppressed neural intuitions of classical sociology, we can uncover a theoretical lineage that implicitly understood the necessity of a biological substrate. Looking toward the future, it is crucial to recognize that advances in the neurosciences now make it possible to explore questions that empirical sociology has thus far been unable to address in their full depth and complexity. Consequently, I contend that without integrating the explanatory mechanisms of neuroscience, sociology risks becoming a purely descriptive discipline eclipsed by the behavioral sciences. The path to epistemological relevance lies in recovering the ‘lost bridge’, understood as the mechanistic link between neural plasticity and social structure, by incorporating biology, evolutionary analysis, and neuroscience into the sociological toolkit. If we accept that sociology is the only social science encompassing the full spectrum of sociocultural processes, from individual interaction to global systemic dynamics, then neurosociology offers the necessary expansion of its explanatory capacity to understand how the ‘social universe’ truly functions.

THE MYTH OF ANTI-BIOLOGICAL SOCIOLOGY

To construct this framework, we must first dismantle the myth that sociology is inherently anti-biological. The discipline's founders were not merely aware of the nervous system; they viewed it as the substrate of sociality. The subsequent purge of biological concepts was an ideological, not an empirical, shift.

In the nineteenth century, social thinkers, such as Auguste Comte and Herbert Spencer, and later Simon Patten and Charles Ellwood, displayed considerable interest in neurology. Although visionary for its time, this intellectual tradition ultimately reached an impasse, managing only to sketch broad mechanisms and offering limited explanations to questions such as ‘Why did a global proletarian revolution not occur?’ This line of inquiry was soon supplanted by psychological interpretations, often grounded in Neo-Kantian conceptions of mind and consciousness – approaches marked by methodological subjectivism and limited empirical verifiability.

With the rise of modern neuroscience in the mid-twentieth century, however, some of the issues that preoccupied early social thinkers, for example, imitation, gained renewed attention. This revival was enabled by discoveries concerning neural mechanisms and by the advent of neuroimaging technologies, such as functional magnetic resonance imaging (fMRI), which allow empirical investigation of cognitive and affective processes in a social context.

In retrospect, social theory neither succeeded, nor perhaps could have succeeded, in advancing significantly without relying on mentalist or cognitive concepts. The very delineation of the boundaries and scope of social theory – particularly within sociology as an autonomous discipline concerned with macrosocial phenomena – rests upon cognitive premises. Max Weber, for example, defines social action through the concept of ‘subjective meaning,’ which presupposes interpretive and cognitive capacities. Similarly, Emile Durkheim conceptualizes sociology as a cognitive science, focused on collective consciousness and the categories of thought that make social life possible (Durkheim 1982 [1895]: 40–42). Even rational choice theory, although formally constructed upon normative models of behavior, remains explicitly cognitive, despite its abstract and often unrealistic conception of rationality – a limitation that calls into question its validity as an explanatory framework for human action (Elster 1985: 8–10).

Contemporary social theory is often regarded as the ‘uncomfortable heir’ to this tradition – formally respected, yet increasingly distant from growing demands for empirical rigor and integrative scope (Turner 2007). Sociologist Stephen Turner aptly uses the term ‘uncomfortable’ to describe the persistence of key classical concepts that no longer correspond to contemporary knowledge about the mind and brain, and in some cases directly contradict it. Yet this disconnect rarely provokes serious concern within established sociological paradigms. Why, then, has the mismatch between outdated social categories and modern cognitive-neuroscientific findings not become a central intellectual issue for today's social scientists? One possible reason is that many sociologists have long abandoned the ambition to be realists about the mental. Instead, they concentrate on discursive constructions or employ terms that no longer have clear correlates in objectively identified cognitive processes, as established by neuroscience and cognitive science. This retreat from realism – whether driven by methodological postmodernism or epistemological skepticism – limits the possibility of integrating sociology more deeply into the interdis-

ciplinary scientific context now dominated by biological and cognitive approaches. The concept of collective memory illustrates this problem particularly well.¹ In its original formulation, as defined by Émile Durkheim, collective memory carries a realist psychological interpretation: it is conceived as an indispensable part of the collective consciousness, whose identity is secured both by its collective status and by its causal relationship to individual consciousness (Halbwachs 1980 [1950]: 48–49).² Within this framework, the mental is not merely present but central. Today, however, such an explanation has largely been abandoned. Contemporary rearticulations of the concept often employ the vocabulary of ‘discourse,’ marking yet another departure from mental and cognitive dimensions. Clifford Geertz’s reduction of culture to ‘text’ effectively decapitated the sociological subject. By treating collective memory and culture as strictly discursive formations, this tradition created a ‘sociology without minds.’ Metaphors like ‘minds filled with presuppositions’ became heuristic crutches, masking a profound explanatory deficit: how exactly does a symbol rewrite a neural connection? His followers, among them William Sewell, continue this discursive turn, reconceptualizing collective memory as a product of representations and narratives, detached from any stable connection to cognitive processes (Geertz 1973; Sewell 2005).

Within this discursive framework, expressions such as ‘minds filled with presuppositions’ are used with metaphorical ease, often without addressing how the mind – or the brain – could in fact be ‘filled’ with such presuppositions (Turner 2007). Importantly, authors defending such positions are not obligated to provide explicit explanations: in their approach, these phrases function as useful analogies for grasping complex cultural and social phenomena rather than as claims to describe actual causal mechanisms. Nevertheless, this strategy leaves substantial gaps in the explanatory framework. Analogies, while heuristically effective, do not advance the empirical investigation of the cognitive and neural mechanisms underlying social phenomena. Relying on future sciences to validate these loose metaphors is distinctively anti-intellectual. It represents a retreat from causal realism into a ‘safe’ descriptive hermeneutics that avoids the friction of empirical verification. The refusal to engage with the neural substrate is no longer a methodological choice; it is an epistemological fallacy (Gross 1998).

The thesis advanced here is that such avoidance can no longer be sustained – the ‘emperor has no clothes.’ The available evidence on the functioning of mind and brain, though still developing, points decisively in a direction quite different from that pursued by many discursively oriented social theories. The retreat from cognitive concepts in contemporary social theory reflects a broader trend of disengagement from the mental. This is evident in numerous approaches that consciously minimize references to, or integration of, cognitive models.

Bruno Latour's Actor-Network Theory commits an act of ‘cognitive erasure.’ By flattening agency into a symmetrical relationship between humans and microbes/objects, Latour achieves analytical elegance at the cost of explanatory emptiness. This ‘flat ontology’ ignores the singular evolutionary feature of the human actor: a nervous system capable of intentionality, simulation, and counter-factual thinking (Latour 1987). While this conceptual leveling is analytically valuable for examining hybrid forms of sociality, it simultaneously eliminates the cognitive processes underpinning human action. As a result, the explanatory potential of network theory for capturing the complexity of social interactions remains limited, producing models that are overly simplified and disproportionate to empirical reality.

An even more illustrative case is ‘practice theory,’ which exhibits a pronounced tendency to emphasize ‘assemblages of objects’ and material practices at the expense of presumed mental content. The work of Andrew Pickering and John Pickstone exemplifies this orientation, highlighting technological and instrumental aspects of social action while downplaying its cognitive dimensions (Pickering 1995; Pickstone 2000). Here too, the retreat from the cognitive reflects a broader disengagement from the mental, characteristic of contemporary sociological thought.

Both actor-network theory and practice theory reveal a prevailing fashion in sociology: the systematic avoidance of cognitive concepts in favor of material, discursive, or hybrid explanatory frameworks. While these approaches introduce innovative analytical perspectives, they also expose profound limitations. Their focus on material objects and practices, at the expense of mental and cognitive dimensions, risks reducing social action to interactions devoid of intention, motivation, or cognitive depth. Consequently, they neglect essential aspects of agency and yield incomplete, often unconvincing, explanations of social phenomena. This deficit is particularly evident in concepts such as Mark Granovetter's ‘weak ties’ – a notion that, although innovative

and influential in economic sociology, incorporates minimal reference to conscious decision-making and limited cognitive content (Granovetter 1973).³ It functions as an empirically effective yet theoretically ‘flat’ model, in which agents operate within networks more according to structural dependencies than through deliberate, meaningful action. While such models offer analytical value, they simultaneously expose the extent to which social theory loses explanatory power when robust concepts of action and cognition are absent. In this sense, weak cognitive concepts yield weak theoretical outcomes. They undermine sociology’s ambition to account for the complexity of the social world, leaving the field vulnerable to displacement by cognitive neuroscience and the behavioral sciences. It is precisely these disciplines – equipped with empirical tools such as brain imaging and behavioral experimentation – that are able to generate more grounded explanations of central social concepts. For example, notions such as ‘trust’ are now studied with remarkable precision in behavioral economics and social neuroscience, often producing findings that surpass, in depth and persuasiveness, analogous concepts in traditional sociological theory (Fehr and Fischbacher 2005; Fehr *et al.* 2005).

The stigmatization of cognitive approaches within sociology can be interpreted as a deliberate refusal to engage with the development of the cognitive paradigm. Yet this refusal risks consigning sociology to a marginal position vis-à-vis the cognitive sciences – a kind of ‘ghetto’ imposed not externally but internally. Such marginalization deprives sociology of its central purpose: to explain the social world through the integration of concepts of consciousness, cognition, and action. Without them, sociology risks becoming a discipline rich in terminology yet impoverished in explanatory capacity, unable to provide empirically validated accounts of the very phenomena it seeks to analyze.

The current state of social theory is thus complex and contradictory. Many inherited concepts of mental life, intellectual traditions underpinning classical theory, and later sociological frameworks have either been discredited or no longer align with contemporary debates on cognition in the cognitive sciences. Escaping the mental through cognitively impoverished alternatives – such as network approaches – does not provide a productive solution. On the contrary, it represents a deviation from the essential vocation of social theory: to explain the social world through concepts such as consciousness, action, and cognition.

Questions of cognition, consciousness, and their biological bases – including the physical properties of the brain – remain foundational for any theoretical framework aspiring to explanatory power over human behavior and social structures. Any plausible conception of the mental in social theory must therefore be compatible with empirically verified properties of its substrate, the brain. This is an imperative that cannot be ignored without undermining the epistemological validity of theory itself.

At the same time, recognizing the need for social theory to engage with the cognitive sciences does not mean mechanically transplanting their concepts. Such an approach would be as unproductive as their outright neglect. What is required is not replacement but continuity: a systematic and methodological integration of concepts of cognition and consciousness, adapted to the specific problem horizon of social theory. This is not a matter of adaptation but of deep epistemological transformation – one that enables active dialogue with contemporary science of the brain and mind while preserving the specificity of social-theoretical inquiry.

The historical example of thinkers such as Émile Durkheim and Max Weber is instructive. They not only followed the scientific and philosophical debates of their time but also used them to reform and enrich their analytical frameworks. Their willingness to engage with new ideas, coupled with critical reflection on their own methods, was decisive for their theoretical productivity. Such openness, however, is far less common today. In the twentieth century, many sociologists, unwilling to reconsider their core categories in light of scientific advances, ceded leading positions to other disciplines – particularly cognitive neuroscience and the behavioral sciences. Renewed engagement with contemporary science requires not only examining what has been achieved by the ‘winners’ but also reassessing the functions and tasks of social theory itself. This implies adopting an interdisciplinary stance in which social theory neither subordinates itself nor isolates itself. Only in this way can it reclaim its relevance and continue to fulfill its central mission: to interpret and explain social reality in its full complexity.

Let us, then, look back two centuries and ask: what happened when social theory last seriously engaged with questions of cognition and the brain? How did early thinkers preceding classical sociology approach these issues? And what lessons might we draw from their efforts today, in an era of rapid advances in cognitive science and neuroscience? Although some of their concepts now appear outdated, ear-

ly nineteenth-century thinkers represent an important stage in the dialogue between social theory and the science of the mind.

THE FIRST WAVE: FROM COMTE'S ORGANISM TO SPENCER'S SYSTEMS

It is time to ‘dust off’ their ideas and recall figures such as Auguste Comte, John Stuart Mill, Herbert Spencer, William James, and James Baldwin.

Auguste Comte, often called the ‘father of sociology,’ was a sharp critic of psychology, which he saw as belonging to the metaphysical stage of intellectual development – a stage science must transcend. In his effort to establish sociology as a positive science, Comte excluded psychology from his model of knowledge and instead proposed phrenology – a discipline that was later discredited (Turner 2007).⁴ This decision, although understandable in the context of his time, significantly limited the potential for integration between social theory and the psychological or cognitive sciences. By contrast, John Stuart Mill insisted on the central role of psychology in constructing the social sciences. He proposed associationist psychology, based on the connections between ideas and experiences, as a foundation for understanding human behavior and social phenomena. While innovative, this vision failed to establish a lasting influence, as associationism gradually gave way to more empirically and neuroscientifically oriented approaches (Mill 1965 [1843]: 24–36).

Herbert Spencer introduced an evolutionary perspective into social theory, viewing moral and cognitive intuitions as products of biological evolution. He laid the groundwork for an approach later continued by James Mark Baldwin, a pioneer in synthesizing evolutionary theory and psychology. Baldwin explored how evolutionary mechanisms shape the development of cognitive capacities and social interactions – anticipating certain contemporary paradigms in cognitive neuroscience (Spencer 1855, 1857; Giddings 1922: 3; Baldwin 1894, 1996 [1896]).

William James occupies a particularly prominent place within this trajectory. As one of the founders of pragmatism and functional psychology, he emphasized the adaptive role of thought and emotions in the social context. For James, consciousness is not a fixed substance but a ‘stream of consciousness,’ whose functions should be studied in terms of their utility for survival and social adaptation.⁵ His work

points toward an integration between psychology and social theory – a path that has become increasingly relevant today.

The very term ‘sociology’ originates from Comte's *Course in Positive Philosophy* (1830–1842), in which he presented his theory of the three stages of intellectual development: theological, metaphysical, and positivist. Although Comte's positivism has had a lasting impact on the methodology of social theory, his skepticism toward psychology left a profound mark, from which the discipline struggled to free itself (Comte 1986 [1830–1842]; Schutt and Turner 2019: 359). Comte envisioned an interdisciplinary relationship between biology and sociology, encapsulated in his conception of humanity as a collective ‘organism.’ This idea, derived from classical Greek philosophy, was later elaborated in the concept of the ‘superorganism’ (Schutt and Turner 2019: 361). Society, in his view, functions as a living body composed of interconnected parts, each performing a specific role. Spencer further developed this organic analogy, describing social structure through biological metaphors – heart, nervous system, and musculature – emphasizing interdependence as the basis of stability.

Comte also recognized that increasingly complex social structures generate both opportunities and risks. To prevent social ‘pathologies,’ he identified three principal stabilizing mechanisms: (1) interdependence among institutions, (2) centralization of authority, and (3) shared cultural values to ensure integration. Although first articulated by Comte, these ideas found full elaboration in Spencer's *Principles of Sociology* (Spencer 1899 [1876–1896]). More on Spencer, whom Russell Schutt and Jonathan Turner describe as the ‘forgotten giant of early sociology,’ will follow shortly.

For now, let us return to a lesser-known but significant aspect of Comte's thought: his hostility toward psychology. As noted, Comte excluded psychology from positive science, dismissing it as metaphysical and speculative. In its place, he endorsed phrenology, a theory linking mental faculties to specific anatomical regions of the skull. According to Comte, phrenology promised a ‘scientific’ basis for understanding the mental without reliance on introspection (Scharff 1995: 19–44). Although thoroughly discredited today, phrenology played a formative role in early neuroscientific thought. Figures such as Paul Broca worked within this tradition, producing anatomical research that crucially advanced modern understandings of language and brain localization. Thus, however flawed, phrenology helped pave the way

toward more accurate and empirically grounded neuroscientific theories.

By the late nineteenth and early twentieth centuries, localizationism had become dominant: the view that distinct mental functions – language, memory, emotion – reside in specific brain regions. This model guided neuroscience for decades. Yet with the advent of modern imaging technologies such as fMRI and EEG, it became clear that brain activity is more dynamic and integrated than early localizationism suggested. Evidence shows that cognition emerges from the coordinated activity of multiple brain areas functioning as networks. Today, strict localizationism has few adherents, largely replaced by paradigms of connectivity and plasticity.

This historical trajectory reminds us that science progresses not linearly but through institutional mechanisms of self-correction. Even erroneous theories, such as phrenology and early localizationism, stimulated knowledge development. They served as temporary ‘scaffolds,’ dismantled in time but indispensable to the eventual edifice of modern science.

Returning again to the nineteenth century, John Stuart Mill's psychology illustrates the role of associationism in shaping the social sciences. Mill argued that mental processes, especially learning, rest on the linking of ideas derived from individual experience. The mind, he proposed, functions by associating ideas through repetition, similarity, and causal connections, thereby constructing increasingly complex structures of thought and knowledge. Contemporary cognitive scientists such as Jerry Fodor have criticized such connectionist models as anachronistic forms of associationism (Fodor and Pylyshyn 1988: 19–20; Bates and Elman 1993). Yet, ironically, modern cognitive neuroscience reintegrates aspects of these early ideas. Neuroimaging indicates that brain activity is realized through clusters of electrical impulses, which interact dynamically across networks rather than remaining confined to isolated regions. This yields a model of thought as the outcome of coordinated activity among neural regions, forming complex, interconnected cognitive systems.

Within this context, Spencer's original ideas represent a distinctive development of the association-localization combination, inspired not by anatomy *per se* but by his broader evolutionary framework. For Spencer, psychology was the natural field in which to apply evolutionary principles. He conceived the mind as an adaptive mechanism

evolving in response to the environment, with physical differentiation of brain regions playing a crucial role in the specialization of mental functions. His concept of structural and functional differentiation, applicable both to biology and sociology, posits that complex systems develop through specialization, as distinct parts assume specific functions.

This vision placed Spencer at the forefront of efforts to integrate the biological with the social, the cognitive with the institutional. Yet paradoxically, the very principle that bridged brain and society was later neglected in much of sociological thought. His ideas were often simplified or distorted – first by contemporaries, later by critics – contributing to their marginalization.

SPENCER AS A COMPLEXITY SCIENTIST

Spencer's work serves not as a historical relic, but as a prototype of modern Complexity Science. He anticipated the fundamental axiom of systems biology: that structural differentiation is a mechanism for managing entropy. By defining social evolution through the specialization of functions, Spencer sketched the first non-metaphysical model of information processing in complex systems. Explicitly affirming localized brain functions on biological grounds, he wrote:

No physiologist who calmly considers the question in connection with the general truths of his science, can long resist the conviction that different parts of the cerebrum subserve different kinds of mental action.

And further:

Localization of function is the law of all organization whatever [...] every bundle of nerve-fibres and every ganglion, has a special duty [...] Can it be, then, that in the great hemispherical ganglia alone, this specialization of duty does not hold? (Spencer 1855: 607–608)⁶

Spencer's position reflects the central principles of localizationism – a paradigm that dominated neurology in the late nineteenth and early twentieth centuries. From his evolutionary standpoint, Spencer regarded the brain as an organ that, much like social systems, develops through processes of specialization and functional differentiation. His arguments found empirical resonance in the work of Paul Broca and Carl Wernicke, who demonstrated that specific brain regions govern particular cognitive and behavioral functions.

Crucially, Spencer understood that specialization without integration leads to systemic collapse. His focus on the ‘nervous system’ of society was not merely an organic metaphor but an early cybernetic insight: distinct functional units (organs/institutions) require a high-bandwidth control network to maintain homeostasis. This effectively prefigures contemporary network-based models of connectivity.

A compelling parallel arises between the neurological principle of specialization and Spencer's social theory. In both domains, he deploys differentiation as a key explanatory principle for complexity and resilience. However, a crucial distinction emerges: while neurological claims can be empirically verified – through, for instance, the study of brain lesions – sociological concepts such as ‘location,’ ‘duties,’ or ‘functions’ often remain theoretical constructs, dependent on interpretation rather than direct observation.

This difference generates a persistent methodological dilemma, summarized by Stephen Turner: functional analysis in sociology may either restate trivial observations in abstract form – for example, ‘the state exercises authority’ – or construct hypothetical entities such as a ‘cultural subsystem’ tasked with ‘maintaining patterns.’ The former risks banality, while the latter risks detachment from empirical grounding. Parsons and Luhmann exemplify this second path. Parsons, in his effort to build a comprehensive theory of social structures, relied heavily on analytical fictions such as the ‘cultural subsystem’ to explain the reproduction of norms and values. Luhmann radicalized this move, describing society as a self-referential system of communications governed by the logic of autopoiesis (Turner 2007). While analytically sophisticated, these theories frequently operate at a high level of abstraction, rendering empirical validation difficult. This methodological gap underscores the tension between biologically informed, evolutionarily grounded approaches and traditions rooted in theoretical formalism. In contrast, Spencer's framework, emerging from evolutionary logic, implies the possibility of empirical testing. This is why functionalism in the style of Parsons and Luhmann is often criticized for offering explanations based on imagined structures, whereas Spencer's model aimed to remain closer to observable mechanisms.

This tension leads to a central question for the future of social theory: can it move beyond abstractions to incorporate biological and neuroscientific concepts, or will it remain bound to deductive, empirically elusive paradigms?

Turner recalls with irony Parsons's famous remark: ‘Who reads Spencer now?’ (Turner 2007) Decades later, the standard sociological

model – the tabula rasa assumption that humans are ‘blank slates’ shaped exclusively by socialization – continues to be defended dogmatically. This entrenched perspective not only oversimplifies human nature but also sustains resistance to evolutionary analyses of human beings and their practices (Schutt and Turner 2019: 359). By excluding biology, sociology limits its explanatory reach. Sociology's erasure of Spencer was an act of boundary-work, establishing the discipline's autonomy by purging its biological foundations. However, as Schutt and Turner note, this theoretical hygiene threw the baby out with the bathwater. By rejecting Spencer's evolutionary framework, sociology denied itself the very tools needed to explain emergent order – leaving the field vulnerable to colonization by evolutionary psychology today (Schutt and Turner 2019). Objectively, Spencer's concepts of structural and functional differentiation provided a framework integrating biological and social evolution. This makes his work highly relevant for contemporary interdisciplinary research, even if it remains overshadowed by more fashionable yet less rigorously grounded paradigms. In this respect, I concur with Schutt and Turner: a reappraisal of Spencer is overdue, particularly given current efforts to establish a unified analytical space between the social and biological sciences. Against Parsons's quip, Spencer deserves renewed attention today.

According to Schutt and Turner (2019), much of the misrepresentation of Spencer originates in the conflation of his sociology with his moral philosophy. This tendency, present among his contemporaries, persisted through the twentieth century. It was in the ethical work *Social Statics: Or, Conditions Essential to Human Happiness Specified and the First of Them Developed* (1880 [1851]) that Spencer coined the phrase ‘survival of the fittest’ – nearly a decade before Darwin introduced ‘natural selection’ in *On the Origin of Species* (1859), and more than two decades before Spencer's sociological writings gained wide circulation with the editions of 1873–1874.

Evolution occupies a central place in Spencer's thought and serves as a foundational principle of his philosophy. Although much of his work postdated Darwin's, Spencer largely bypassed natural selection in favor of his own evolutionary framework. He argued that all domains – physical, biological, psychological, sociological, and moral – are governed by universal forces driving progression toward greater complexity. This process of complexification produces either disintegration or higher levels of organization through the aggregation, differentiation, and integration of constituent matter (Turner 2007). In Spencer's sociol-

ogy, these forces act upon ‘social matter’ – human populations – whose growth generates social differentiation and, in turn, pressures for innovation in four domains: (1) production to secure resources; (2) reproduction and maintenance of structures; (3) distribution of resources and information; and (4) regulation via central authority and unifying cultural symbols (Schutt and Turner 2019). Societies that adapt successfully not only preserve structural integrity but initiate new cycles of growth and differentiation, strengthening their organization and resilience. Societies that fail either disintegrate or succumb to more adaptive rivals.

For Spencer, war played a central role in this evolutionary process. It intensified selective pressures and accelerated systemic consolidation through discipline and centralized power. Consolidation extended across production, reproduction, distribution, and regulation. Yet this same centralization produced growing inequality and stratification, generating internal pressures for new regulatory mechanisms often reliant on coercion. The more power concentrated, the greater the risks of destabilization. Thus, paradoxically, success often sowed the seeds of future disintegration through accumulated contradictions and conflicts.

In his final years, Spencer articulated an alternative path to break this destructive cycle. He argued that the expansion of markets – an outcome of innovations in distribution – could reduce reliance on coercion and gradually replace war with economic exchange on a global scale. Economic integration, he believed, fosters interdependence among societies, thereby tempering the impulse toward conflict. Though articulated in the nineteenth century, this vision anticipates later theories such as world-systems theory, which highlight the centrality of economic processes in promoting global stability and peace (Turner 2007).

Russell Schutt and Jonathan Turner emphasize that the core ‘error’ behind widespread criticisms of Spencer's sociology lies in its conflation with the utilitarian premises articulated in *The Principles of Ethics*. It is there that his defense of the ‘survival of the fittest’ becomes explicit – an idea often interpreted as individual competition for resources (Spencer 1897 [1892–1893]). Over time, this concept became inextricably linked to his view of societies as ‘super-organisms’ and their evolutionary dynamics: population growth, resulting selective pressures, and the need for new forms of organization in the spheres of production, reproduction, distribution, and regulation. By contrast, in *The Principles of Sociology*, Spencer avoids overtly utili-

tarian positions and rarely employs ‘survival of the fittest,’ except when analyzing intersocietal conflict rather than individual struggle (Schutt and Turner 2019: 361). His sociological work focuses on the evolution of societies as complex systems whose structural and functional traits emerge in response to selective pressures. Although he largely develops this systemic perspective, Spencer does not disregard individual action; he underscores its importance for understanding social processes (Spencer 1873: 330), though he does not elaborate extensively on it in *The Principles of Sociology*. Instead, his more detailed reflections on individual behavior appear in *The Principles of Ethics*, where he advances the thesis of the ‘permanent supremacy of egoism over altruism.’ This view reflects his evolutionary philosophy of adaptation and survival. While Émile Durkheim criticized Spencer’s utilitarianism, he later acknowledged individualism as a fundamental aspect of human nature – a concession that lends retrospective support to Spencer’s perspective (Schutt and Turner 2019: 361).

Spencer’s intellectual legacy thus offers two pathways for linking biology and sociology through evolutionary theory. On one hand, his sociology provides a macro-theory of social evolution, analyzing social structures by analogy with biological organisms (Spencer 1899 [1876–1896]). Within this framework, conflict between social systems and institutions operates as a primary driver of transformation and progress, analogous to the struggle for existence in biology. On the other hand, his ethical writings – first in *Social Statics* (1851) and later in *The Principles of Ethics* (1892–1893) – emphasize competition among individuals within societies. For Spencer, such competition is both inevitable and beneficial, as it fosters adaptation, personal development, and refinement of social organization. In this sense, he introduces a micro-theory of individual evolution that complements his macro-sociological perspective (Spencer 1880 [1851]; 1897 [1892–1893]).

The intellectual context in which Spencer worked is also crucial. Following the publication of the fifth edition of Darwin’s *On the Origin of Species* (1869) – the edition in which Darwin incorporated Spencer’s phrase ‘survival of the fittest’ – the connection between biology and sociology gained legitimacy. Over time, however, Spencer’s sociological theories came to be interpreted primarily through the lens of his ethical views, leading to a reductionist association between the two. This process culminated in Spencer’s reputation as an ideologue of Social Darwinism. Such a view, although widespread, oversimplifies and distorts his philosophy by ignoring its complexity and multi-

dimensionality. Notably, Spencer died in 1903, before Social Darwinism became entrenched in certain intellectual and political circles. This fact undermines efforts to hold him accountable for ideological trends that only crystallized after his death (Offer 2014; Schutt and Turner 2019: 362).

Returning to Spencer's core sociological framework: he argued that societies differentiate along four primary axes of institutional organization: production, distribution, reproduction, and regulation. These represent the dimensions through which selective pressures, generated by population growth, shape the evolutionary dynamics of social systems. Jonathan Turner and Alexandra Maryanski's recent book *Biosocial Evolutionary Analysis: Reconciling Biology, Psychology and Sociology* (2024), synthesizing decades of scholarship, provides a contemporary elaboration of these ideas.

The authors emphasize that production concerns securing resources for socio-cultural maintenance; distribution involves structures enabling the flow of resources, people, and cultural ideas; reproduction refers to replacing and perpetuating social structures and populations; and regulation entails both (a) exercising social control over individuals and (b) consolidating organizations through authority and symbolic systems – ideologies, values, and norms (Turner and Maryanski 2024: 8). Although Spencer did not frame his analysis in precisely these terms, his theory implicitly addressed how demographic growth and differentiation generate selective pressures on four adaptive challenges: (1) extracting and distributing resources; (2) reproducing individuals and institutions; (3) facilitating the circulation of goods, people, and information; and (4) legitimizing authority through cultural symbols that stabilize coordination. In Spencer's view, population growth is not merely quantitative but a structural-dynamic process driving the emergence of new institutions and cultural forms (Schutt and Turner 2019: 362). These processes intensify under specific conditions – demographic expansions, ecological transformations, or heightened competition with neighboring societies. Selective pressures, therefore, may be internal (demographic, ecological, structural) or external (intercommunity competition, wars, and migrations), each activating different axes of adaptation (Turner and Maryanski 2024: 9).

From this perspective, Turner and Maryanski note that while Spencer's early writings emphasized resource competition and war as catalysts of social evolution, his later works shifted toward recognizing economic development as a more sustainable adaptive strategy. He increasingly highlighted production and distribution through market exchange

as central mechanisms of adaptation – both within and between societies. Even in competitive contexts, such exchange promoted more adaptive outcomes by stimulating innovation, improving efficiency, and enabling voluntary coordination among social actors.

In his final years, Spencer grew sharply critical of centralized state power. He argued that coercive governance inevitably concentrates resources and produces deep inequalities, generating crises of regulation and integration that erode systemic resilience. Against this backdrop, Spencer came to see decentralized markets and voluntary associations not only as economic alternatives but as viable foundations for sustainable social and cultural development (Turner and Maryanski 2024: 10–11).⁷

Following Spencer's example, all functionalist theories developed during the second half of the twentieth century can be revisited through the lens of selectionist arguments – an approach that could potentially remedy several implicit limitations of traditional functionalist paradigms, particularly their tendency toward teleology and assumptions of normative stability. Yet this potential remains largely underexplored in contemporary sociological assessments of Spencer and his work. As noted earlier, Spencer is often narrowly cast as a dogmatic functionalist, despite his consistent emphasis on the possibility of social system disintegration – or the collapse of the so-called ‘social super-organism’ – when selective pressures are inadequately addressed.

Disintegration, in Spencer's framework, arises precisely when participants in the social order fail to respond adaptively along the four primary axes of institutional organization: production, reproduction, distribution, and regulation. Thus, there is no a priori guarantee of social harmony or the automatic emergence of integration; rather, his theory explicitly allows for – and indeed insists upon – the potential for structural instability and evolutionary regression. Critics of Spencer, including early Émile Durkheim, often dramatize and exaggerate the utilitarian elements of his theory.⁸ Such readings reduce Spencer's nuanced reasoning to a schematic logic of individual interest, thereby distorting the systemic perspective he actually advances. This distortion is further reinforced by interpretations from supposed followers, such as William Graham Sumner, who emphasize almost exclusively the notion of ‘survival of the fittest’ individuals. In doing so, one of the most significant insights in Spencer's theoretical corpus is overlooked: selection operates on multiple levels – not only at the individual level but also at the level of corporate units, which form the institutional and organi-

zational framework of society (Schutt and Turner 2019: 362–363). In fact, it is precisely the multilayered nature of selective mechanisms that endows Spencer's sociological theory with its distinctive analytical power. His account of the evolution of social and institutional structures offers an original perspective that transcends the limitations of both classical functionalism and reductionist individualism. In this regard, Schutt and Turner rightly emphasize that Spencer's most enduring contribution lies not in his social philosophy or ethics, but in his sociological analyses, which lay the foundation for an explanatory evolutionary theory. Positioned at the intersection of sociology and Darwinian insights, this theory holds considerable potential to illuminate the complex mechanisms through which human societies develop, adapt, and transform within the context of their ecological, biological, and cultural environments (Schutt and Turner 2019: 362–363).⁹ Properly understood, Spencer's framework is not merely a historical curiosity; it offers theoretical tools with contemporary relevance for analyzing processes of social evolution and institutional dynamics. Beyond the confines of classical sociology, Spencer is now also recognized as one of the pioneers of modern evolutionary psychology. In my reading, perhaps the most influential aspect of his intellectual legacy is his avant-garde and daring thesis that fundamental human cognitive capacities, including moral intuitions traditionally associated with reason and ethics, are products of evolutionary processes. As I examine in detail in *Homo moralis: A Neurosociological Theory of Moral Capacity and Social Regulation* (Georgiev 2025a), this idea is now validated as a foundational proposition in the emerging field of neurosociology.

A parallel argument is found in the work of James Baldwin, the American psychologist, whose concept – today known as the ‘Baldwin effect’ – serves as a significant interdisciplinary bridge between biology and social theory. The core idea is that organisms, including humans, acquire new skills and behavioral patterns through adaptive responses to environmental pressures, which, although initially non-genetic, may over time become stabilized through natural selection. The most controversial aspect of this hypothesis is its suggestion that socially acquired behavior can influence biological evolution – a claim that, while seemingly at odds with classical neo-Darwinian paradigms, must be understood in the context of the period in which it was formulated. It is worth noting, however, that Lamarck's ideas similarly appeared entirely plausible within the context of his own era.¹⁰ In the

spirit of Gabriel Tarde, Baldwin emphasizes imitation as a primary mechanism of social learning. He argues that the inevitable variations arising from imperfections in the imitation process generate selective potential (Baldwin 1894, 1996 [1896]). The social environment, understood as a complex of behavioral patterns, not only provides templates for imitation but also acts as a filter for their persistence through social rewards or sanctions. In this way, even the deep motivational structures of the individual are shaped and selected within culturally specific contexts – an idea with significant implications. If learned behaviors can, under certain conditions, become physiologically stabilized, then culturally acquired traits may potentially be transformed into innate predispositions. In other words, learning processes may acquire a physiological substrate.

This perspective suggests that social selection of motivations and behaviors can exert a profound influence on the development of the human psyche. From this emerges the concept of the ‘socialization of the mind’ – an idea that both socializes mental functions traditionally conceived as biological and lays the groundwork for their biologization through culturally mediated evolution. Despite this promising synthesis, late twentieth-century academic sociology largely ignored the biological dimension of this dynamic. The concept of the socialization of the mind was treated primarily as a cultural construct, rather than as a process capable of inducing biological adaptations. Consequently, the opportunity for an integrative theory connecting cultural, social, and biological evolution within a unified framework was largely overlooked.

THE NEURAL ARCS OF SIMON PATTEN: ANTICIPATING CONNECTIONISM

When Simon Patten, nominally a professor of economics, published *The Theory of Social Forces* in 1896, he effectively built upon an already established theoretical foundation by incorporating neurological knowledge that was gradually gaining recognition toward the end of the nineteenth century. Patten sought to construct a social theory markedly different from that of Herbert Spencer. His new theory was grounded in an (archi)neuroscientific model, in which social forces are explained in terms of neurological processes. In his work, Patten formulates the idea that:

In any network of currents like the human brain the secondary currents are of the greater importance. They bind the var-

ious centers into a harmonious whole reflecting sensations from one center to another [...] the whole mind is thus aroused to a similar activity [...] the process of reflection separates from each other the elements which are united in the obscure currents. [...] In this way these elements are purified by isolation, and each one is carried to that center most fitted to receive it (Patten 1896: 22, cited in Turner 2007).

Patten effectively anticipates the core tenet of modern connectionism and Hebbian learning: that repeated co-activation strengthens synaptic weights. Decades before the digital neural network revolution, Patten conceptualized the ‘social’ not as an external force, but as a pattern of reinforced neural pathways.¹¹ Following this line of thought, Patten advances a series of arguments suggesting that evolutionary forces, driven by adaptation to specific environmental conditions, operate in parallel and shape mental mechanisms. This is a clear articulation of neural Darwinism. Patten posits that social forces operate essentially as selection pressures on neural architecture. The ‘purification of neural connections’ he describes is functionally identical to what contemporary neuroscience identifies as synaptic pruning and Long-Term Potentiation (LTP) involved in habit formation. He terms this process a ‘neuro-cognitive mechanism,’ based on the repetition of the ‘neural arc’ – the connections between neurons. In this framework, neural activity is not merely a biological function but a fundamental regulator of psychosocial development.

Patten draws inspiration from the philosophical ideas of John Locke and David Hume regarding the ‘vividness of ideas,’ interpreting neural selection as a ‘purification of neural connections.’ This purification produces clear and strong ideas in the mind – a process through which both individual cognition and social reality are structured. He contends that customs and institutions form in a similar manner through evolution, eventually becoming part of the subjective environment that shapes the mind. In this context, Patten distinguishes between the objective environment, composed of original impressions, and the subjective environment, created through the activity of interconnected neural centers:

Each impression from the outer world has added to it certain ideas from the subjective environment and the joint product is projected by the mind and seems a part of the objective world. Customs, habits, institutions and ideals are as objective and real to individuals as any part of the outer world (Patten 1896: 53, cited in Turner 2007).

In this way, Patten constructs a conception of social reality that avoids the problematic notions of collective psychology or an objective social mind, as proposed by Émile Durkheim. The concept of 'social forces,' highlighted in the title of his work, gains particular significance: learning occurs within the social environment through actions aimed at satisfying basic needs and pursuing pleasures, as well as achieving altruistic goals related to survival. The term 'social forces' thus encompasses fundamental psychological motivators that play a specific role in the creation and maintenance of social life – a concept addressing core questions of sociological interest at the time. Among the notable theoretical contributions influenced by this approach are Franklin H. Giddings's work on 'social causation' and Charles Ellwood's *Sociology in its Psychological Aspects* (1912), one of the first major studies in social psychology. Nevertheless, despite its forward-looking character, this intellectual legacy has largely been abandoned by contemporary academic sociology, marginalized in favor of dominant research paradigms.

This, however, is not the end of the story. Charles Ellwood, active at the turn of the nineteenth and twentieth centuries, demonstrated a receptive attitude towards Darwinian insights while avoiding the reductionist approach characteristic of some later sociobiologists and evolutionary psychologists. By rejecting biological determinism, Ellwood integrated evolutionary perspectives with social-psychological analysis without reducing social behavior to biological instincts or genetic programs. Simultaneously, he criticized the notion of causal autonomy attributed to the holistic 'social,' as postulated by Durkheim. He rejected the idea that society constitutes an independent reality analyzable apart from the psychological mechanisms involved in social processes. Ellwood foreshadows the 'Social Brain Hypothesis' by insisting that the psychological and the social are co-constitutive. He rejected the sterilization of sociology from psychology, arguing that social phenomena are not abstract entities but emergent properties of inter-mental processes. For Ellwood, the brain did not evolve in isolation to solve logical puzzles, but specifically to navigate the complexities of group living (Ellwood 1925: 453–479).

Ellwood emphasizes that evolutionary perspectives and socially transmitted knowledge are not in conflict; social evolution is realized precisely through the cultural transmission of knowledge and practices. Ellwood grounds social transmission in the materiality of the brain. Anticipating modern neuroplasticity, he argues that 'associative learn-

ing' is the mechanism by which culture writes itself into biology. Social evolution, in this view, is the accumulation of successful neural adaptations transmitted through interaction – a process of physiological scaffolding for cultural complexity. While he does not elaborate on detailed cognitive mechanisms, Ellwood conceives associative learning as biologically based yet socially shaped. This allows him to formulate a concept of social evolution in which the primary driving force is the interaction between the individual's neuro-psychic structure and the social environment in which they develop.

Ellwood's views can thus be described as a form of *de facto* social evolutionism. He treats mutual learning as selective and directed rather than random or arbitrary and recognizes that directional tendencies in social transmission may arise from evolved instincts rooted in human biology. Although he devotes limited attention to the cognitive mechanisms themselves, Ellwood asserts that the social transmission of knowledge and skills constitutes the principal mechanism of social evolution.

Unfortunately, the Darwinian conception of the mind advanced by Ellwood largely fell victim to a powerful generational shift led by proponents of sociological behaviorism (Bannister 1987: 141–142, 193–194). Within a few years, academic social psychology abandoned not only the concept of instinct but also key notions such as imitation, previously foundational in early twentieth-century empirical and theoretical work (McDougall 1921). This shift marginalized the physical reality of psychological facts – a problem perceived as overly complex within the framework of the emerging experimental paradigm dominating social psychology for much of the century.

Despite increasing academic isolation, Ellwood consistently defended instinct theory during a period when concepts like 'attitudes' were interpreted almost exclusively through a behaviorist lens. Late in his career, he published work on the evolution of culture grounded in mutual learning (Ellwood 1927). This evolutionary approach, however, clashed with the emerging anthropological concept of culture, associated with scholars such as Franz Boas, who framed culture as a shared set of assumptions, values, and norms, rather than the product of evolutionary dynamics (Mead 1928: 13; Turner 2002: 74–107). The rise of cultural relativism pushed evolutionary perspectives, including Ellwood's, to the margins of academic discourse. Even anthropologists who did not adopt the relativist paradigm – such as Leslie White – gradually withdrew from debates on the 'big' questions

concerning the evolution of altruism and social morality (Turner 2007). Consequently, Ellwood's evolutionary ideas remained marginalized and underappreciated within the rapidly developing social sciences.

**THE FALLACY OF THE COLLECTIVE MIND:
'A SERVER WITHOUT SOFTWARE'**

Meanwhile, European social theory evolved along a different trajectory, strongly influenced by ideologically driven anti-individualism, positing the existence of an objective collective mind. According to this view, key categories, concepts, and worldviews are collectively experienced by society's members, forming a 'shared mental life.'

The roots of this concept trace back to Hegelian philosophy and Neo-Kantian traditions, represented by thinkers such as Ernst Cassirer. Sociologically, it assumes that different social groups and forms of life are associated with distinct worldviews, and that attitudes, experiences, and norms are collectively produced and shared. Over time, the concept became so entrenched that it was often treated as nearly axiomatic.

However, scrutiny at the level of basic assumptions reveals significant weaknesses, primarily regarding psychological mechanisms. Concepts such as collective structures, shared patterns of thought, and worldviews indeed capture important social phenomena, yet the assumption that they can provide a comprehensive explanation for cognitive processes is highly questionable. The central problem lies in mechanistic plausibility – that is, the absence of a realistic process through which such collective mental structures could form and remain synchronized across multiple individuals.

Turner exposes the 'ghost in the machine' fallacy of cultural sociology. Without a central 'server' to synchronize meaning across individual minds, the concept of a monolithic Collective Conscience collapses. What actually exists is distributed cognition – a decentralized network of neural adaptations where 'shared meaning' is a statistical probability of similar neural firing patterns, not a mystical metaphysical substance. It fails to provide a plausible, physically realizable model explaining how people actually perceive, organize, and transmit information socially. From this perspective, the absence of a 'server' is sufficient reason to reject theories postulating an autonomous objective mind, cultural paradigms, or worldviews as stable, self-sustaining structures. While these ideas may hold conceptual value and human-

istic appeal, they remain problematic and, in essence, unrealistic from a cognitive and mechanistic standpoint (Turner 2007).

Where does this leave us? The paradigm dominating U.S. social psychology after 1925 generated a substantial body of empirical findings, yet it failed to account satisfactorily for the nature of the mind. This development was associated with the adoption of the ‘shared assumptions’ model – an ontological construct that could not be translated into a psychologically plausible narrative. Its primary weakness lies in the lack of clearly defined cognitive mechanisms through which purportedly ‘shared’ schemas, categories, or attitudes could be realistically perceived, internalized, and maintained by individuals. Without an objective mechanistic link between social-level descriptions and individual mental processes, the model remains conceptually elegant but explanatorily ineffective.

It is noteworthy that thinkers displaced by this new paradigm – such as Charles Ellwood and Simon Patten – also failed to solve this fundamental problem. Their theoretical attempts to connect social dynamics with psychological motives and learning processes remained abstract. Consequently, the gap between general descriptions and concrete explanatory questions, such as how social norms, beliefs, and values are formed, maintained, and transmitted, remained wide. Thus, regardless of epistemological position, neither Ellwood's evolutionary approach nor behaviorist reductions succeeded in providing a comprehensive theory bridging the mental and the social.

Today, this structural gap between social description and neuroscientific mechanisms is partially bridged through advances in cognitive neuroscience and interdisciplinary research paradigms. Approaches such as social cognitive neuroscience, the mirror neuron framework, theory of mind, and studies on empathy and moral reasoning open new avenues for linking individual cognition with social context. Nevertheless, some aspects of this gap remain difficult, if not insurmountable, within current scientific frameworks. Contemporary science has, however, clarified the nature of these limitations, enabling the formulation of more modest but realistic scientific goals in social theory and cognitive science. Subsequent sections examine how contemporary theories attempt to bridge this gap via models that integrate social and neuroscientific perspectives – not by reducing one perspective to the other, but by establishing frameworks for their coherent coexistence and dialogue. These efforts seek to combine neuroscientific rigor with sensitivity to social and cultural complexity.

A significant obstacle remains the problem posed by universal mechanisms that ignore contextual specificity. This is both methodological and epistemological, undermining the explanatory value of such approaches and justifying their rejection. The most problematic cases occur in sociobiology, which explains complex social structures and behaviors through universal biological mechanisms, such as genetic altruism or evolutionarily adaptive instincts. Here, longstanding criticisms of Ellwood re-emerge, including accusations of arbitrarily inventing instincts to account for observed social phenomena. William McDougall, a collaborator of Ellwood, articulated this vicious circle clearly: when explaining phenomena such as complex social structures, Ellwood postulated an instinct producing that outcome; subsequently, the existence of the phenomenon was used to validate the instinct. In this way, the hypothesized instinct is retrospectively confirmed by the very phenomenon it was meant to explain – a logical fallacy undermining the theory's validity (McDougall 1921: 91, 331). Contemporary researchers, including Edward Wilson and Daniel Dennett, encounter analogous criticisms, particularly when explaining religion through instinctual mechanisms (Wilson 1998; Dennett 2006).¹² One of the primary challenges of this approach is its tendency to overgeneralize religious phenomena. Religions are often depicted as far more similar than they actually are, which risks obscuring critical distinctions, such as those between magical religions and religions promising salvation, or among different theodicies, each possessing a distinct structure and function within social life (Weber 1976a [1946], 1976b [1946]). These distinctions lie at the core of both classical and contemporary sociological theory, which aims not merely to describe them, but to analyze them as social constructs embedded within institutional and cultural contexts. A further challenge for efforts to integrate social and neuroscientific perspectives arises from attempts to 'culturize' the overreliance on sexual selection as a universal evolutionary mechanism, often assumed to operate uniformly across diverse cultures and historical periods.¹³ A critical distinction must be made between Neurosociology and Evolutionary Psychology (*e.g.*, Pinker 1997). While the latter often seeks to explain behavior through fixed, universal modules (a 'Stone Age mind'), sociology emphasizes context. As Turner notes, cultural institutions – like kinship systems – do not merely 'modulate' biological impulses; they fundamentally restructure the selection pressures acting on the individual (Turner 1986: 30–32). The brain is not a repository of rigid instincts, but a plastic

engine designed to internalize these external institutional constraints. Social and historical patterns, therefore, are often best treated as ‘ideal types’ in the Weberian sense: analytical abstractions useful for navigating complexity, but not fully empirically adequate.

Particular attention should be paid to the implicit and tacit social transmission of knowledge and skills – a topic central both to empirical cognitive science and social theory, including the work of Pierre Bourdieu (Turner 2007). The transmission of habitus, bodily techniques, and a sense of social space cannot be fully captured through linguistic means or rational-choice models.

THE HARDWARE OF IMITATION: MIRROR NEURONS AND THE SOCIAL SELF

The discovery of mirror neurons provides the hardware for Gabriel Tarde's software. For over a century, Tarde's ‘Laws of Imitation’ remained a plausible but unverified sociological hypothesis. The identification of the mirror mechanism transforms imitation from a mysterious ‘social fluid’ into a distinct neurophysiological imperative. We now know that the brain simulates the actions of others pre-reflectively, effectively dissolving the rigid Cartesian boundary between ‘self’ and ‘other’ prior to any linguistic interaction. Contemporary neuroscience suggests that the self emerges through interaction rather than preceding social behavior. Mirror neuron mechanisms can operate without fully developed self-awareness. Turner recommends situating this debate within two influential approaches in theories of consciousness: theory-theory and simulation theory (Davies and Stone 1995; Kögler and Stueber 2000; Turner 2000). Theory-theory posits that understanding others requires acquiring an implicit theory about minds, whereas simulation theory argues that understanding arises from an innate capacity to simulate the behavior and experiences of others, either through direct imitation or imaginative rehearsal. This aligns closely with Mead's concept of the ‘attitude of the other’ and the work of contemporaries such as Gabriel Tarde and James Baldwin.

Simulation, therefore, is not a secondary product of reflective consciousness but a basic neural capacity upon which social and cultural structures are later superimposed. This has major implications for understanding empathy: by ‘adopting’ the attitudes of others and activating corresponding behaviors through imitation, mirror neurons provide a neuroscientific basis for empathic processes (Hurley and Chater 2005; Hurley 2008). While validating the concept of empathy,

these findings also prompt a critical re-evaluation of established social-scientific concepts, allowing them to be redefined in light of new empirical data.

A striking example of such integration is neuroeconomics, an interdisciplinary field using brain imaging and biochemical analyses (e.g., oxytocin) to study mechanisms underlying trust, altruism, and norm enforcement. This research demonstrates that neural processes can be directly linked to behaviors traditionally examined in sociology or psychology, illustrating how biological and social levels of explanation can coexist without reduction.

These developments also invite a re-evaluation of the 'Hobbesian problem.' In Hobbes' original formulation, the 'state of nature' – absent formal institutions – leads to constant competition and distrust, producing a life that is 'solitary, poor, nasty, brutish, and short' (Hobbes 1968 [1651]). According to Hobbes, a social contract and centralized authority are necessary to maintain order. Talcott Parsons later reconceptualized this regulatory function in sociological terms, portraying social norms as symbolic analogues to Hobbes' sovereign, legitimized through internalized values.

Neuroscience forces a reformulation of the fundamental 'Hobbesian problem of order.' Order is not imposed top-down upon a brutish nature by a Leviathan; it emerges bottom-up from the neurobiological imperative for attachment and mimicry. The 'State of Nature' is not solitary; it is inherently relational, wired by mirror neurons and oxytocinergic systems long before the social contract is signed. Neural mechanisms that curb egocentric behavior and promote cooperation suggest a biological basis for prosociality, offering a new dimension to classical sociological debates.

In this context, the notion of 'social forces' must be reconsidered within a Darwinian naturalist framework. This requires moving beyond Parsons' model, which presumes universal, abstract social actors endowed with a rational capacity to act according to culturally prescribed norms. Instead, a research perspective is needed that focuses on the biochemical and neurophysiological foundations of behavior, addressing questions such as how phenomena like trust, social solidarity, and rule-following emerge. A central issue in this regard is how the brain responds when individuals conform to a particular social norm: does this response stem from rational evaluation, fear, early developmental emotional experiences, or a complex combination of factors that can be localized and analyzed at the neural level? Tackling

this question demands an interdisciplinary approach that incorporates cognitive science while avoiding an absolutist reliance on it.

Although normative theories of rationality provide an incomplete – and sometimes misleading – picture of human thought and behavior (as discussed in Georgiev 2025b), they remain indispensable as a reference framework. This is particularly true for the analysis of departures from rational choice – for example, violations of the transitivity of preferences – which are difficult to detect without a ‘rational ideal’ serving as a baseline. A comparable methodological function is observed in neuroeconomic research, where experimental findings are often interpreted through the lens of the ‘as if’ model of the rational agent. While this model is not itself realistic, it serves a critical role in identifying deviations from rational behavior. Such an approach enables not only the capture of empirical behavioral patterns but also the formulation of new explanatory mechanisms that integrate biological, social, and cognitive levels of analysis.¹⁴

Let us frame the question more broadly. When analyzing beliefs, intentions, and other subjective phenomena, we often rely on the ‘folk’ or ‘everyday’ conceptual framework – a system of concepts convenient for daily communication but problematic for rigorous academic investigation. Despite its limitations, this language remains deeply embedded in social theory, particularly in the description of morally charged categories such as ‘responsibility,’ ‘conscience,’ or ‘intention.’ For instance, the concept of ‘representative democracy’ presupposes that voters act consciously, guided by ethical and rational considerations. Yet what does ‘conscience’ signify across different cultural and historical contexts? Such terms, often assumed universal, are in fact deeply contingent upon local mythologies, religious traditions, and social expectations. Conscience, therefore, cannot be conceptualized as a stable internal attribute inherent to every individual but rather as a culturally conditioned mechanism for social coordination.

In this context, Eric Dodds' critique in *The Greeks and the Irrational* (1951) is instructive. Dodds challenges the traditional view of ancient Greece as a bastion of rationality, highlighting the central role of irrational beliefs and emotions. The gods were not mere metaphors but personifications of emotional states – Zeus's anger, Hera's jealousy – through which the Greeks made sense of their world and their place in it (Dodds 1951). This insight has profound implications for contemporary social theory, which often underestimates the contextual complexity of human behavior in its pursuit of explanatory rigor. Ra-

tionality, in this sense, should not be conceived as a universal norm but as an adaptive mechanism: biologically grounded yet culturally mediated.

The neurobiological perspective complements the cultural one. Human capacity for rational thought has a neurophysiological basis, but its forms are shaped by cultural narratives, social institutions, and historical practices. Language thus serves a dual function: it refers simultaneously to external social roles and regulations, and to internal mental states. For example, the notion of 'responsibility' presupposes the existence of conscience and internal judgment, while also functioning as a label within a network of social expectations, sanctions, and rituals. Language, therefore, is both descriptive and a mechanism of social coordination.

From this follows a broader conclusion: different cultures and historical periods develop distinct models for describing the mind and behavior, and these models are not interchangeable. They reflect the specific needs of social organization, as well as the beliefs, rituals, and mythologies of a given community. For example, the theory of mind in a modern Western liberal democracy is incompatible with that of a traditional society organized around tribal or religious hierarchies. Strict universality should not be expected between cognitive processes and their cultural descriptions; instead, these descriptions should be seen as adaptive cultural constructs, reflecting and shaping how individuals experience, rationalize, and interpret the world.

BRIDGING THE EXPLANATORY GAP: TOWARDS PHYSICAL PLAUSIBILITY

A central epistemological hurdle is the 'Explanatory Gap,' aggressively critiqued by philosophers like Jeff Coulter. Coulter warns against the 'mereological fallacy' – the error of attributing psychological attributes (like 'deciding' or 'perceiving') to parts of the brain rather than to the whole person. However, acknowledging this gap should not lead to paralysis. The fact that the brain does not 'decide' in a homuncular sense does not negate the fact that no decision occurs without a neural correlate. Such reductionism overlooks the complex interplay among neural, cognitive, and social levels. The core problem is that sociology relies on 'Folk Psychology' – a pragmatic lexicon of 'intentions,' 'beliefs,' and 'desires' inherited from common sense. While functionally useful for social coordination, these categories are merely a 'user interface.' They obscure the underlying machine code. By re-

fusing to look under the hood (at the neural substrate), sociology confuses the vocabulary of description with the mechanism of causation (Coulter 1989; Button *et al.* 1995).

One historical approach to bridging this gap is found in the social psychology of Charles Ellwood, praised by Harry Elmer Barnes for adhering to ‘common sense.’ Ellwood’s strength lay not in abstract theorizing but in empirically grounded causal methodology. We must demand ‘Physical Plausibility’ from social theory. This is the new gold standard: any sociological concept of action or structure must be compatible with the known constraints of human neurobiology. If a theory relies on a model of the mind that the brain cannot physically support, it belongs to the realm of metaphysics, not science. Neurosociology is not reductionism; it is the quality control of social theory. Weberian methodological constructs remain valuable but must be reconsidered in light of neurocognitive limits.

Such a transformation is imperative if we aim to address questions historically framed in ideological terms – from why a proletarian revolution did not occur, to the emergence of mass nationalist sentiments, to the mechanisms of ideological subordination. Without integrating biologically and cognitively grounded models, social theory risks remaining trapped in a hermeneutic loop, unable to respond to contemporary knowledge.

When analyzing shared beliefs and social phenomena, we cannot rely solely on traditional speculative constructs. Stephen Turner, in ‘Social Theory as a Cognitive Neuroscience’, critiques assumptions that phenomena such as nationalism or socialist solidarity engage human cognitive resources uniformly. He asks whether these processes share cognitive characteristics with other phenomena – such as revenge, trust, or religious experiences – already investigated by neuroscience and social psychology. Classical sociological theories often dismissed such questions due to methodological limitations, which demanded operationalized categories for observation. The new generation of social theories, however, can overcome these barriers. Turner presents this prospect as a potential rebirth of social theory (Turner 2007).

This rebirth involves rethinking key concepts – social attitudes, normative systems, social solidarity – within the context of neuroscience and cognitive science. Unlike earlier approaches, which treated social processes as independent of biological and cognitive foundations, contemporary frameworks integrate these components to explain how shared beliefs and identities interact with brain processes,

engaging cognitive and emotional resources in specific ways. Research increasingly examines how social contexts and belief systems shape individuals, activating distinct cognitive systems and emotional responses. For instance, collective identities such as nationalism or socialist solidarity emerge and are maintained through the interplay between individual cognitive strategies and broader cultural and social structures. Understanding these interactions is crucial for constructing theoretical frameworks that provide deeper explanations of social phenomena.

CONCLUSION: FROM 'FOLK PSYCHOLOGY' TO PHYSICAL PLAUSIBILITY

The analysis presented in this article leads to an inescapable conclusion: the 'biological amnesia' of twentieth-century sociology was not a stage of maturation, but an epistemological deviation. By isolating the social from the biological, the discipline deprived itself of the very mechanisms necessary to explain its subject matter. As demonstrated, the classics of sociology – from Spencer's systems logic to Patten's connectionism and Ellwood's interactionism – never suffered from this dualism. They intuitively understood what contemporary science now proves empirically: social structures do not exist in a vacuum but are rooted in the plasticity of the nervous system.

It is time for sociology to abandon its defensive stance and the 'folk psychology' that operates with metaphors of the mind devoid of material grounding. Concepts such as 'collective consciousness' or 'habitus' can no longer exist as black boxes. The new gold standard for any social theory must be the principle of physical plausibility: no sociological concept can be valid if it contradicts the architecture of the human brain.

This is not a call for reductionism, but for realism. Neurosociology does not aim to reduce culture to synapses, but to explain how synapses make culture possible. If sociology refuses to integrate this knowledge, it risks becoming a museum piece – a discipline rich in description but poor in explanation. Conversely, if we accept the challenge to recover the 'lost bridge,' sociology has the potential to become the leading science of the twenty-first century, providing the missing context for the biological revolution. The brain is a social organ; therefore, sociology is its natural science.

NOTES

¹ Although the term ‘collective memory’ was later introduced and developed by his student Maurice Halbwachs, the concept is fundamentally grounded in Durkheim’s work.

² By ‘realistic,’ I mean that Durkheim acknowledged that social facts exert an influence on the psyche and behavior of individuals.

³ I categorically do not classify Mark Granovetter within post-structuralist or post-humanist paradigms. I point out, however, that his theory also suffers from cognitive sparsity: actors are embedded in a network of ties whose effectiveness is measured by structural indicators, without a thorough consideration of mental motivation, emotional investment, or conscious judgment in the formation of these ties.

⁴ Phrenology (from the Greek φρήν, *phrēn*, ‘mind, consciousness,’ and λόγος, *logos*, ‘study’) is an outdated and scientifically discredited theory and practice that aimed to study the human brain by analyzing the shape and size of the skull. Phrenologists believed that different regions of the brain corresponded to specific personality traits and temperaments, and that these could be assessed through palpation and measurement of the skull.

⁵ The concept of the ‘stream of consciousness’ is central to James’s work and emphasizes the pragmatic value of consciousness for social adaptation and survival. The ‘stream of consciousness’ refers to the ongoing flow of thoughts, feelings, and sensations, which is dynamic and constantly changing.

⁶ A ganglion is an anatomical structure composed of a cluster of neuronal cell bodies, located outside the central nervous system, which serves as a relay and integrative center in the transmission of nerve impulses.

⁷ This line of reasoning is developed by Spencer in his 1884 work *The Man Versus the State*, arguably the most libertarian political philosophy text of the nineteenth century (see Spencer 1884).

⁸ Although Durkheim criticized Spencer, he drew extensively on Spencer’s work and ideas, as well as on those of Comte and Darwin. For a detailed discussion of this issue, see the chapter ‘On the Origins of Evolutionary Analysis in Biology and Sociology’ (pp. 1–25) in *Biosocial Evolutionary Analysis* by Turner and Maryanski. An interesting side note is that, while still a young lecturer in 1882, Durkheim borrowed books from the library, with Spencer’s works occupying a leading position on his preferred reading list, rather than Comte’s (Turner and Maryanski 2024: 9).

⁹ Following Schutt and Turner’s (2019: 363) interpretation of Chapters 4 and 5 of *The Descent of Man*, Darwin emphasizes the importance of social habits for human evolution: they promote mutual aid and can override self-preservation (Darwin 1989 [1877]: 52), extend beyond kinship to the social group (*Ibid.*: 114), exert greater influence than selfishness alone (Darwin 1871: 125), and reach wider communities (Darwin 1989 [1877]: 127). According to Schutt and Turner’s interpretation, the evolutionary competition that led to the emergence of modern humans occurred both between groups and between individuals, with the basis of group advantage lying in mutual support among group members (Schutt and

Turner 2019: 363). However, this important addition to Darwin's theory has largely been overlooked by those who have drawn quite different conclusions about human society from *The Descent of Man* (see De Waal 1996: 11; Schutt and Turner 2019: 363).

¹⁰ Jean-Baptiste Pierre Antoine de Monet, Chevalier de Lamarck (1744–1829), was a French naturalist and biologist, and a precursor of evolutionary theory, renowned for his idea of the inheritance of acquired characteristics. Lamarck was among the first scientists to formulate a coherent theory of the transformation of species over time.

¹¹ The connectionist approach to modeling cognition is a theoretical framework that draws on concepts from connectionism in psychology and neuroscience to explain cognitive and thinking processes. This approach is based on the assumption that cognition arises from the dynamic activity of neural networks in the brain, which are shaped and modified through experience and learning. The connectionist perspective on modeling cognition has attracted particular interest in the field of artificial intelligence. So-called 'neural networks' are inspired by the connectionist approach and have become effective tools for solving a variety of tasks, such as pattern and language recognition, data processing, and other computational problems. Such models aim to simulate the functioning of neural networks in the brain and to approximate what some researchers consider the mechanisms underlying consciousness and the generation of knowledge in the human mind (see, e.g., Rumelhart 1990; Rogers and McClelland 2004).

¹² Daniel Dennett's thesis, developed in his 2006 book *Breaking the Spell: Religion as a Natural Phenomenon*, approaches religion as a natural evolutionary phenomenon shaped by the human brain within the context of cultural and biological evolution. According to Dennett, religious beliefs and practices are neither unique nor supernatural, but rather natural processes that have evolved throughout human history. A central idea is that religious tendencies and behaviors emerge from the interaction between biological and social factors that have shaped human cognitive mechanisms.

Dennett explores why religion remains so compelling and persistent across different cultures. He investigates how it spreads, how it regulates social behavior and interactions within groups, and how its various elements function within an evolutionary context. A central hypothesis in his work is that religious beliefs and practices can be understood as products of neurological and cognitive mechanisms that originally evolved as adaptive traits.

For example, the human tendency toward anthropomorphism, which involves attributing human qualities to inanimate objects or natural phenomena, and the instinctive drive to infer causality, or the need to explain events through cause-and-effect relationships, may serve as foundational components in the formation of religious beliefs. These mechanisms not only help religious ideas take hold but also make them 'sticky,' ensuring their transmission continues within social environments.

Dennett's approach is not designed to prove whether religious beliefs are true or false. Instead, he treats religion as a subject for scientific investigation by analyzing it as a natural phenomenon. He argues that viewing religion through the lenses of evolutionary biology, cognitive science, and social psychology can help

explain its role in the development of human culture and social organization. Furthermore, Dennett emphasizes the spread of religious ideas as cultural memes, a concept borrowed from Richard Dawkins to describe replicable units of culture that are passed on through social learning. This memetic perspective suggests that religious beliefs are shaped by both individual brain mechanisms and the specific social and cultural environments that sustain and propagate them.

¹³ Sexual selection refers to an evolutionary process in which individuals choose mating partners based on specific traits or qualities. These traits may be external – such as bright coloration, particular forms, or the striking sheen of plumage in birds or internal, including behaviors, social status, intelligence, and other characteristics that enhance an individual's attractiveness to potential mates. Sexual selection plays a crucial role in evolution, often leading to the development of secondary sexual characteristics that are not directly related to survival but significantly increase reproductive success. Examples include elaborate bird songs, antlers in certain mammals, or complex social behaviors and rituals.

Two primary mechanisms of sexual selection can be distinguished:

Intrasexual selection – competition among individuals of the same sex for access to mates, such as male-male fights among deer or displays of physical strength in other species.

Intersexual selection – mate choice by individuals of the opposite sex, often based on attractive or demonstrative traits; for example, female peafowl select males according to the complexity and beauty of their plumage.

In humans, sexual selection involves both biological and cultural factors. While some preferences, such as physical symmetry, may have a biological basis, social and cultural norms strongly influence standards of attractiveness and mate-selection behaviors. Attributes such as intelligence, social status, and communication skills are frequently regarded as important in mate choice, particularly in contemporary human societies (see Andersson 1994; Miller 2001; Trivers 2017).

¹⁴ The normative model of rational choice is useful as an analytical benchmark even when it does not accurately describe actual human reasoning. Departures from its predictions concern observed behavior; they are not themselves a 'false model.' Comparing behavior with the model helps identify deviations and assess the model's descriptive limits (Turner 2007).

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