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# The socio-cognitive perspective: Why does "the cognitive" matter?

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## Abstract

This article explores the socio-cognitive perspective, emphasizing the necessity of interdisciplinarity in the social sciences. It critiques the fragmentation of academic disciplines, arguing that excessive specialization stifles innovation and prevents the integration of knowledge across fields. The discussion highlights how scientific progress has become increasingly self-referential, leading to a decline in groundbreaking discoveries. A core focus is the interdisciplinary study of law, which the article positions as a "super-meme"—a biosocial construct influenced by cultural, psychological, and biological factors. The work explores how cognitive biases, neuroscience, and behavioral insights shape legal reasoning and decision-making. It also delves into neurolaw, analyzing the implications of cognitive science on legal responsibility, free will, and normative structures. The study ultimately argues for a paradigm shift in the social sciences and legal studies, advocating for a cognitive approach that integrates biology, psychology, and sociology. By bridging these disciplines, the article suggests that we can achieve a more comprehensive understanding of law and human behavior.

## Key words

Law; sociology; cognitive science; neuroscience; cognitive biases

## Resumen

Este artículo explora la perspectiva sociocognitiva, haciendo hincapié en la necesidad de la interdisciplinariedad en las ciencias sociales. Critica la fragmentación de las disciplinas académicas, argumentando que la especialización excesiva frena la innovación e impide la integración del conocimiento entre distintos campos. El debate destaca cómo el progreso científico se ha vuelto cada vez más autorreferencial, lo que ha llevado a una disminución de los descubrimientos revolucionarios. Un tema central es

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el estudio interdisciplinario del derecho, que el artículo posiciona como un "supermeme", una construcción biosociológica influenciada por factores culturales, psicológicos y biológicos. La obra explora cómo los sesgos cognitivos, la neurociencia y los conocimientos sobre el comportamiento dan forma al razonamiento jurídico y a la toma de decisiones. También profundiza en la neuroderecho, analizando las implicaciones de la ciencia cognitiva en la responsabilidad jurídica, el libre albedrío y las estructuras normativas. En última instancia, el estudio aboga por un cambio de paradigma en las ciencias sociales y los estudios jurídicos, defendiendo un enfoque cognitivo que integre la biología, la psicología y la sociología. Al tender puentes entre estas disciplinas, el artículo sugiere que podemos lograr una comprensión más completa del derecho y el comportamiento humano.

**Palabras clave**

Derecho; sociología; ciencia cognitiva; neurociencia; sesgos cognitivos

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## 1. Interdisciplinarity and the social sciences

The interdisciplinarity we need today stems from a legitimate aspiration not to close disciplines within watertight compartments, which ultimately do not communicate except occasionally, or which communicate only among their own sub-fields. Such aspiration stems from a concern, which is that scientific inquiry, by losing itself to increasingly specialized field and methodologies, will be reduced to silo-thinking and lose its fecundity and innovativeness.

Due to hyper-sectorization, any collaboration between say the condensed matter physicist and the general physicist, or between the criminal lawyer and the civil lawyer, or between the sociologist of politics and the sociologist of economics, has come to be regarded as interdisciplinary, while it is clear that interdisciplinarity should be pursued between macro-areas and by combining different methodological approaches. It should also be pursued between the natural sciences, and the social sciences: physics with law, engineering with history, architecture with philosophy.

Today, the term 'interdisciplinarity' is trendy, almost overused and bragged about. The issue was raised in recent years by the Gubelkian Commission, which included both social and natural scientists (Wallerstein *et al.* 1996). The Gubelkian Commission was coordinated by Immanuel Wallerstein, a Marxist sociologist, who on the occasion expressed views not unlike another progressive scholar such as Noam Chomsky (Chomsky and Foucault 2006).

In fact, several social scientists, but also natural scientists, are criticizing this interdisciplinary aspiration, expressing fears with respect to "scientific imperialism", mainly on the part of the hard sciences vis-à-vis the social sciences (Mäki *et al.* 2018). Are there any other reasons for this aversion? The social scientist might harbor apprehensions that the resurrection of the interdisciplinary essence inherent within the social sciences could inadvertently impose a unidirectional trajectory upon the flow of scientific knowledge, primarily from the realm of natural sciences towards the social sciences themselves. The underlying concern seems to be, however, that if the social sciences and humanities cannot enjoy a protected sphere, they risk being swallowed up by the hard sciences for the purpose of legitimizing the existing natural state.

Disciplinary barriers cannot be reduced to simple differences in terminology; they also stem from the mental models that every organized professional body ends up adopting and into which every aspect of reality must be pigeonholed. Barriers over time become reinforced and crystallized, with the consequence that these social groups begin to resemble tribes in conflict to preserve their sphere of influence (Vick 2004, 168-169). Indeed, the reasons are also political and institutional: recruitment strategies increasingly push for defensive self-referentiality (Giunta 2017).

However, the result of this compartmentalized system is stifling. A quantitative study confirms what until recently may have only been an anecdotal impression, namely that science and research are becoming less and less disruptive and innovative (Park *et al.* 2023). By measuring the number of citations that published articles and patents receive in the years following their publication, the authors note a regular and steady decline in innovativeness in the official academic sources of knowledge. In essence, the proportion of articles and patents that result in a discontinuity or paradigm shift in scientific

explanations is steadily decreasing, because an increasing proportion are based instead on an increasingly limited segment of classics, or own studies, or studies that tend to come from only one field or sub-field (Park *et al.* 2023, 142).

This *modus citandi*, which relies on a literature more easily recognized by the academic community of reference, probably benefits the individual positions of individual researchers, but in the aggregate, it does not foster the innovative character of knowledge, which necessarily should progressively and periodically get rid of past paradigms, in order to disavow or refine them with more precise and appropriate ones. Who has never consulted or cited a "classic" without it being functional to the hypothesis he or she intended to test, but to show that he or she knows and masters the entire reference corpus of the discipline? A race to the bottom seems to be emerging at the expense of innovativeness.

Several more benign alternative explanations might also be conceivable. First, science may have now exhausted an early historical phase during which it was relatively easier to make discoveries: when the experimental method was quite new, vast unexplored fields of research were still available. Second, and as a corollary to this first phenomenon, in order to get to the point of being able to make innovative discoveries, the researcher today needs much longer training to master the entire body of knowledge and techniques of inquiry available. While developing new knowledge is destructive, teaching established knowledge is codified and conservative. Once this long formative phase is completed, there will be much less time left for properly innovative activity.

The fact remains that the loss of disruptiveness, no matter what the reason, is a worrying trend. To reverse it, I am interested in looking at the most interesting attempts to hybridize paradigms and move beyond disciplinarity, particularly in explaining social and legal behavior. Westermarck (1908), with the concept of "human moral emotions," is probably the first to integrate Darwinian concepts with the social sciences in general and anthropology and philosophy in particular. Fortunately, other open views in the social sciences have emerged periodically (Schütz 1967, Blumer 1969, Boudon 1969, Runciman 1970, Mead 1972, Morin 1977, Elias 1982). The profound social-philosophical ramifications entwined within the grandiose theories emanating from the natural sciences, ranging from the paradigm of Darwinian natural selection to the realm of quantum mechanics, remain elusive solely to those who have merely skimmed their surface.

The impression is that recursively the same calls for openness and integration of paradigms are fruitlessy renewed. Acquaviva, for example, complained almost thirty years ago about the refusal in the social sciences to consider models from other disciplines (except then resorting to psychoanalytic models). He formulated a proposal for integration called "biogram," by merging the theory of social action with the engine represented by drives and primal needs, consciously drawing from animal ethology (Acquaviva 1993, 23).

Gallino, too, at an early stage, distances himself from the self-referentiality of culturalism and the dogma of the "tabula rasa" (Gallino 1982, 1987), and proposes the construction of a theory of behavior, hitherto obstructed, especially in Italian and continental sociology, by the combined forces of idealism, Gramscism and Marxism, and by distrust of psychology (Gallino 1987, 9).

He goes so far as to say that the social sciences of the twentieth century have a hypercultural and ultra-socialized view of human nature (Gallino 1987, 92), and to advocate that the "animal" traits of human societies should no longer be considered a legacy to be repudiated en bloc, nor to be endured as signs of an "inevitable imperfection" (Gallino 1987, 134). He finally opts for a theory of the social actor that requires an understanding of the cognitive activities of the brain/mind system, by pursuing close interaction between the different human sciences (Gallino 1987, 13-14). All of this should not mean renouncing social projectuality, but moving along an evolutionary line beginning from the "memory of the species" (Acquaviva 1993, 113).

Mascini (2016, 13) speaks explicitly of "behavioral sociology", and invokes its *impurity* and the need for contamination. Another sociologist such as Cipriani acknowledges how the attempts of sociology and biology, by working in isolation, achieved modest results, and he calls for a new interdisciplinary collaboration, built on new and open foundations, and proposes in doing so a new interpretive scheme defined as the "social [multifactorial]-DNA model," which should be the indicator of the properties and dynamics of human societies (Cipriani 2020, 46, 52), starting precisely from the community as a collective entity.

## 2. The interdisciplinary study of the law

Normativity, and more so law in the narrow sense, are among the most interesting extrinsications of the self-regulating tendency of living systems. Human living beings, as well as many other nonhuman animal species, apparently experience an instinctive drive to self-regulate and self-limit, thus rejecting the "free for all" logic that we culturally associate with the natural world.

In an earlier work, I argued that law is a *super-meme* (Cominelli 2018), that is, a construct of a bio-social nature that develops with (and oversees at a high level) complex social organizations, on a par with morality or religion. The idea itself of the law as a super-meme is a specific application of the broader idea of the *memeplex* (Blackmore 1999). Other authors have taken similar positions (Gruter 1992, Masters 1992, Gianola 1997, Jones 1999, Sacco 2015). Haye and colleagues argue, for example, how the self, and by implication self-regulation, would be the connection between culture and biology, and thus between the social system and the physical world (Haye *et al.* 2017, 222).

It would thus seem to be important that the study of law be undertaken with an awareness not only of the social and cultural environment in which it is situated, but more broadly also of its economic, psychological, biological and physical context. Law can be seen both as an instrument for the satisfaction of individual and collective needs (Acquaviva 1993, 139), and as a hypostatization operated by the limbic brain to justify the defense of such needs (Gallino 1987, 133-134). An integrated view of the social sciences and the natural sciences certainly has implications for the science of law as well, for example from the perspective of deviance, or human rights theory, in which the fundamental norms would be precisely biogrammatic in nature (Acquaviva 1993, 61, 138).

On the contrary, for a long time we have seen that legal scholars tended to isolate and delimit legal science as an autonomous science, both in object and method. A common element of critiques of such critiques against interdisciplinarity was the fear of

weakening the identity of the legal studies and risk its subordination to other disciplines, deemed more prestigious, rich, or scientifically strong in the academia (Vick 2004, 186-187). By limiting the teaching of doctrine and black-letter law, interdisciplinarity could have also created a growing disconnect between practice and theory (Edwards 1992). Those same critics admit that sociology or psychology, for example, are of great help in the skills required of the legal practitioner (Edwards 1992, 2196).

The political origins of the conception of law as an autonomous science are highlighted by Posner (1987): only a closed and self-sufficient conceptual system was able withstand the pressures of the sovereign power first, and the executive power later. Posner explains the crumbling of faith in the concept of law as an autonomous field with the broadening of the political spectrum of the class of jurists, who at first were confined to a pragmatic moderatism, and now range instead from the radical left to the nationalist and fundamentalist right. As a result of this politicization, the legal solutions that can be envisaged can also vary greatly depending on the orientation (Posner 1987, 766-767).

Stelmach seems to conclude that doctrinal law is not scientific per se, and states that legal science bound to the past ends up being a harbinger of errors, misunderstandings, and irrationality (Stelmach 2021, 512-513). This also happens because of a defect of "philosophical education" in jurists, as far as methodology and logic are concerned, and it seems hard to contradict such a claim. Continental jurists are more and more tightly bound to their specialization in one or a few branches of law, and they are forced to become encyclopedic connoisseurs of the relevant bodies of law, losing sight of the normative system in its social complexity. This is the result of the distancing of the doctrine and practice of law from philosophy and theory, and the anti-naturalism of modern jurisprudence. To this Stelmach adds laziness, which perhaps we should requalify as path-dependency or inertia, also characteristic of every organized institution. Jurists have become prisoners of their language habits, and failed to adapt their concepts (Stelmach 2021, 517).

Interdisciplinarity has certainly its risks as well (Chiassoni 2021, 491) such as the improvisation of the neophyte, confusion of discourse levels, and provincialistic deference to the outside expert. A further typical risk is that starting from a focus on efficiency and consumer utility maximization, some may end up assuming implicit normativities, thus simply replacing the *homo economicus* with the *homo legalis privatus* (Pałka 2021, 223, 225).

Interdisciplinarity, however, is irreversible, and the political implications need to be openly acknowledged: legal theory is an autonomous and relevant discipline, quite distinct from legal doctrine, which is responsible for broadening the perspectives of knowledge about the law with scientific or humanistic methodologies (Posner 1987, 778-779). Even from a philosophical perspective, a "legal-metaphysics" approach is multidisciplinary and related to cognitive psychology (Roversi 2021, 100), because it depends on the cognitive foundations of the mental states on which legal facts depend.

One of the most productive ways to preserve doctrinal coherence without locking oneself in a self-referential ivory tower is to create multidisciplinary teams, where each one brings substantive and methodological knowledge that will enable the others not to improvise. Moreover, lawyers are in fact already all-rounders, and therefore accustomed to handling different languages since law is a cross-cutting phenomenon over numerous

fields of human activity (Vick 2004, 192). The modern study of law will require a parallel and simultaneous collaborative effort of hybridized methodologies.

## 3. A cognitive-science approach to the study of law

Among these hybrid approaches, the cognitive sciences can now provide the social scientist with theoretical paradigms for the study of society and law in their reciprocal interactions: bias and prospect theory, states of consciousness, neuroimaging, neuroethics, evolutionism, psychology, game theory, agent-based simulations, and the social-psychological hypotheses of procedural justice, all bring testable and relevant hypotheses to the field of normativity. Associating law with the cognition-behavior combination does not necessarily imply a process of psychologizing and a behaviorist drift.

In referring to *cognitive sciences*, we now mean all those sciences that contribute to understanding the activity of cognition. It is perhaps wrong to call them "sciences," because implicit in this is the pigeonholing into a set of methodologies, whereas it would perhaps be more correct to call it an "approach," because it converges all of these fields toward an object of analysis that is nonetheless human behavior as defined and oriented by and toward law.

The idea that the social understanding and interpretation of the law are central, and so is the formation and expression of one's individual beliefs about it, was expressed by the "knowledge and opinion about the law" studies, which in a sense is one of the precursors of the cognitive approach. Our opinion about the law tends in fact to align with our social and moral conceptions, and this has the consequence that the law tends to gain spontaneous compliance whenever this alignment occurs (Van Rooij and Fine 2021, 484).

The first cognitive epistemological turns (Stelmach 2021, 510-511) were first based on a "strong physicalism" (Meyering 2000), that is, the idea that any social phenomenon was traceable, with certain degrees of approximation, to a physical-material phenomenon. Examples of this naturalism are provided by the neo-positivism of the Vienna Circle. A further cognitive turn was linked to a more evolved concept of naturalism, which combined ontological and methodological naturalism, and eventually affected law, as well as all the social sciences and humanities. This gave entrance to interdisciplinarity, and opened toward paradigms closer to the standards of the hard sciences, such as those of experimental psychology and economics. The last turn finally opened the door to "reality," with the cognitive sciences and neuropsychology.

The cognitive approach has now made inroads in several areas, such as the decision about the admissibility of evidence (evidentiary reasoning), and the classification of case facts, and in general any analysis of the efficacy of a rule and the absence of unintended effects in it (good law) (Hage 2021). In these fields, decision-making theory, with the help of experimental psychology, has often questioned the "common sense" conceptions of judges and laywers, and has led to the revision of certain cornerstones in the ascertainment of evidence (think recognition and eyewitness testimony), as well as led to the admission of new sources of evidence (eg neuroimaging).

The assumption of the human being as a rational entity, and therefore fully accountable to the law, except in cases of confirmed pathology, has come up against the discovery of

its swaying rationality, or rather its time-shifted rationality (Jones 2001), and of the need to respond simultaneously to different and conflicting criteria of choice. Very often, we are unable to explain the reason that prompted us to act, and we misrepresent and self-delude that there is another one (Hage 2021, 39). Cognitive sciences have thus progressively changed the view of law through a change in the conception of human action.

That the factors which mentally interfere with our legal rationality are complex, and that they pile up in a steady stream, had already been fully understood by Frank when he wrote of those "jungles of the mind," pondering whether new discoveries would at least reduce the "chaotic state" of the law (Frank 1949, 113), to which we cling with an "infantile hope of absolute legal certainty" (Frank 1949, 159). The hopes he did harbor turned out to be far too optimistic, because the social sciences lagged behind.

The decline of behavioral mechanicism necessitated a new direction in shaping a modern theory of behavior and law-oriented conduct. It was a combination of mentalist and behaviorist perspectives that illuminated this path forward. Stemming from the notion, dating back to Hume, that emotions override reason and drive actions, there arose a belief that subjective experiences could explain more. However, this was not possible until advancements in neurosciences and cognitive science provided a comprehensive toolkit for analyzing mental functions. These disciplines not only transformed epistemology but also revolutionized social sciences by demonstrating the potential to connect biology with culture and re-unite matter with mind. The intricate social behaviors exhibited by primates and humans, such as cooperation, imitation, or deception, were precisely the factors driving the expansion of the cerebral cortex (Pineda 2009, V).

These "cognitive revolution[s]" carry significant implications. When cognitive psychology and psychoanalysis eroded the concept of homo oeconomicus (Crespi 1989, 30), it followed that homo sociologicus had to face scrutiny too. Besides challenging established psychological and sociological paradigms, cognitive sciences addressed the Cartesian "error" of the mind-body dualism, thereby paving the way for conceptual integration across philosophical, anthropological, and pedagogical realms (Iagulli 2011, 13).

According to Pattaro (2005, 397), cognitive sciences and neurosciences will enrich those areas of inquiry where psychology and sociology often rely on metaphorical interpretations. With a deeper understanding of individual cognitive processes, the phenomenological tradition, including methodological individualism, might unravel some unresolved macrosociological issues. To quote a few examples of this potential, Collins (1975, 14) illustrates the power of the cognitive approach through Weber's concept of power legitimization and Durkheim's idea of collective consciousness formation through rituals. Mead (1966) underscores the significance of the mind's physiological mechanisms in shaping social experiences and behaviors. Franks (2010, 2) illuminates the implicit nods to neuroscience within the symbolic interactionist tradition.

Some of the core fields of the sciences that explain human behavior have found a shared foundation by adding the "neuro-" prexif and resulting in the emergence of neuro-ethics, neuro-sociology, neuro-economics (Franks 2010, Boella 2011, Hitlin and Vaisey 2013). This convergence has initiated a reconsideration of previous assumptions, by

revealing for example that we harbor an unconscious and reflexive ethical decision-making, often leading to tragic choices and occasionally yielding paradoxical results.

Consider the familiar moral dilemma presented by the "trolley problem" (Pardo and Patterson 2013, 54), where this hypothetical scenario unfolds: an out-of-control trolley is hurtling toward a group of people. The hypothetical bystander is in a position to influence the outcome by toggling a switch, and so diverting the trolley onto a track where it would cause the death of just one person (who happens to be standing on that track) and spare the lives of several individuals on the main track. In this case, we generally concur that toggling the switch is morally justified. However, if the means to achieve the same result were altered — for instance, having the only option of pushing an individual onto the track to halt the trolley destined for the group, instead of toggling the switch— our certainty wavers. We become hesitant to take such action, even though there appears to be no clear moral difference from the initial scenario.

Morality and legal principles might be governed by different brain processes, with some scholars suggesting that justice involves a "nonverbal algorithm that is programmed by some mixture of genetic blueprint, cultural heritage and personal experience," while law relies on a linguistic framework and can thus be labeled an "interpreter module" (Pardo and Patterson 2013, 50). However, verifying this theory will be challenging due to the absence of advanced techniques and the difficulty in unequivocally connecting specific mental functions to the activation of specific brain regions.

Cognitive mechanisms have to be acknowledged as essential for comprehending social phenomena like law, aiming to correlate legal validity with the notion of "acceptance-worthiness" and the "cognitive bindingness" of rules (Sartor 2005, 331). For instance, why do individuals fail to recognize intellectual property infringements as such (Goodenough and Prehn 2006, Goodenough 2009), or why do legislators sometimes pass laws that are clearly unenforceable (Monti 2008, 16)? Individual perceptions and judgments remain a domain that has been insufficiently explored by legal science thus far.

## 4. Neuroscience

Cognitive neuroscience and neurolaw are inherently transdisciplinary and can hardly be constrained by disciplinary boundaries. Neuroscience delves into the intricate workings of the nervous system, sitting at the crossroads of medicine, biology, psychology, physics, philosophy, linguistics and artificial intelligence (Miller 1956, Nagel 1974). What distinguishes the human mind is a proliferation of instincts that represent specific problem-solving adaptations and permit the expansion of psychological mechanisms with broader functionalities. These mechanisms are currently grouped under vague terms like "the capacity for culture," "intelligence," "learning," and "rationality,", but these expressions fail to fully elucidate their nature (Tooby and Cosmides 1992, 113).

Techniques for studying the brain in living organisms have revealed the physical basis of emotions and perceptions, which involve what Damasio calls the "biological machinery of reason" (1994, 53). Neuroscience's crucial contribution to cognitive sciences lies in understanding that every part of the body communicates with the brain through nervous system signals and bodily chemicals (Almodóvar 2015). Conversely,

the brain exerts influence over the entire body via nerves, creating an inseparable unity (Damasio 1994, 88). Neuroscientific advancements have pinpointed the prefrontal cortex as the evolutionary locus for the development of higher functions, akin to a physiological *superego* (Sapolsky 2006, 233).

However, every deterministic analogy needs to be handled with caution: there is no brain region where all sensations converge, nor is there a central "command center" for decision-making (Damasio 1994, 94). If we consider the physiological evolution of the brain—from primitive spinal cord reflexes to paleoencephalic instincts and impulses, leading to the cognitive functions of the neocortex—we find little linearity (Oliverio 2012, 68).

The brain is not a uniform, undifferentiated organ but a complex one, comprising regions whose interactions are still not fully understood (Greenberg and Cohen 1982, 81). Consider the distinct functional areas once thought to be strictly linked to the right or left hemisphere: this notion has been disproven by studies on individuals with anatomically separated hemispheres (Gazzaniga 1985, 47). Rationality, typically associated with the neocortex, appears ineffective without the biological regulation from subcortical areas, requiring coordinated activity with other brain regions like the amygdala or the cingulate cortex front (Damasio 1994, 128, 137).

Damasio's research emphasizes the fundamental flaw of the Cartesian misconception, which excludes emotions and feelings from the cognitive framework and proposes a dualism between a "thinking thing" (res cogitans) and an "extended thing" (res extensa). Once the biological basis of affective states is correctly understood, this distinction becomes untenable (Puppo 2021). According to Damasio's hypothesis, the connection is established through somatic markers that streamline decision-making processes. These markers are associated with the anticipated outcomes of future scenarios, serving as warning signals or as incentives depending on their nature (Damasio 1994, 173). Social markers are physiological mechanisms linked to the autonomic nervous system (such as sweating, increased heart rate, muscle tension, gastrointestinal contractions) that indirectly influence our rational decisions.

The neuro-approach in social sciences doesn't necessitate explaining human behavior by breaking it down into neural processes, but it does entail a shift where mental functions, typically viewed as undifferentiated, are now seen as modular. The concept of the mind as modular (Fodor 1983) is supported by evolutionary psychology (Barkow *et al.* 1992) and depicts higher functions as divisible into "expert systems" of simulations (Anolli and Mantovani 2012, 89). Mental modules serve as a dependable guide to navigating the world and are essential for effectively handling challenging situations. They are passed down from one generation to the next, thereby assuming a universal, unchanging, and biologically predetermined nature (Anolli and Mantovani 2012, 90).

The neuro-legal approach has the potential to enhance the study of law by challenging the nomothetic perspective of legal theory, which assumes uniform cognitive abilities among all individuals (a principle also found in behavioral law and economics). Those advocating for nomothetic models in lawmaking argue that they provide a similar explanation to that of rational choice theory. They suggest that these models offer a satisfactory approximation, since cognitive errors are often difficult to discern and generally insignificant (Rachlinski 1982, 139). A neuro-based approach can assist in

acknowledging that reality is consistently idiographic, and that the law should, whenever feasible, accommodate diverse individual cognitive capacities through tailored mechanisms (Rachlinski 1982, 126).

Neuroscience can also dispel some common-sense conceptions now proven wrong. Law, in many cases still relies on folk psychology positions (Brożek and Hage 2021, 8) and on an almost entirely intuitive conception of how the human mind works. For example, we tend to think that our visual memories are a faithful "video recording" of what happened, or that certain physiological or expressive reactions can be used to determine unequivocally whether someone is lying or telling the truth. Folk psychology mixes with common sense, but it should be an object of study rather than a hermeneutic tool for the interpreter and practitioner. Mental illness, memory, creativity, cannot be explained through its simplified concepts.

In essence, folk psychology cannot be included in the cognitive sciences (Kurek 2021, 62). It is completely dependent on living law, which in this case is shaped by the medical positions of the expert witnesses, and by constitutional interpretation. Capacity, diminished responsability, the degree of culpability, the subjective element (mens rea), are all examples of parameters the assessment and the degree of which are highly variable and often scientifically controversial. They apply in any case mainly in criminal law (Hage and Waltermann 2021, 274), and they are closely related to the problem of the degree of free will.

## 5. The problem of free will

The cognitive sciences have also been central in reassessing the legal principles governing personal responsibility. The discussion regarding whether individuals can be held accountable for their deeds dates back as far as the debates concerning determinism. The topic is, of course, central to the sociological and philosophical debate on imputability and accountability. Personal conceptions of accountability differ widely. But while people ideally accept consequentialist purposes (with general deterrence or special prevention as the main objective), when they are entrusted with the decision on punishment, one tends to employ a strictly retributionist perspective (Carlsmith 2008).

The clash between determinism and free will remains unsolved. One argument suggests that the legal system adopts an overly ambitious concept of free will, disregarding criticisms rooted in neuroscience (Green and Cohen 2006, 208). The exploration of free will within neuroscience underwent a significant transformation following Libet's studies on the cerebral electrical signals preceding voluntary actions (Libet *et al.* 1983). In the study, participants observed a finger movement and were then instructed to replicate it spontaneously, so that they acted at their own will and when they felt the urge to do so, while promptly notifying the experimenters when this urge arose. The procedure enabled to gauge the interval between the brain initiating the command to move the finger and the moment the participants sensed the impulse. The experiment found that the impulse preceded the actual movement by approximately 0.20 seconds. However, a surge in electrical brain activity, known as "readiness potential," occurred approximately 0.55 seconds before participants became consciously aware of the impulse and signaled it to the experimenters. This indicated that the motion might not

have been attributable to volition, but rather to an antecedent neural occurrence, beyond any conceivable conscious influence.

This construal faced scrutiny, given that the motion had been prompted by an external directive. While some later debated the conclusiveness of these experiments, the research seemed to indicate that consciousness followed action, implying that consciousness serves as a spectator of acts which are predetermined by another cerebral function (Sartori *et al.* 2011, 158). Additional studies were subsequently conducted to delve deeper (Pockett 2007, 290), yet they failed to reach any definitive conclusions (De Caro 2011, 75-76).

The exploration of consciousness and awareness of our actions has led to the formation of three core perspectives (Farahany 2012), with significant implications for personal liability. The materialistic-deterministic perspective asserts that mental phenomena are bound by the same physical laws governing material processes, effectively denying the existence of free will. In behavioral sciences, this perspective is termed *incompatibilism* (Pockett 2007, 282), and it rules out any retributionist view (Hage and Waltermann 2021).

In the dualist/libertarian perspective, neurological processes and conscious choices are understood to function on separate levels. It suggests that moral conscience cannot be measured against neural consciousness and is sometimes termed *mysterianism*: free will is deemed essential but remains both unexplainable and at somewhat at odds with the scientific worldview (De Caro 2011, 81). Conscious choices stem from neurophysiological indeterminism, potentially rooted in the uncertainty principle of quantum physics, which would prevent any deterministic prediction from the micro level upward.

Finally, from the *compatibilist* perspective, neurological determinism is harmonized with the concept of free will. This proposition steers clear of the reductionist dilemma, arguing that although our brain's biological composition may not grant us complete autonomy regarding desires, preferences, and motivations, we nevertheless maintain some degree of freedom (Farahany 2012). This liberty entails a *free won't* capacity to veto actions, that is, the ability to stop ourselves from performing something that we might feel compelled to do due to an irresistible urge. Despite neural activity preceding conscious awareness, conscious intention still plays a role. We retain then a range of options, albeit restricted, enabling us to break away from the seemingly inevitable chain of events suggested by Libet's research (Farahany 2012, 11-12).

Searle adopts such compatibilist viewpoint. He characterizes consciousness as akin to biological processes like digestion or growth (Searle 1997, 6). Additionally, he highlights its uniqueness in that it cannot be comprehended from an external perspective: consciousness and our experience with it blend seamlessly (Searle 1997, 213). While it's acknowledged that consciousness can't be simplified down to just neuronal processes, this doesn't automatically imply a strict separation between the two (Searle 1997, 214).

### *5.1. Critiques of the cognitive and neuro approaches*

In the face of legitimate demands for accountability directed at the judicial-political system, fatalistic resignation that judicial or policy decision may in some event be irretrievably irrational or wrong should be averted at all costs. To ignore the problem

would be to renounce the principle of nondiscrimination and equality before the law. Today, it's impossible for instance to overlook that judges, similar to everyone else, are prone to "patterns of social functioning" that influence their decision-making process (de Cataldo Neuburger 1988, 335, Danziger *et al.* 2011). One can only aspire, as Frank suggests, for these patterns to be revealed, as only then can the judge become "more sensitive, more finely balanced, more accountable to their own examination, and more adept at detailed articulation" (Frank 1949, 143).

Experimental research also showed that many are willing to bear the cost of a suboptimal outcome in negotiation or litigation, just to steer clear of the potential regret associated with altering the status quo (Rachlinski 2000, 759). Such behaviors reflect a deeply subjective rationality, and it's unrealistic to expect that cognitive science will offer unequivocal, universally applicable recommendations to the legal domain. The efficacy of any suggestions will hinge on the extent of complexity and refinement we are willing to integrate into the legal framework. To effectively accommodate individual disparities, any legal system should incorporate corrective measures capable of accommodating diverse perceptions of rationality.

Legal cognitivists are well aware that the practical effects of biases don't entirely undermine the rational dynamics of our daily interactions, and that this awareness is often integrated into judicial practice: jurists are skeptical of neuroscience because sometimes they see it as a high-tech version of reinventing the wheel (Fuselli 2014, 18). It should be acknowledged that neurolaw and legal cognitivism cannot be used with the intent to significantly revolutionize the law, as Levy (2014) also contends.

Suspicions of determinism hovering over the cognitive approach are certainly relevant too. However, it is entirely possible to avoid determinism. Acknowledging the influence that the biology of our brain and nervous system has on our behavior does not imply accepting the possible pernicious consequences, or giving up on the idea of change. As Acquaviva puts, by "fooling biological directives it is possible to reduce the cost of satisfying needs, and the weight and number of unmet needs, while still, if we wish, pursuing ends that are socially and individually our own. It is also possible to override (concretely and not ideologically) the theories that claim that it is impossible to change society because of genetic conditioning" (Acquaviva 1993, 158).

By acknowledging the notion that the human mind and human experience can't be simply reduced to the brain's neural functioning (Sartor 2005, 18, Pardo and Patterson 2013) we also reject the idea of employing cognitive science as the sole, all-encompassing paradigm for elucidating every legal phenomenon (Goodenough and Tucker 2010, 66), so to avoid a new mono-dimensional fallacy (Boudon 2009). I share Searle's assessment that the theoretical achievements of the masters of the social sciences cannot be useful in this domain, because they do not give us an adequate knowledge of intentionality and of individual rule-governed behavior.

Bioethicists are right to remind us of the inherent risks of manipulation and rights violations that come with the distorted use of insights from the cognitive sciences. The misuse of personal biological data poses a tangible threat. Biotechnology and biopower travel together, and there is a wealth of critical stances and caveats in this regard (Rose and Rose 2014). But many other research techniques might be deemed as invasive of intimacy. Should we include psychoanalysis or cognitive behavioral therapy among

them? Are there new technologies that have not posed such risks? Behind calls for regulation we sometimes seem to discern the assumption that new technologies such as this can only be employed for manipulative and controlling purposes.

Any restrictive policy choice in this regard is certainly justifiable and understandable. The important thing is to weigh the consequences of the blanket application of the precautionary principle. We now see the implications of delays in energy, medical, and environmental research (abandonment of nuclear power, genetic experimentation, synthetic meat), and it is necessary to be aware of what the price will be in terms of technologies that may prove to be essential tomorrow for the protection of rights.

The accusations of manipulation have been given an interesting rebuttal by Murphy (2022) with the conceptualization of the "collective cognitive capital". Through this lens, which should be considered one of the fundamental parameters in any law- and policy-making, it is possible to emphasize the collective implications of the cognitive dimension. According to Murphy, cognitive and brain sciences need to evaluate public policies based on their effect on people's cognitive and emotional functioning. Attention should be given to those cognitive skills and emotional/interpersonal abilities that are relevant also outside the labor market, or not amenable to monetary valuation, such as caregiving, self-care, civic engagement, volunteering, or voting.

As an aggregate measure, collective cognitive capital captures the relational nature of society and focuses on emotional and social regulation that has to do with personal well-being, interpersonal relationships, and social life. Collective cognitive capital emphasizes the variables of development, plasticity, reserves and resilience— biological traits that are not necessarily hard-wired or unchanging. Such an idea would depart from the approach of behavioral law and economics, whose focus is the individual interest in "cognitive liberty" (Farahany 2019). The "collective cognitive capital" paradigm directly echoes the idea of "social capital", and the "capability approach" adopted in development studies. It includes knowledge, personal traits, health, experiences, and education, i.e., any capacity that helps in establishing social bonds.

It is clear the immediate impact this kind of cognitive approach would have in regulation, for example in the face of compliance overload and the excessive burden of administrative procedures, which are a source of fatigue, cognitive fatigue, disillusionment, and distrust (Murphy 2022, 1387). It is becoming apparent, for example, that while the digitization of administrative processes simplifies some bureaucratic steps for citizens, it also raises the threshold for the level of digital skills required. There is a tendency for less responsive administrations to shift the burden of information collection and aggregation onto the citizens, thereby negating the time savings intended by dematerialization.

An example reported by the ombudsman in the Netherlands is indicative of the kind of cognitive burden that weighs even on citizens of a Nordic democracy that is certainly not known for its administrative inefficiency. According to current regulations and regulatory practices, a single parent with two school-age children, a part-time job, living in a rented house and receiving welfare benefits, receives 12 different financial lines of support provided by 8 different institutions and must complete 18 different forms that will entitle him or her to receive 80 payments over the course of one year… (Keizer *et al.* 2019, 116).

The balance between a modern public administration's duty of fairness and information and respect for the citizen's cognitive well-being is very delicate. While the ability to make free decisions on the basis of received information generally offers a sense of satisfaction, the very act of choosing can prove painful when the decision concerns negative existential events. And in general, too much information can also be overwhelming and negatively affect the quality of choice (Reutskaja *et al.* 2021, 632-633).

A survey conducted in France found that 60 percent of taxpayers regarded the mental burden of applying complex rules as more burdensome than the tax itself (Leroy 2008, 49). The increasing complexity of regulations and the proliferation of special regimes and programs paradoxically lead to regressive effects for certain segments of the population.

Some government agencies have already implemented integrated analytics that challenge the traditional concept of responsibility by incorporating the cognitive framework of self-reliance and mental resilience[1]. Another example is the *EAST* framework (*easy, attractive, social, and timely*), a form of nudge that is more sophisticated than disclosure duties or purely informational nudges (Service *et al.* 2014). Although these methodologies do not always radically affect compliance or acceptance rates, the results are nonetheless substantial and may still result in savings. This does not imply advocating for a utopia where life is stress-free and everything is effortlessly provided: within some limitations, adversity, and to some extent even job stress, improves learning, memory, and the ability to solve problems and make decisions in unpredictable situations (Murphy 2022, 1394).

Ultimately, while cognitive and neuro- approaches offer valuable insights into legal decision-making, they are certainly not capable of overhauling the legal system. An approach that balances fairness, efficiency, and cognitive well-being can be achieved, and by focusing on collective cognitive capital and the relational aspects of decision-making, policymakers may foster a legal environment that is both empirically informed and ethically sound.

## 6. Conclusion

The solid epistemological wall dividing the natural sciences from the human sciences isn't as robust as previously believed. Evolutionism may serve as a starting point, offering intriguing hypotheses that warrant case-by-case testing, albeit not providing a complete explanation for normativity of every kind. It's worth noting that biology, through Darwinian theory, borrowed the principle of evolution from philosophy and the social sciences. The cultural variable, despite fears from some quarters, would not be certainly dismissed. The task at hand is to prove that humans are inherently cultural beings due to their biology, much like any other animal with a transmissible culture. They possess innate cognitive capacities shaped by evolution over generations, and at an individual level, they wield significant influence over the behavior of their peers and descendants.

Due to our disdain for the moral hazards of Lombrosianism, a large part of the social sciences adopted the belief that humans are entirely shaped by their environment, an

[1] 'Weten is nog geen doen', Netherlands Scientific Council for Government Policy (WRR), 2017.

assumption known as the "tabula rasa". Despite our intuitive awareness that this notion cannot hold true—evidenced by daily observations of individual predispositions to behaviors or illnesses—we've embraced a double standard. This allows sociological theory to be challenged in many instances by empirical evidence. It's also crucial to acknowledge the inherent risks in proposing theories that aren't open to testing. The type of testing I suggest is socio-cognitive, and the hypothesis I'm presenting for examination is that similar to any behavior, the way we interact with the law is influenced and shaped by biosocial constraints, which are not solely genetic nor solely cultural.

I use the prefix *bio-* in a more specific sense compared to its usage in the social sciences. This distinction becomes clear when we explore the interconnected relationship between genotype and phenotype, as revealed by epigenetic studies (Meloni and Testa 2014). While the term biosocial may trigger objections related to determinism, it's important to recognize that by just mentioning the "biological", one risk evoking social Darwinism. Therefore, it is prudent to address potential objections by substituting in some instances *biosocial* with *cognitive*. This entails understanding the "cognitive" as referring to the system of instincts and mental structures that shape our learning, information processing, evaluation, and decision-making—essentially, the environment in which our cognition operates.

I aim to emphasize that concentrating on cognition isn't an attempt to covertly promote behaviorism. The study of cognition encompasses various approaches, so there's no need to fear it being associated with any one stereotype. However, we should be cautious not to overly generalize cognition: just like everything can't be explained solely through evolution or communication, similarly, cognition does not and can not explain everything.

I propose a cognitive hypothesis, which includes a proposition specifically about the law. This proposition suggests that legal systems are essentially pseudo-moral regulations stemming from our biosocial nature. In such an integrated paradigm, law can be viewed as a *super-meme* (Cominelli 2018). This super-meme hypothesis could elucidate the apparent contradiction between law as a static, historical phenomenon and law as a dynamic, promotional instrument. And it could explain the coexistence of rules that guard inveterate prohibitions, alongside progressive regulations that aim at disrupting long-standing social conduct.

I do not recall where I found the first time this super-meme expression, but I did not invented it. I am not very sure either of having been the first one to have associated it with the law. I am not sure anymore of the creative process behind it. Others may have linked it to morality or religion, but regardless, while I do not necessarily claim authorship of the concept, I strongly endorse it: like many creations of intellect is a natural process of mixing and mingling different sources coming from similar contexts.

When examining the cognitive biases influencing our legal conduct, we need for instance to explore the contrast between defensive biases (those inclined towards preserving safety) and assertive biases (those inclined towards risk-taking). It is through the equilibrium of these opposing biases that we can comprehend the mixed nature of social behavior, constantly pulled between the security of what is familiar and the challenge of what is unfamiliar. This juxtaposition was also underscored in Hume's examination of

the concept of justice, which, while constructed artificially through education and societal norms, is also influenced by human conditions and necessities.

The concept of fairness, which forms the foundation of law and justice, is determined by principles that often contradict one another (equality, need, retribution, protection, reciprocity, deserts). Common wisdom is full of sayings and behavioral guidelines that clash between them, precisely on the point of "risk-taking" vs. "slow and steady" strategies. To a certain degree, this contradiction should be tolerated. Such a perspective would effectively challenge the romanticized rousseauvian idea that humanity has lost its innocence, by portraying living creatures living in complex and organized societies as naturally individualistic yet heavily inclined toward cooperation.

It should follow from all this that it would no longer be so far-fetched today to demand cognitive profiling for parties entering into contracts, depending on individual predispositions. Would the act be seen as discriminatory, akin to refusing health coverage for preexisting conditions linked to genetic risk factors? If it is discriminatory, shouldn't we also oppose practices such as adjusting insurance premiums based solely on the age or residence of the insured, without any other information about the individuals involved? These forms of price discrimination are all considered legal.

In a sense, this is what the financial regulations in the European Union directives also do, requiring the intermediary to ascertain the retail investor's investment knowledge and experience, in addition to personal financial situation, investment objectives, and expertise on that type of product or service. In order to underwrite investments whose functioning is considered particularly complex, some banks, for example, require clients to pass a knowledge test.

Legal systems have addressed cognitive biases by mandating disclosure and ensuring the public stays informed about relevant matters. However, these efforts are frequently implemented in a simplistic manner and can sometimes backfire. As noted earlier, disclosure requirements and obligations to inform are often executed in ways that create unnecessary cognitive burdens for consumers or result in formalities that are completed perfunctorily. Individuals may find themselves repeatedly signing contract clauses or informed consent forms separately in the same document. The new field of "legal design" aim precisely at making complex legal concepts more easily usable and understandable (Rossi *et al.* 2019, Ducato and Strowel 2021) through information nudging and a framing strategy.

A distinction might be necessary between the civil law system and the criminal law system. From the perspective of cognitive science, these are almost two ontologically different entities as to their respective regimes of responsibility. Criminal law is still essentially retributivist and has as its main purpose punishment, even though numerous provisions and constitutional interpretations also enshrine the principle of re-education for the offender, while private law is consequentialist and would have essentially as its purpose restoration and risk management (Hage and Waltermann 2021, 274).

A continuous and heavy cognitive load undermines the possibility of a human-faced and responsive government and administration. This requires respecting individual differences among citizens and ensuring that a moment of distraction or neglect—whether caused by stress, poverty, or bereavement—is not met with excessive

punishment (Keizer *et al.* 2019, 124-125). The objective of empirical research will also be to determine whether a law informed by cognitive insights can achieve an asymmetric form of paternalism, which adapts to everyone's cognitive capabilities. This approach will also offer the social sciences potential research hypotheses concerning law, as opposed to opting for neuroinvasive methods or genetic therapies that pledge to intervene on the genotype to forestall aging, or rectify character flaws, anomic or antisocial personalities.

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