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Homo moralis: A Neurosociological Theory of Moral Capacity and Social Regulation

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Abstract

This article explores the evolutionary and sociocultural foundations of human morality through an interdisciplinary neurosociological framework. It defends the thesis that the capacity for moral judgment is a biologically evolved feature of *Homo sapiens*, rooted in emotional mechanisms shaped by natural selection. Drawing on theoretical insights from Jonathan Turner, Christopher Boehm, and Francisco Ayala, alongside empirical evidence from neuroscience and behavioral studies, the article argues for a crucial distinction between an innate moral capacity and culturally constructed moral norms. While moral codes vary across societies, they rely on universal neurobiological predispositions to function and endure. Emotions such as shame, guilt, and moral indignation—complex and uniquely human—serve as evolutionary preconditions for moral behavior, facilitating internalized social regulation and the development of complex moral systems. The paper further examines reciprocal altruism as a foundational mechanism for cooperation and moral cognition, linking it to moral realism—the view that certain moral principles possess objective and universal validity. Despite cultural diversity, core moral intuitions emerge early in ontogeny and are observable across species, underscoring their deep evolutionary roots. Ultimately, the article presents morality as a co-evolved phenomenon, emerging from a biologically grounded moral faculty and refined through cultural elaboration, cognitive development, and symbolic representation. This integrative perspective challenges moral relativism and highlights the neurobiological scaffolding underpinning ethical behavior.

Keywords

Moral Capacity, Evolutionary Ethics, Neurosociology, Emotional Foundations of Morality, Moral Realism, Reciprocal Altruism, Social Regulation, Biological Basis of Moral Behavior

1. Introduction

Understanding the biological and sociocultural foundations of moral behavior is a central challenge at the intersection of neuroscience and sociology. At the heart of this inquiry lies a key question: How is moral choice and behavior possible? Is morality merely a cultural construct, or does it stem from universal biological predispositions shaped by evolution? This question can be approached from two perspectives: first, as a cognitive-affective capacity for moral judgment—the human ability to evaluate actions as "right" or "wrong"; and second, as a normative system of ethical rules regulating behavior according to socially accepted standards.

This article argues that, while moral systems vary across cultures, the underlying moral sentiments and capacity for ethical reasoning are rooted in evolved neurobiological mechanisms. Morality, as a capacity, is an evolutionary attribute of human nature, whereas specific ethical norms and value systems are products of cultural evolution and thus socially constructed.

A crucial distinction must be made between the capacity for moral choice and actual moral behavior. The former refers to an innate ability to distinguish between "good" and "evil", while the latter comprises culturally shaped and internalized codes and norms that guide conduct. Like all cultural systems, moral codes could not have emerged or endured if they were fundamentally incompatible with human biology. Since morality arises within human societies shaped by millions of years of evolution, ethical systems must, to some extent, reflect our biological nature. Empirical evidence supports the view that many moral norms promote behaviors enhancing biological fitness—for instance, parental care. However, this alignment is not absolute. Finally, it is important to distinguish between the existence of moral capacity—a basic compass for discerning right from wrong—and the enactment of specific moral behaviors. Awareness of moral rightness does not guarantee corresponding action.

In this context, the article adopts a moderate form of moral realism, which holds that certain core moral facts—such as the wrongness of gratuitous harm—are objectively grounded in human neurobiology and social necessity, rather than being mere subjective preferences. Here, "objective moral facts" are not conceived as metaphysical absolutes existing independently of human beings, but as stable, cross-culturally recurring moral constraints emerging from the interaction between evolved social emotions and the functional requirements of cooperative life. This definition seeks to reconcile the empirical variability of moral codes with the existence of underlying, biologically anchored moral dispositions.

To establish the evidentiary basis for this interdisciplinary synthesis, the article employs a selective literature review drawing on peer-reviewed sources from neuroscience, sociology, moral psychology, and evolutionary theory. Priority was given to works that 1) provide empirically supported models relevant to the neurobiological and sociocultural determinants of moral behavior, 2) offer theoretical frameworks integrating biological and cultural perspectives, and 3) present recent empirical findings from functional neuroimaging, behavioral experiments, and

cross-cultural studies. Sources were weighted according to their methodological rigor, citation impact, and relevance to the central research question, with an emphasis on bridging disciplinary boundaries to construct a coherent neurosociological account of morality.

2. Theoretical Discussion

2.1. Philosophical Foundations of Morality

Aristotle viewed moral values as intrinsic to human nature—not as fixed rules, but as outcomes of cultivating virtue and striving for eudaimonia, or human flourishing. For over two millennia, the foundations of morality have remained central to philosophical and theological thought. In the medieval period, Thomas Aquinas—still highly influential –identified three sources of moral norms: lex divina (divine law, e.g., "worship only one God"), lex naturalis (natural law, e.g., "do not kill"), and lex humana (civil law, e.g., "pay taxes"). Aquinas arranged these hierarchically, with divine law at the top, and human law expected to conform to natural law.

In the eighteenth century, thinkers like David Hume, Immanuel Kant, and Adam Smith laid the foundations of a rich moral philosophy. Three major branches are typically distinguished: metaethics, normative ethics, and applied ethics.

Metaethics explores the nature, meaning, and justification of moral norms, including whether moral truths are objective, the role of emotion and reason in moral judgment, and the semantics of ethical concepts. Key positions include moral realism, which posits objective moral facts, and moral anti-realism, which denies such objectivity, seeing moral truths as shaped by attitudes or norms. Other views include emotivism (moral judgments as emotional expressions), prescriptivism (moral statements as imperatives), and moral relativism (moral truths as context-dependent).

Normative ethics seeks principles for determining morally permissible or obligatory behavior. Major theories include deontology (duty-based morality), utilitarianism (consequentialist evaluation of actions), and virtue ethics (focus on moral character and virtue cultivation).

Applied ethics addresses real-world moral dilemmas requiring value-balancing. Fields include bioethics (e.g., euthanasia), technology ethics (e.g., AI), and military ethics (e.g., war legitimacy). In practice, people often draw from multiple ethical frameworks depending on context (McPherson & Plunkett, 2024; Schleidgen et al., 2023; Morán-Reyes, 2022; Franz, 2022).

2.2. Foundations of Moral Capacity: Evolutionary Biology Meets Social Theory

Darwin's theory of evolution prompted a fundamental reconsideration of morality's origins. While we don't attribute morality to all animals, evolutionary theory raises key questions: When did moral capacity emerge in humans? Did species

like *Homo habilis* or Neanderthals exhibit proto-moral traits? Is morality a by-product of cognitive evolution, or purely cultural?

In *The Descent of Man*, Darwin emphasizes morality as a defining human trait, shaped by natural selection. He argues that any social animal with sufficiently developed intellect would eventually acquire a moral sense or conscience (Darwin, 1871: pp. 67-69). Darwin acknowledged moral diversity across cultures but did not view this as proof of moral arbitrariness. Instead, he interpreted such variation as adaptive responses to specific environments. He rejected supernatural accounts of morality, framing it instead as an evolved, universal human capacity expressed in culturally specific forms. Thus, the universality of moral capacity coexists with the variability of moral norms—both products of human development.

In *The Descent of Man*, Darwin makes two central claims: 1) moral behavior is biologically grounded, linked to the development of intellect; and 2) specific moral norms arise from social experience and cultural evolution (Darwin, 1871: pp. 68-69). He adds a key qualification: even if a highly social animal developed human-like intellect, its moral sense would not necessarily mirror human morality. Its conscience might guide behavior differently (Darwin, 1871: p. 70). This highlights that the presence of a moral sense does not dictate the specific content of moral norms—that is, which behaviors a society sanctions or permits. Differentiating between moral capacity (or conscience) and moral norms is essential for understanding morality's complexity. Failing to make this distinction often underlies current debates about morality's biological basis.

Some scholars argue morality is innate, grounded in a biological capacity for moral judgment. Others contend the moral sense is shaped entirely by culture and religion. These debates often focus on moral codes—normative systems defining "good" and "bad" behavior. Their cultural variability suggests moral norms are not biologically fixed but shaped by social processes. Yet this variability does not negate the existence of a universal moral capacity; it underscores that specific norms are historically and culturally contingent. Thus, it is critical to distinguish between moral capacity—an evolved ability to evaluate actions in terms of "good" and "evil"—and moral prescriptions, which are socially constructed norms that, sensu stricto, guide behavior within particular cultural contexts.

Jonathan Turner, a leading evolutionary sociologist, offers a framework for viewing morality as intrinsic to human nature. His model integrates concepts such as the evolution of the social brain and the emotional basis of behavior. For Turner (2010a: pp. 125-126), morality involves five interrelated elements:

1) universal cultural codes distinguishing right from wrong;

2) intense emotions that give moral norms existential meaning;

3) satisfaction or happiness from moral conformity;

4) guilt and shame from norm violations; and

5) anger directed at moral transgressors.

Turner's model explains morality as an outcome of biological predispositions, emotional dynamics, and cultural systems, while accounting for variation across

societies. He emphasizes that these five dimensions function as variable parameters—intensity and expression depend on the sociocultural context. A highly moral society features strong, articulated expressions of all five; a low-morality context shows their weak presence (Turner, 2010a: p. 126).

As I will show later, emotions play the foundational role in Turner's model. Without emotional engagement—feelings like shame, guilt, pride, anger, or admiration—morality cannot regulate behavior. Even before the neocortex expanded, natural selection favored an increasingly complex emotional repertoire. As Turner argues, this development was vital for social cohesion, enabling emotions like belonging, trust, and loyalty—core elements for sustaining moral systems. This emotional substrate is a key evolutionary preadaptation that made morality possible (Turner, 2010a: p. 127).

The conventional sociological view sees morality as a product of social processes—emerging from cultural norms, institutions, and socialization—rather than from biological or evolutionary mechanisms (Hitlin & Vaisey, 2013). Turner does not reject this, acknowledging that morality can be understood as a system of norms created by a cognitively advanced species. However, this raises a key question: What gives moral codes their psychological force—what compels individuals not only to recognize but to follow them? And why do humans create such normative systems? Turner locates the answer in the evolution of human emotionality. Emotions provide the affective energy that transforms cultural norms into binding imperatives, embedding them in inner experiences like shame, guilt, pride, and anger. Morality, in this view, cannot be fully explained as a cultural construct—it relies on an emotional-biological foundation. Emotions become "moralized" when tied to violations of culturally defined norms. Feelings such as anger, disgust, or indignation gain intensity and normative authority when moralized—transcending personal reactions to become social sanctions. The issue is not how different cultures define moral violations, but the evolutionary basis of moral competence itself. How does the emotional association with moral judgment arise? Why is it so powerful? And how does it sustain social order?

Neurosociology emphasizes the biological basis of emotions to explain moralization. The affective system underlies moral feelings that regulate behavior, shape norms, and promote coexistence in complex societies. Turner's core thesis is that morality evolved as part of human nature—not imposed on a neutral mind, but emerging through adaptations that enable stable, cooperative communities (Turner, 2010a, 2021; Turner & Stets, 2005, 2006).

Morality, Turner argues, is embedded in human biology and cannot be reduced to social construction. Without the brain's specific neural architecture, moral judgment would not be possible. These neural capacities are evolutionary products, shaped by selection for a highly emotional species—capable of blending cognition with affect, engaging in self-reflection, and experiencing complex moral emotions. Humans also possess rich emotional repertoires and sanctioning mechanisms to evaluate others' moral behavior (Turner, 2010a: p. 143). The position

advanced here aligns with Turner's view and related empirical findings, with one clarification: I treat morality not as a fixed set of norms but as a universal moral capacity embedded in human nature.

Traits often considered uniquely human—such as language, culture, self-reflection, and high intelligence—are commonly seen as distinguishing *Homo sapiens* from all other species. Turner, however, asks why these traits developed to such extraordinary degrees in humans. Since modern humans descend from hominins who shared ancestors with today's great apes, many of these traits are not exclusive to humans in kind, but in degree.

Humans share approximately 99% of their genes with chimpanzees, 98% with gorillas, and 96% - 97% with orangutans. This genetic closeness reflects not only evolutionary kinship but also shared biological foundations for cognition and social behavior. Many traits linked to human uniqueness evolved through elaboration of capacities already present in other primates. Our ancestors likely inherited the neurological predisposition for language from a common ancestor of modern apes. While language in its current form did not exist, its biological basis was present. Similarly, moral capacity can be viewed as an evolved predisposition, whose cultural expression advanced alongside increasing social and cognitive complexity.

Rudimentary forms of communication are also found in birds, elephants, and whales, challenging the assumption of language as a uniquely human faculty. These animals show degrees of self-awareness and perceive themselves as social actors, reflecting George Herbert Mead's idea that the "self" arises through interaction. Some also display basic culture and notable intelligence, though less complex than in humans. Human intellect stems from cognitive traits inherited from primate ancestors. Turner argues that human biology is an evolutionarily refined form of anthropoid primate biology, shaped by natural selection. Moral sensitivity, too, is part of this evolutionary legacy. Even primates lacking advanced cognition show emotions resembling anger or moral indignation. For instance, in experiments, they often refuse to perform tasks when rewarded less than another for the same action (Brosnan, 2006; Brosnan & de Waal, 2003a, 2003b). Great apes exhibit even stronger indignation, especially when inequity affects close kin.

Turner and Richard Machalek argue that higher mammals and intelligent birds show a proto-moral capacity based on fairness and reciprocity (Turner & Machalek, 2018: p. 354). In B.F. Skinner's experiments, pigeons showed frustration when expected rewards were withheld. Though Skinner cautioned against anthropomorphism, it is evident that animals form expectations and react emotionally when those are violated. These findings have influenced sociological exchange theories, many of which—rooted in behaviorism—treat fairness as a core principle. Pet owners recognize this dynamic: animals often show displeasure or "sanction" caretakers when expectations, such as feeding routines, are not met. The neurological roots of morality lie in the mammalian lineage, with fairness in social exchange appearing as a universal trait among great apes (Turner & Machalek,

2018: p. 355). As they explain:

"*There is a kind of proto-morality built into this behavioral propensity that strengthens relationships and constrains free-riding and failure at reciprocity and fairness in the exchange of resources. When expectations of reciprocity and/or for fair exchanges are not realized, higher mammals react negatively and are prepared to sanction those who have violated these expectations. Ultimately, as humans built up moral codes with their larger neocortices and facility with spoken language, this culture-based morality was built on the neurological platform inherited by humans' hominin ancestors. As emphasized, macrosocieties develop collective representations, many of which involve statements of morality, and it is the collective commitment to these moral codes, reinforced through emotion-arousing rituals, that is a pre-condition for macrosocieties*" (Turner & Machalek, 2018: p. 421).

Turner sees this as compelling evidence that humans inherited the neurological scaffolding for morality. While it remains debatable whether nonhuman animals are "moral" in the human sense, they clearly exhibit the preconditions for moral behavior. Although human morality is more complex, its foundation is emotional. What distinguishes humans is their hyper-emotionality—a broader and more nuanced emotional range, which deepens moral perception (Turner, 2023: pp. 93-94).

Selective pressures over the last five million years expanded hominin emotionality. Emotions predate language, neocortical growth, and symbolic culture. Without evolving as highly emotional beings first, these later developments would not have been possible (Turner, 2023: p. 94).

Franks (2010, 2019) notes that the hominin brain grew significantly—*Homo erectus*, for example, reached a volume of ~1100 cm^3. Turner argues that this expansion had evolutionary value only if paired with more complex emotional and cognitive capacities (Turner, 2000a, 2007a, 2007b, 2010a, 2021, 2023). Damasio (1994), he emphasizes that intelligence requires emotional engagement: information becomes cognitively useful only when emotionally charged. The richer the emotional repertoire, the more intelligent the organism can become, because emotion scaffolds cognitive growth (Turner, 2023: p. 94).

Turner suggests that the slow brain growth in early hominins reflects selection for subcortical emotional regions. In his words:

"*Without emotions, there would be little to put into a big neocortex; it would be an empty warehouse consuming calories and protein.*" (Turner, 2023, p. 94)

Expanded emotional capacity, in turn, enabled more sophisticated cognition, memory, and decision-making—paving the way for symbolic culture and complex social systems. This raises a deeper question: why did emotions evolve before traits like intelligence, language, and culture? Turner's answer lies in the ecological pressures early hominins faced. As forests contracted and open savannas expanded due to climate change, hominins became more exposed to predators. Unlike their forest-dwelling ancestors, they lacked natural cover and had slower mo-

bility. In such risky environments, survival increasingly depended on social coordination and group cohesion. These conditions favored the intensification of emotional bonds. Hominins needed strong social connections to survive—an isolated individual faced greater threat. As Turner argues, evolving deep emotional capacities was a vital adaptation, allowing the formation of cohesive and durable groups. This emotional groundwork preceded and enabled the later emergence of advanced cognitive traits (Turner, 2023: pp. 94-95). Over time, the subcortical brain regions responsible for emotion nearly doubled in volume compared to our primate relatives. Through this expansion, natural selection indirectly shaped humans as deeply social beings by fostering a broad range of positive emotional tendencies (Turner, 2000a, 2007b, 2021). Unlike most mammals, whose social behavior is driven by genetically encoded neurobiological programs, early hominins lacked such automatic mechanisms. This created selective pressure for an alternative: enhanced emotional complexity to promote sociality and cooperation in open, challenging environments. This pressure accelerated the development of brain regions responsible for generating and regulating emotions. As these areas evolved, emotions grew more intense and varied, motivating hominins to form enduring emotional bonds. According to Turner, this emotional deepening enabled the emergence of the nuclear family as the primary social unit, offering stability, cohesion, and a reliable basis for group organization (Turner, 2023: p. 95). Turner emphasizes that humans developed large brains, complex language, and advanced symbolic culture because they became the most emotional species. Emotional intensification fostered intelligence, which enabled language, ultimately giving rise to symbolic culture. In this evolutionary sequence, specifically human moral competence emerged from the prior expansion of emotional depth and sensitivity. In this context, Turner concludes:

"*Coupled with the evolution of the capacity of humans to experience shame and guilt, the anger associated when exchanges are unfair provides a hardwired basis for the formation of the capacity to be moral, in the sense that self and others are evaluated by reference to moral codes that specify good and bad, right and proper*" (Turner, 2021: p. 111).

All cultural elaborations of human morality—despite their diversity—are ultimately rooted in the evolution of human emotionality. Emotions such as guilt and shame, essential for regulating behavior through moral codes, are uniquely human. Great apes and most other mammals do not appear capable of experiencing these emotions, which remain distinct features of our species (Turner, 2021).

As noted earlier, many higher mammals recognize fairness in resource distribution. Yet this alone does not make them "moral" in the human sense. Human morality is embedded in cultural artifacts—transcendental beliefs, shared values, traditions, and symbolic systems—that require high intelligence and linguistic ability to construct, transmit, and maintain. While whales, dolphins, or elephants may show coordination and fairness, their social behavior remains largely genetically programmed. In contrast, human sociality evolved without fixed instinctual

scripts. This absence of rigid programs placed selective pressure on emotional capacities, leading to greater cognitive complexity. The resulting growth in intelligence made spoken language possible. Still, the neurobiological substrate for language predated *Homo sapiens*, inherited from ancestors shared with great apes. However, earlier species lacked key anatomical features—of the vocal tract, lips, tongue, and musculature—needed for articulated speech. These emerged uniquely in the hominin lineage. Whether early hominins developed proto-languages is unclear, and likely unverifiable. What is more certain is that *Homo sapiens*' linguistic capacity rests on symbolic predispositions already present in earlier species like *Homo habilis* and especially *Homo erectus*. Yet modern language required critical neurological changes, including differentiation of Broca's and Wernicke's areas, and anatomical modifications of the vocal system. These changes depended on prior reorganization of subcortical structures involved in emotional regulation. The hominin brain evolved for millions of years before the modern neocortex appeared, which itself integrates with older subcortical emotion centers. This neuronal reorganization—starting with the emotional brain—enabled language and symbolic culture to emerge. Thus, the evolution of articulate speech and symbolic reasoning was contingent on earlier transformations in the neural systems governing emotion and social behavior. When an organism combines emotional sensitivity, advanced intelligence, and symbolic capacity, morality can arise as a complex regulatory system. Human morality functions by interpreting and moralizing social behavior, enforcing norms, applying sanctions, and internalizing conduct codes—making it essential for social organization. Moral behavior also depends on the formation of a sense of self—one's ability to perceive themselves as an autonomous, morally responsible agent. This reflexivity allows individuals to anticipate moral judgment, recognize violations, and internalize norms (Turner & Machalek, 2018: p. 355). Social control becomes most effective when internalized as self-control, where emotions like pride for conformity—or guilt and shame for transgressions—guide behavior. The latter, often highly aversive, are subject to unconscious suppression, mediated by the hippocampus and less accessible to conscious regulation by the prefrontal cortex. Such subliminal inhibition of negative affect activates neural and psychodynamic processes that remain central in psychiatry and the sociology of emotion (Scheff, 1988; Turner, 2000a, 2000b, 2002, 2007a, 2007b; Turner & Machalek, 2018). Once moralized, cultural symbols actively promote sociality—a key factor in early human survival. This symbolic moralization laid the foundation for expanding social organization, enabling the transformation of small groups into complex macrosocial structures. Still, human morality is not as abrupt an evolutionary leap as often assumed. Proto-moral behaviors are observed in many higher mammals, including social primates and early hominins, suggesting morality developed from an existing neurological substrate. The refinement of emotional states related to social regulation was critical in evolving proto-morality into organized moral systems. This moral evolution enabled durable mechanisms of social control in early human groups and likely

laid the groundwork for religion as a universal cultural tool for behavioral regulation and cohesion (Turner et al., 2017; Turner & Machalek, 2018). Turner and Machalek argue that, beginning around 6,000 years ago, the increasing scale of human societies demanded more complex integration, achieved through three interrelated processes:

1) moral codes reinforced by emotionally charged rituals; 2) external sanctions for moral compliance or violation; and 3) self-sanctioning as an internalized form of moral regulation (Turner & Machalek, 2018).

From these mechanisms, shame and guilt emerged as essential for sustaining cohesion (Boehm, 2012). Without them, societies would have remained small and unstable (Turner & Machalek, 2018). This evolved capacity for moral legitimation and behavioral constraint allowed humans to construct mega-societies comprising billions (Turchin, 2016). While human sociality lacks the genetic rigidity of eusocial insects, it demonstrates the crucial role of moral rules, cultural structures, and emotional regulation. However, as Turner warns, emotions that foster cohesion also have a "dark side." These same forces can generate division, hostility, and large-scale destruction (Turner, 2023). The mere ability to make moral judgments does not ensure moral stability. History shows how emotions enabling integration can, when amplified by modern technologies, escalate into violence and self-destruction.

Ultimately, emotion is central to any viable theory of morality. Morality would not exist without the emotional core of human nature. As Turner emphasizes, understanding morality requires first understanding why humans evolved greater emotional complexity than other mammals (Turner, 2010a: p. 127). Culture and emotion are deeply entwined in the human brain's neurobiology. Tracing how natural selection favored expanded emotional capacity—and thus enabled sophisticated social interaction—illuminates how this emotional base later gave rise to complex moral and cultural systems. As Turner rightly concludes, this evolutionary perspective clarifies the internal logic and dynamics of morality.

Turner is not alone in asserting that morality has universal, objective neurological foundations. Social anthropologist Christopher Boehm, in *Moral Origins: The Evolution of Virtue, Altruism, and Shame* (2012), offers a nuanced evolutionary account of moral behavior's emergence. Boehm argues that morality is not purely cultural but arises from an intricate interaction between biological adaptations and cultural processes fostering prosocial behavior, egalitarianism, and cooperative regulation in early human communities. This interaction occurred mainly between 200,000 and 50,000 years ago, when anatomically modern *Homo sapiens* began developing mechanisms for behavior regulation and conflict resolution within small, interdependent groups.

Despite some argumentative limitations, Boehm's work is a valuable contribution to evolutionarily informed social science, including neurosociology. He suggests early hominin social regulation was harsh, direct, and lacked moral symbolism. *Homo erectus* (~2 million years ago) likely maintained order through archaic

group control strategies targeting antisocial behavior. Individuals showing extreme selfishness or aggression faced sanctions such as ostracism, exile, or execution. These sanctions deterred "free riders" and promoted prosociality, while incentivizing alignment with group expectations. Such rudimentary social control mechanisms laid the groundwork for later internalization of moral norms—the eventual human conscience. Boehm's social selection framework fostered behavioral strategies focused on (self-)suppressing antisocial impulses and adapting to norms, enabling conscience's emergence: a cognitive-emotional capacity for self-regulation grounded in internalized group expectations. As Boehm states, "*Conscience serves not only as an inhibitor, but also as an early warning system that helps to keep prudent individuals from being sanctioned*" (Boehm, 2012: p. 203).

In early hominin evolution, conscience likely existed rudimentarily, manifesting primarily as fear of external punishment—a proto-awareness of group control and sanctions. Over time, alongside advancing cognition, this externalized fear evolved into an internalized moral obligation—a subjective distinction between right and wrong. Though paleoneurological data are scarce, Boehm hypothesizes a pivotal evolutionary moment when rising anti-hierarchical tendencies caused dominant individuals to incur social costs for coercive attempts. Facing resistance and sanctions, natural selection favored individuals with enhanced self-regulation and an emotional drive to internalize social norms. This dynamic reshaped behavior and influenced evolutionary fitness (Boehm, 2012: pp. 312-313). Between roughly 250,000 and 100,000 years ago, *Neanderthals* (including *Homo heidelbergensis*) and early *Homo sapiens* developed proto-morality grounded in emergent conscience. Neurosociologically, conscience can be viewed as an adaptive product of evolved neuroanatomical structures interacting with social pressures. The limbic system—especially the amygdala, which processes fear and salient stimuli—was central to recognizing consequences of deviance. By this time, brains capable of internalizing group rules, anticipating outcomes, and producing rich emotional responses had evolved. The well-developed prefrontal cortex, crucial for self-reflection, inhibition, and goal-directed behavior, worked with the limbic system to enable anticipation of sanctions and formation of emotional bonds with collective norms. Boehm's hypothesis aligns well with evolutionary neuroscience and social theory. A key feature is rule internalization: social norms ceased being mere external impositions and became personal moral obligations. Boehm links this shift to two foundational emotions: fear and shame. Initially, fear of sanctions inhibited deviance in early conscience formation. As conscience matured, shame—a social emotion tied to reputation and belonging—became central, motivating avoidance of socially disapproved behavior. Boehm notably emphasizes shame over guilt, highlighting shame's universal physiological marker—blushing—an involuntary response signaling remorse and social attunement upon norm transgression. While guilt lacks such consistent expression, it remains vital to moral behavior. He argues that neural systems generating complex emotions and enabling self-restraint, regulation, and long-term planning were shaped by social pressures

within egalitarian hunter-gatherer groups. Physical punishments disciplined deviance, but cultural practices—storytelling, moral teaching, rituals—transformed conscience into morality, a culturally embedded system of beliefs, norms, and values fostering group cohesion and identity. Moralistic social control involves sanctioning undesirable behaviors and rewarding prosocial conduct. Virtues like generosity beyond kin, altruism, and fairness are elevated, while antisocial tendencies are punished and stigmatized. Morality thus regulates behavior and symbolizes group ideals such as justice, equality, and mutual responsibility. A critical shift from conscience to morality is the universalization of moral principles. Whereas conscience relies on personal inhibition and reputation concerns, morality formulates general norms applying equally to all group members, reflecting collective interests in social justice and stability. This moral universalism presupposes neurocognitive and emotional advances. With enhanced abstraction, symbolic reasoning, and foresight, humans recognized long-term collective consequences. Emotions like shame and guilt internalized social control, ensuring prosociality absent external enforcement. Boehm traces this transformation to intragroup egalitarianism—an adaptation crucial for cooperation in hunter-gatherer bands (100,000 - 50,000 years ago). Early hominins likely lived in dominance hierarchies with resource-monopolizing alphas, causing internal conflict and reduced cooperation. Evolution favored egalitarian mechanisms that constrained alpha dominance, distributed resources equitably, and enforced fairness. This fostered shared moral expectations grounded in mutual surveillance, emotional sanctioning, and norm defense. The shift from hierarchy to egalitarianism occurred with early *Homo sapiens* (~200,000 - 100,000 years ago), driven by factors like cooperative large-game hunting. Successful hunts required coordinated effort and equitable resource sharing to prevent discord, limiting dominant individuals' power and consolidating egalitarian principles. Advanced cognition and symbolic language enabled articulation of grievances, dispute resolution, and collective rule-making on resource distribution and behavior. Group survival depended on suppressing selfish impulses and sanctioning aggressive alphas through isolation or punishment. This interplay of biology and culture rendered humans adaptively moral (Boehm, 2012: p. 34). Social groups that curbed excessive dominance and promoted cooperation had better survival and reproduction chances. Consequently, conscience evolved into moral systems based on reciprocity, fairness, and collective responsibility. Unlike hierarchical societies with top-down rules favoring dominants, egalitarian bands developed norms collectively, reflecting shared interests. Boehm argues that for protomoral social selection to impact the gene pool, it operated over at least a thousand generations (~25,000 years). By 100,000 - 50,000 years ago, cultural systems of universal moral rules, promoting generosity beyond kin and altruism, were established (Boehm, 2012: p. 237). These cultural mechanisms reinforced social bonds and stability. Egalitarian communities required universal norms, founding justice and equality principles. Despite rule variability, their core function—to maintain cohesion—is universal. Thus, morality

transcends social control, dynamically strengthening egalitarian structures and collective harmony. As cognition, culture, and technology advanced, moral systems diversified into pluralistic narratives reflecting human cultural divergence (Boehm, 2012).

Boehm's work significantly contributes to evolutionary sociology and neurosociology but has limitations. Its main achievements include: an integrative framework linking biology and culture in moral behavior; emphasizing emotions like shame and fear in social regulation, underscoring neurosociological research needs; and providing a novel perspective on hierarchy-to-egalitarian transitions as uniquely human evolutionary processes.

Despite its significant contributions, Boehm's work has limitations. Many claims rely on induction and extrapolation from ethnographic studies of contemporary hunter-gatherers rather than direct archaeological or anthropological evidence, raising doubts about their applicability to prehistoric societies. Additionally, Boehm may overgeneralize the universality of moral sentiments like shame and altruism, as cultural variations in moral norms receive insufficient attention. His optimistic conclusion regarding the resilience of moral systems amid rapid social and technological change also appears somewhat overstated, leaving open questions about the durability of moral norms.

Complementing Boehm's sociological view, evolutionary biologist Francisco Ayala offers a biological perspective on moral behavior's roots. Ayala argues that humans possess a moral sense because biology provides three essential preconditions for ethical behavior: 1) the ability to anticipate consequences; 2) the capacity to make value judgments; and 3) the potential to choose between alternative actions (Ayala, 2010).

Ayala emphasizes the first condition—anticipating consequences—as crucial. An act is morally significant only if the agent can foresee its outcomes; for example, pulling a trigger is morally relevant only if one understands it may cause harm. The moral weight depends on this foresight. This anticipatory ability is tied to the cognitive capacity to relate means to ends—recognizing objects or actions as instruments for goals. Such competence presupposes future-oriented imagination and mental simulation of absent realities. Ayala traces this capacity to bipedalism's emergence, which freed forelimbs for manipulation, enabling sophisticated tool use—hunting, food processing, clothing—that enhanced survival and reproductive success. Tool use depends not just on manual dexterity but also conceptual understanding of means to ends, favored by natural selection alongside advanced planning and cognition (Ayala, 2010). The second precondition is making value judgments—perceiving some outcomes as more desirable than others. Moral assessment requires valuing consequences; without this, actions lack moral relevance. These values span ethical, aesthetic, economic, and political domains and depend on abstract classification and hierarchical organization of preferences, cognitive abilities fully developed only in humans, enabling moral choice and ethical responsibility (Ayala, 2010). The third condition is the capacity to choose

among alternatives. An act is morally relevant only if it could have been avoided; automatic physiological processes are excluded. Here, free will is central—without it, moral behavior is illusory, as ethical evaluation presupposes alternatives and the ability to select among them. This conscious deliberation situates human morality in a distinct evolutionary and philosophical category (Ayala, 2010).

Building on this, I introduce reciprocal altruism as further evidence for a universal biological basis of morality. Reciprocal altruism, a well-established evolutionary mechanism in humans and other animals, was coined by Robert Trivers in his seminal 1971 paper *The Evolution of Reciprocal Altruism* (Trivers, 1971). Trivers explains how reciprocity underpins cooperative social relationships. Turner and Machalek emphasize Trivers's integration of biological and sociological dimensions (Turner & Machalek, 2018). Trivers shows that prosocial behavior can evolve among "genetic strangers" through mutual benefit and repeated interactions. Such cooperation can arise even in species with limited cognition, like ants (Trivers, 1971). However, Turner and Machalek note that reciprocity is most fully realized in cognitively complex, culturally and linguistically competent species like *Homo sapiens*, whose consciousness enables understanding and strategic evaluation of reciprocal interactions (Turner & Machalek, 2018). Consciousness facilitates cost-benefit tracking and future engagement judgments, rendering exchange both possible and predictable.

Sociologically, reciprocal altruism is often called "delayed reciprocity" because rewards may be deferred (Molm et al., 2007). Economic systems founded on exchange principles thus become major enduring human institutions (Turner & Machalek, 2018: pp. 137-138).

Empirical studies document reciprocal altruism and cooperation across diverse species: primates, dolphins, birds, deer, zebras, ants, bees, among others (Seyfarth & Cheney, 2012; De Waal, 2007, 2008; De Waal & Lanting, 1998; Brosnan & De Waal, 2003a, 2003b; Connor & Krützen, 2015; Nowak et al., 2010; Jensen et al., 2007; Clutton-Brock & Parker, 1995; Willems et al., 2013). This mechanism—selfless help without immediate reward—fosters cooperation and social bonds. Examples include group hunting and sharing, collective defense, resource exchange, and cooperative offspring care enhancing juvenile survival. A striking example is whales assisting injured or young individuals to surface for air, and Dawkins's cited case of a dolphin rescuing a drowning human, which challenges explanations outside reciprocal altruism (Dawkins, 2006).

In human evolution, reciprocal altruism has reinforced social bonds and trust, facilitating coordinated hunting, predator defense, offspring care, and resource sharing. Interdisciplinary research from evolutionary biology, behavioral ecology, anthropology, and social neuroscience supports its deep evolutionary roots and universality across cultures. Key contributions include Trivers's foundational article on reciprocal altruism, Ernst Fehr and Urs Fischbacher's empirical research confirming its cross-cultural universality (Fehr & Fischbacher, 2003), Joseph Henrich and Robert Boyd's work on reciprocal altruism in social control and sanc-

tioning (Henrich & Boyd, 2001), Martin Nowak's analyses of cooperation mechanisms (Nowak, 2006), and Nicolas Baumard et al.'s exploration of its moral dimensions and links to justice (Baumard et al., 2013).

Yuval Noah Harari challenges the "law of the jungle" myth of ruthless competition, arguing instead that nature is complex and marked by cooperation, symbiosis, and altruism (Harari, 2024: p. 416). Alongside biologists like Frans de Waal and Robert Sapolsky—experts with extensive fieldwork in natural environments—Harari shows cooperation's primacy in ecosystems (Sapolsky, 2002; De Waal, 1996, 2005, 2006, 2010; Zook, 2010; Das & Varma, 2009).

Cooperation extends beyond animals to plants, fungi, and bacteria: about 80% of terrestrial plants depend on fungal symbiosis, and 90% of higher plants engage with microorganisms. Without cooperation, rainforest ecosystems would collapse. Harari asserts that the true "law of the jungle" is cooperation, not ruthless competition (Harari, 2024: p. 416).

At this point, it is important to highlight Francis Fukuyama's work, which emphasizes reciprocal altruism as a universal evolutionary factor in creating and sustaining social and political institutions (Fukuyama, 2011: pp. 40-52, 411; Fukuyama, 2014: pp. 10, 24, 68-69, 152, 344, 355-358). In his two-volume study—*The Origins of Political Order* (2011) and *Political Order and Political Decay* (2014)—Fukuyama traces political and social institution evolution across diverse regions, including China, India, and Europe. He argues that humans are not entirely free agents in shaping social behavior; rather, they share a largely homogeneous biological nature, stemming from a relatively small ancestral population from about 50,000 years ago. While this biology does not deterministically govern politics, it shapes and constrains institutional possibilities, resulting in recurring behavioral patterns across epochs and cultures. Fukuyama's view of human universality rests on several key points. First, humans have never existed as isolated individuals; the classical ideas of a pre-social state—whether Hobbes's anarchic violence or Rousseau's peaceful ignorance—are inaccurate. Like primate ancestors, humans always lived in kin-based social groups of varying complexity. Second, these groups persisted long enough evolutionarily to embed the cognitive and emotional capacities for social cooperation in the genome. This challenges the rational choice model of collective action, which views cooperation as solely pragmatic, underestimating the depth of social cohesion and ignoring deeply rooted social motivations. Fukuyama identifies two fundamental principles of human sociality: kin selection and reciprocal altruism. Kin selection entails altruism toward genetic relatives, proportional to relatedness. Reciprocal altruism, by contrast, builds relationships based on mutual benefit or harm outside kinship, relying on repeated personal interactions and developed trust (Fukuyama, 2011: p. 411). Emphasizing reciprocal altruism's role in institution-building, Fukuyama stresses that humans require social organization and cannot exist as isolated individuals. He links reciprocal altruism to cooperation and collaboration capacities, noting that social order predates formal political institutions such as chiefdoms or proto-states. Reciprocal

altruism fosters trust, a cornerstone for durable social bonds, shared norms, and values that uphold early *Homo sapiens*' social cohesion. As interactions grew complex, formal institutions emerged, evolving in response to changing social needs and cultural particularities across world regions. Nonetheless, reciprocal altruism remains a universal evolutionary factor strengthening social order, coherence, and conflict resolution, enabling diverse governance forms adaptable to historical and cultural conditions (Fukuyama, 2011).

As noted, reciprocal altruism is not unique to humans but widespread in animals, underscoring its biological grounding. This raises the question: can reciprocal altruism support moral realism—the view that humans possess an evolutionarily ingrained capacity for morality and share common moral values? There are strong grounds to affirm this. Reciprocal cooperation shows that fundamental moral standards—such as cooperation and mutual aid—are evolutionary products. More importantly, substantial evidence suggests these principles have an objective character, arising from universal biological needs and manifesting independently of specific cultures. If accepted, this implies moral truths are not wholly subjective or arbitrary but embedded in human biology as evolutionary adaptations. Morality, then, is not merely social construct but a mechanism evolved via natural selection to promote cooperation and social stability. However, this argument is not exhaustive. Morality's nature is complex, spanning biological and cultural dimensions. While neuroscience and evolutionary biology illuminate the origins and underpinnings of moral intuitions, they cannot alone determine what is "right" or "wrong." These normative questions require philosophical and ethical reflection beyond natural science, entering normative ethics and moral metaphysics.

Proponents of cultural relativism argue that moral norms are entirely products of specific historical and cultural contexts, with no underlying universal principles. From this perspective, what is considered "moral" in one society may be judged immoral in another, and there is no objective standpoint from which to adjudicate between them. This view emphasizes variability, the influence of power relations on norm formation, and the embeddedness of moral judgments within culturally specific meaning systems. While these insights underscore the contingency of particular moral codes, they do not preclude the existence of shared neurobiological capacities for moral judgment. Cross-cultural research indicates that, despite differences in specific prescriptions, certain moral sentiments—such as aversion to unprovoked harm—are near-universal. The neurosociological perspective adopted here acknowledges the sociohistorical specificity of moral systems but contends that these systems operate within biologically evolved parameters that enable moral cognition in the first place.

From a neurosociological perspective, the biological roots of morality and the possibility of objective moral standards are supported by extensive empirical research and theoretical analysis. Evidence affirms that the fundamental capacity for moral judgment—as seen in reciprocal altruism—has clear biological foundations. This capacity is not merely a product of socially constructed norms and cultural meanings but is rooted in universal characteristics and needs of living

organisms. However, this universal moral predisposition should not be equated with genuine moral truth; rather, it forms the biological and cognitive substrate upon which complex ethical systems are culturally constructed. Leading thinkers such as Sam Harris, Robert Sapolsky, Daniel Dennett, and neurosociologist Regin Firat provide compelling evidence showing how neurological and social mechanisms underpin moral sentiments and behavior, highlighting morality's coevolutionary biological-cultural nature (Harris, 2010; Sapolsky, 2017; Dennett, 2004, 2015; Firat & McPherson, 2010; Firat & Hitlin, 2012).

Despite this, entrenched 20th-century paradigms in social sciences—especially sociology—remain dominated by moral relativism, denying universal moral principles and viewing norms as wholly culturally contingent and dynamic. Such relativism often meets the biological foundations of morality with skepticism or outright opposition, sometimes dismissing evolutionary evidence with near-dogmatic fervor.

Convincing staunch skeptics with these arguments—though important—remains challenging. In this regard, the work of Peter Singer, a prominent bioethicist, enriches the discourse by strongly supporting moral realism and the universality of moral standards. In *The Expanding Circle: Ethics and Sociobiology*, Singer (1981) argues that certain moral principles are objective truths transcending cultural or individual viewpoints. He claims these universal moral facts exist independently of social conventions and compel actions consistent with justice, compassion, and respect toward all sentient beings. A core element of Singer's argument is the recognition of suffering as a moral fact. Suffering—the capacity to experience physical or emotional pain—is universally measurable and not culturally relative. Evolution has shaped instincts like empathy and compassion, which culture then elaborates. Thus, morality emerges from an evolutionary foundation later refined by social and cultural complexity.

Singer acknowledges cultural contexts shape moral beliefs and norms, emphasizing moral principles evolve through cultural evolution. Nevertheless, he insists this social construction does not negate universal moral principles, which manifest independently and have biological roots—aligned with Fukuyama's thesis on human biological commonality. Therefore, despite cultural moral diversity, shared objective principles exist indicating certain actions are morally right or wrong regardless of context. One example is suffering: the ability of living beings to suffer imposes a universal moral imperative to minimize suffering as far as possible. Singer grounds moral realism in the principle that the interests of all beings capable of pain are equal and morally significant, independently of sociocultural interpretations. The human capacity for empathy is evolutionarily ingrained, and moral systems ignoring it lack rational and ethical justification[1]. A central tenet

[1]Peter Singer is a leading social thinker who, for over fifty years, has advocated for animal rights and the reduction of suffering caused by humans. His seminal work, *Animal Liberation: A New Ethics for Our Treatment of Animals* (1975), remains foundational in bioethics and the animal rights movement. The book has been reissued multiple times, with the latest updated edition edited by Singer himself released in 2023 (Singer, 1975, 2023).

of Singer's ethical philosophy is the principle of the expanding circle—the idea that moral responsibility and empathy should extend beyond family, community, or nation to include all sentient beings capable of suffering. Singer views this expansion as a dynamic, ongoing process, supported by empirical evidence showing a gradual decline in various forms of violence. This trend exemplifies the potential evolution of moral consciousness toward broader inclusion, fostering conditions for a more just and compassionate social order[2].

In this context, Michael Huemer, Professor of Philosophy at the University of Colorado Boulder and advocate of evolutionary ethics, highlights the objective basis of morality rooted in biological origins. In *Ethical Intuitionism* (2005), he defends the theory that humans possess the capacity to intuitively apprehend moral truths. This moral intuition, shaped by evolution, is grounded in biological and cognitive mechanisms, providing an objective foundation for moral judgment. Huemer thus links moral evaluations to our natural capacity for ethical reasoning. Huemer contends that objective moral truths exist and can be known through intuition, independent of deductive arguments or empirical evidence. He does not equate these intuitions with innate instincts but regards them as rational insights accessing moral truths. Natural selection favored social traits—cooperation, empathy, mutual aid—that enhanced survival and reproduction, embedding psychological predispositions conducive to morality. However, Huemer rejects reducing moral truths solely to evolutionary influences. He maintains certain moral truths are universal and independent of cultural conceptions, explaining the presence of similar principles across diverse societies. While specific notions of "justice" are social constructs, the capacity to recognize and evaluate justice rests on a biological foundation. (Huemer, 2005) Though his theory intersects with ethical naturalism (e.g., Sam Harris), Huemer insists moral truths exist independently of cognitive capacities and require rational intuition, affirming their ontological autonomy beyond biological or empirical reduction.

Equally significant is neurophilosopher and neurosociologist Patricia Churchland's work, supporting the biological predisposition of the human brain to develop moral judgments. Interpreting neuroscientific data, Churchland views morality as rooted in brain mechanisms evolved to underpin social behavior and moral evaluation. She shows that moral decisions often rely on neurobiochemical and neurophysiological processes, with emotional components frequently outweighing conscious deliberation. Churchland emphasizes the role of the prefrontal cortex and limbic system—especially the orbitofrontal cortex—in categorizing actions as just or unjust. She argues moral reactions arise intuitively from evolved

[2]For a comprehensive analysis, see Steven Pinker's *The Better Angels of Our Nature* (Pinker, 2012). In this extensive work of over 800 pages, Pinker argues, with strong empirical support, that humanity has experienced a long-term decline in violence alongside increased peaceful coexistence. Drawing on comparative data from various periods and regions, he systematically examines trends in warfare, crime, and domestic abuse. Pinker attributes this decline to factors such as strengthened human rights, advances in education, expanded international communication, and the establishment of the rule of law. Central to his thesis is the influence of the "better angels" of human nature—compassion, cooperation, and reason—which have collectively driven this ongoing humanitarian transformation.

social tendencies fostering empathy, justice, and care—traits adaptive for human societies. Nonetheless, she notes that while some moral values may be biological adaptations, they do not constitute absolute truths. Moral norms emerge from the dynamic interplay of biological predispositions and socio-cultural, historical evolution, shaped by environment and interpersonal interactions. Thus, moral systems are socio-cultural constructs grounded in universal biological foundations developed over millions of years (Churchland, 2008, 2011, 2013).

In summary, numerous psychological and neuroscientific studies, alongside philosophical and sociological arguments, demonstrate that morality—the capacity to discern good from evil in self and others—is an evolutionary product rooted in biological predispositions evolved to facilitate social cooperation and survival in complex environments. The wide variation and historical transformation of moral norms underscore the significant influence of socio-cultural factors on moral discourse and practice.

Psychologist Jean Decety and neuroscientist Jason Cowell provide three primary lines of evidence supporting this thesis: 1) foundational moral "building blocks" appear in some non-human animals, indicating an evolutionary basis; 2) infants show early capacity for basic moral evaluation, suggesting moral intuitions precede cultural learning; 3) neuroscientific research identifies specific brain regions involved in moral judgment, highlighting complex emotional-cognitive interactions (Decety & Cowell, 2016). The authors highlight that fundamental aspects of moral behavior are evident in animals. Reciprocal altruism, for instance, requires no conscious reasoning or language and has been documented in various mammals. Prosocial behaviors—actions benefiting others—such as mutual aid and offspring care, are well documented in rodents and primates. Chimpanzees, notably, assist one another and selectively share resources, typically when sharing costs are low and others' needs are clear. They cooperate in multiple social contexts, including hunting and alliance formation during conflicts. Research by Sarah Brosnan and colleagues shows that capuchin monkeys respond negatively to perceived unfair treatment of peers (Brosnan et al., 2005). Similarly, Brosnan and Frans de Waal find that chimpanzees disengage from exchanges perceived as unfair, such as when another chimpanzee receives a greater reward for the same effort (Brosnan & de Waal, 2003b). Chimpanzees also comfort victims of social conflict through embracing or grooming, reducing stress. Comparable empathy and prosocial behaviors occur in other species; for example, rats free trapped conspecifics without direct personal gain. These behaviors are more frequent toward relatives and group members, underscoring their evolutionary adaptiveness in enhancing cooperation and survival within social communities (Decety & Cowell, 2016: pp. 3-4). Newborn infants demonstrate an early capacity to distinguish "good" from "bad" behaviors. Decety and Cowell cite an experiment where three-month-old infants spent significantly more time observing a puppet exhibiting "good" behavior compared to one displaying "bad" behavior. By six months, infants not only look longer at characters performing "good" actions but also reach

toward them, indicating emerging moral intuition. By around twelve months, infants show an understanding of fairness; for example, they expect equal cookie distribution between puppets and express surprise at unfair allocations (Decety & Cowell, 2016; Hamlin, 2013).

Further evidence for the biological roots of morality comes from Paul Bloom, Professor of Psychology and Cognitive Science at Yale, whose experiments reveal that infants aged six to ten months distinguish "good" from "bad" actions and prefer compassionate and fair individuals. Bloom's findings reinforce the thesis that moral intuitions emerge spontaneously early in development, before substantial socialization (Bloom, 2014). Decety and Cowell conclude that while experience shapes moral development, genetic predispositions play a significant role. As children mature, their understanding of morality evolves—from a simple fairness based on equal distribution to more nuanced preferences prioritizing need or effort in adolescence. This progression reflects the dynamic interplay of biology and culture in moral development (Decety & Cowell, 2016; Bloom, 2014: pp. 4-5).

The third line of evidence concerns neuroscientific findings identifying brain regions involved in moral judgment, including the medial prefrontal cortex (mPFC), amygdala, ventromedial prefrontal cortex (vmPFC), dorsolateral prefrontal cortex (dlPFC), insula, and posterior superior temporal sulcus (Decety & Cowell, 2016: p. 6). Cognitive neuroscientist Joshua Greene's research significantly advances understanding of moral dilemmas by conceptualizing two "moral engines": an "automatic moral engine" that operates rapidly, emotionally, and intuitively in immediate contexts, and a "rational moral engine" that is slower, analytical, and engages cognitive resources for complex moral reasoning. Greene's concept of "metamorality"—a global morality transcending ethnic and cultural boundaries based on rational analysis of human well-being—aligns with evidence emphasizing cognitive control and emotional regulation in moral processes (Greene, 2014a, 2014b)[3]. Morality has evolved through a complex interaction of genetic predispositions and cultural influences—not by the dominance of either factor alone. Humans are born with an inherent moral capacity and biological disposition for moral judgment. At the same time, uniquely human cognitive abilities and social experiences shape moral concepts beyond mere emotional or instinctive reactions. Reason plays a pivotal role in broadening empathy and moral concern beyond kinship and in-group ties. In this regard, neurosociology, alongside neuroscience, psychology, and evolutionary biology, remains crucial for uncovering mechanisms underlying moral thought, feeling, and decision-making. Future interdisciplinary research promises a deeper understanding of capacities such as anticipating consequences, self-reflection, and social responsibility. I share Decety and Cowell's hope that science will also clarify why some individuals—such as psychopaths—fail to act morally and potentially inform ways to assist them (Decety & Cowell, 2016: p. 7).

[3]Greene's metamorality approach does not dismiss moral intuitions; instead, it provides a rational framework that builds upon these fundamental moral mechanisms, aiming to enhance their applicability and effectiveness in intergroup and global contexts.

2.3. Neurosociology and the Foundations of Moral Realism

Without any claim to exhaustiveness, I will briefly outline the framework through which I interpret morality from a neurosociological perspective. Before doing so, however, I return once more to the central question: why is neurosociology important?

The position I advocate transcends the traditional—and deeply entrenched in academic circles—binary opposition between biology (nature) and the social sciences (culture). This antagonism, borrowing a term from Nassim Taleb, amounts to a form of epistemological arrogance. I support this claim with two key arguments.

First, as Jonathan Turner rightly emphasizes, sociologists have often avoided engaging with human evolution, clinging instead to the outdated notion that once a species acquires "culture", its biology becomes irrelevant. This view is not only simplistic but fundamentally mistaken. Culture itself is the product of a long evolutionary trajectory—at least 40 million years in primate evolution and approximately 5 to 6 million years within the hominin lineage. Therefore, any adequate explanation of why and how humans develop moral attitudes—and why they ascribe moral significance to virtually every aspect of their reality, including their very conception of self—must necessarily incorporate the evolved biological foundations of humanity (Turner, 2010b, 2021; Stets, 2015). Any interpretation of morality that neglects these biological underpinnings remains incomplete—just as any sociological account of human behavior that excludes biological components is insufficient. To the extent that sociology disregards the biological nature of humans, it limits its explanatory scope and its capacity to analyze the complexity of human interactions and sociocultural structures[4]. This conceptual blindness, as Turner emphasizes, not only undermines the scientific rigor of sociology but also diminishes its practical relevance in a world that urgently demands a profound understanding of the pathologies inherent in social organization. This urgency is heightened by the fact that many of these pathologies arise directly from human emotionality and the innate tendency to moralize the social universe (Turner, 2023: p. 97).

My second argument is formulated deductively, beginning with a fundamental question: Does truth exist? Are objectivity and facts real? I maintain that the answer is affirmative. Naturally, *Homo sapiens* has by no means arrived at some

[4]Turner argues that societies evolve through differentiation into three interdependent levels: micro, meso, and macro. These sociocultural layers continuously shape and influence one another. Macro-level structures constrain processes at the meso- and micro-levels, yet are themselves sustained through interactions at these lower levels. Neglecting any level, Turner warns, leads to incomplete theoretical accounts that overlook key social forces. While macrostructures emerge from micro- and meso-level dynamics, they also exert reciprocal influence. The meso-level serves as both a product of macrostructures and a shaper of micro-level interactions and behavior. Whether addressing culture, structure, interaction, or behavior, sociological inquiry must engage all three levels. These are not mere analytical constructs but represent the real modalities through which societies develop. Understanding their interplay is crucial for explaining current social systems and anticipating future change (Turner, 2023: pp. 74-92).

ultimate, irrefutable truth "about life, the universe, and everything" (to borrow the immortal phrase of Douglas Adams). As the eminent philosopher of science Karl Popper insightfully observed, truth is not discovered but invented[5]. Returning to the nature–culture dichotomy, which I regard as both conceptually obsolete and counterproductive to scientific progress, it is crucial to emphasize that this dualism hinders a comprehensive understanding of human behavior. Instead of accepting such artificial epistemological divisions that fragment scientific inquiry, we should embrace the integrative potential of neurosociology.

From a neurosociological standpoint, moral decision-making is not simply the product of "free will" or a uniquely transcendental moral faculty. Rather, morality arises from the intricate interplay between biological substrates and social influences. Neural processes—including neurochemical and neurophysiological mechanisms—generate the information, evaluations, and emotional responses that underlie moral preferences and judgments. Concurrently, social factors such as cultural norms, communal values, and interpersonal relationships profoundly shape the perception and interpretation of moral situations. More specifically, moral choice constitutes a complex decision-making process that synthesizes neurobiological mechanisms with sociocultural inputs to determine which actions and evaluations are considered morally acceptable in a given context. Neurosociological analysis underscores the universality of the human capacity for morality. In this light—and without delving into excessive detail—my position, grounded in current scientific evidence, aligns with a neurosociological interpretation of morality framed within moral realism[6]. The version of moral realism I defend is a philosophical position asserting that moral facts exist independently of individual opinions and social constructions, and that these facts can be apprehended through rational, scientific, or intuitive means. This view holds that moral truths are not entirely subjective or relative but rest on an objective foundation grounded in biological, neurological, and social mechanisms. Crucially, the objectivity of morality does not imply that moral truths exist entirely apart from the human mind; rather, it signifies that they are rooted in genuine biological and social processes. To prevent misunderstanding, several clarifications are warranted.

First, affirming the objectivity of moral truth does not deny the evident reality that specific moral values and norms are culturally constructed. Rather, I emphasize the existence of a neurobiological capacity for morality and the presence of universal moral intuitions—such as those concerning concepts of "good and evil" or "right and wrong"—which enable the social construction of diverse ethical systems. Second, I maintain that morality is not only amenable to, but indeed requires, rigorous

[5]Accepting Popper's notion that truth is invented does not imply that moral truths are arbitrary or purely subjective. Rather, they emerge from evolutionary processes and human cognitive development, making them objective within our shared biological and social reality.

[6]For an in-depth discussion of moral realism and its counterpart, moral relativism, see *Moral Relativism and Moral Objectivity* by Harman and Thomson (Harman & Thomson, 1996). The authors engage in a nuanced debate, analyzing core theoretical arguments and their logical, epistemological, and ethical implications. Further support for the idea that morality evolved via natural selection while retaining objective features can be found in the work of Nichols and Joyce (Nichols, 2004; Joyce, 2007).

scientific investigation. Third, consider the following example: substantial evidence supports the claim that the sense of justice is a universal, evolutionarily ingrained feature of human nature. Yet it is essential to distinguish between the biological intuition of justice and the particular cultural interpretations of what is considered just or unjust across historical, geographic, and sociocultural contexts. In this regard, morality should not be conflated with justice. Justice constitutes a utopian ideal—an ideologeme—that inherently involves subjective value judgments, which by definition cannot and should not be wholly determined by emotional or biological factors. In brief, the human brain is biologically predisposed toward the pursuit of justice, but the content and expression of that pursuit vary. Interpretive understandings of what counts as "just" or "unjust" are culturally contingent and subjectively experienced. Fourth and finally, the neurosociology of moral decision-making, which I explore here, should not be conflated with the field of bioethics.

3. Conclusion

The central argument advanced in this study is that human morality cannot be adequately understood without recognizing its dual origins: as a biologically evolved capacity and as a culturally elaborated system of norms. Grounded in a neurosociological perspective, this article defends the view that moral behavior emerges from the dynamic interaction between evolved neurobiological mechanisms—particularly those governing emotion—and sociocultural processes of norm formation and transmission. Emotions such as shame, guilt, empathy, and moral indignation are not merely products of cultural conditioning but represent fundamental affective substrates that enable moral judgment and social regulation. These emotional mechanisms, shaped by natural selection, provide the neurocognitive scaffolding upon which complex moral systems are constructed and sustained. Within this neurosociological framework, the article offers a theoretical synthesis that integrates insights from evolutionary biology, neuroscience, and sociology. It distinguishes between the universal moral capacity—embedded in the neural and emotional architecture of *Homo sapiens*—and the variable content of moral codes, which are shaped by specific historical, cultural, and symbolic contexts. The position defended here challenges the moral relativism dominant in much of contemporary social theory, instead advancing a form of empirically grounded moral realism. While moral norms are context-dependent, they are constrained and enabled by biologically evolved predispositions for moral cognition and affective response. Ultimately, this study affirms that morality is a co-evolved phenomenon: neither reducible to culture alone nor rigidly determined by biology. As such, the neurosociological lens offers a compelling and integrative explanatory framework for understanding the emergence, function, and variability of moral behavior as a core dimension of human social life.

Limitations and Future Directions

A limitation of the present framework is its reliance on indirect paleoneurological

inference when discussing the evolutionary emergence of moral capacities. While such inferences are supported by comparative neuroanatomy and archaeological evidence, they remain necessarily interpretive. Future research should aim to test key propositions of the model through direct empirical methods, such as cross-cultural neuroimaging studies of moral judgment, longitudinal developmental research, and experimental manipulations of moral decision-making contexts. These avenues will help refine the theoretical claims and assess their applicability across diverse sociocultural settings.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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