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Symbiotic Realism: a transdisciplinary approach to understanding international relations

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The contemporary landscape of international relations (IR) is shaped by seven interdependent forces: disruptive technological advancements; the changing role of non-state actors; the emergence of novel strategic domains; the rise of collective civilizational frontier risks; the intensification of sub-/supra-national transcultural historical schisms, and the weaponization of economic interdependence. This paper argues that these six forces are profoundly influenced by a seventh: the predispositions of human nature. Traditional IR theories have long relied on speculative notions of human nature to advance their explanations of global politics. Their capacity to explain trends or events rests on a range of assumptions rather than explicit knowledge of the drivers of behavior. This paper presents an approach that unifies insights from the life sciences with ideas from realist IR theory. Informed by neuroscientific findings about the formation of emotions, Symbiotic Realism targets the speculation at the core of IR paradigms to account for the inherent human predispositions shaping state behavior in light of changing global dynamics. It does this by employing pragmatic, multi-sum, symbiotic, and non-conflictual competition to advance the view that national interests must be reconciled with transnational and transplanetary interests for them to be achieved in a sustainable and peaceful way.

KEYWORDS

Symbiotic Realism, transdisciplinary philosophy, political philosophy, international relations (IR) theory, neuroscience, global and outer space security, global governance and global order, AI and disruptive technologies

1 Introduction: at the crossroads of international relations and neuroscience

Recent years have seen profound transformations in the world that challenge the core tenets of mainstream theories of International Relations (IR). These ongoing changes are primarily driven by technological advancements that have already reshaped geopolitical dynamics in multifaceted ways. For example, cyberspace and innovations such as drones have endowed non-state actors with unprecedented influence and capabilities, altering the balance of power that once predominantly rested with nation-states. At the same time, we are witnessing the emergence of new but inadequately regulated arenas for geopolitical competition ranging from the virtual realm to the boundless expanses of outer space.

As humanity breaks new ground in science and ventures further into space than ever before, we encounter what I call "civilizational frontier risks." Stemming from innovative technologies such as artificial intelligence (AI), quantum computing, and synthetic biology,

these risks raise big-picture questions about the trajectory of human civilization. They create mutual vulnerabilities that transcend national boundaries, compelling policy makers everywhere to navigate a continuously evolving landscape of global interdependencies.

Despite this growing interdependence, the world is characterized by deep-seated divisions and conflicts rooted in historical grievances and amplified by modern communication technologies. These schisms transcend individual nations to carry significant ramifications for IR, global politics, and interactions across culturally diverse groups around the world. Overall, the rise of transnational challenges exemplifies the inadequacy of the zero-sum logic often characteristic of the policymaking applied to tackle contemporary issues, such as the threats posed by pandemics, fragile supply chains, and escalating climate and biodiversity crises.

Zero-sum thinking extends from subjective individual perceptions about the gains and losses associated with strategic decision-making. Such logic is explained by realist IR theory that, alongside other mainstream IR theory, struggles to account for human nature (Edinger, 2021).[1] In classical IR theory, it is widely accepted that "politics, like society in general, is governed by objective laws that have their roots in human nature (Morgenthau and Thompson, 1985)". But the conceptions of human nature found in traditional IR theories are often speculative, "analytically insignificant or dangerously reifying (Jacobi and Freyberg-Inan, 2015a)." This is partly owing to their reluctance to take up human emotions. Emotions are everywhere in world politics, "implicit and ubiquitous, but undertheorized" (Jacobi and Freyberg-Inan, 2015a).

IR theorists long held a belief that efforts to address human emotion must have a rational (or at least intelligible) baseline (Mercer, 2005). As a result, the emotional basis for human behavior was generally overlooked. Human responses to threats and fear, as well as emotional relationships more broadly, have not been given the attention they deserve by IR scholars. Notable exceptions include Simon Koschut and Christine Sylvester. Koschut (2022) has contributed to the study of emotions in international relations by emphasizing how emotions are not merely personal feelings but are embedded in social structures and discourses that shape international politics. In turn, Sylvester's work focused on challenging the traditional frameworks of IR by emphasizing the significance of emotional narratives in understanding global politics (Mhajne, 2015).

However, some argue that the ways in which psychologists and neuroscientists might study emotion "cannot be replicated anytime soon in foreign policy decision settings (Crawford, 2000)." In his review of how classical realism took an interest in generalizable processes of the mind, Harald Edinger points out that IR as a whole is challenged by the difficulty of "scaling up" emotions from the level of the human to that of the state (Edinger, 2021, p. 1184).

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1 Realism has long had immense influence on policymakers, particularly in the area of foreign policymaking. For a discussion of its influence in the context of emotions, see Edinger (2021).

Consequently, we struggle to make sense of contemporary global politics through traditional lenses even as we know that insights into human emotions can advance our understanding of ongoing conflicts and interstate dynamics. To a large extent, our innate predilections determine how we might, for instance, deploy emerging technologies that bring both promise and peril. To bridge this theoretical gap, this paper proposes a transdisciplinary approach to analysis that I call Symbiotic Realism. This approach unifies findings from the life sciences with familiar ideas from realist IR theory, such as assumptions of rationality, self-interest, and the zero-sum games that result. Drawing from the neuroscientific study of the formation of human emotions in the brain, it targets the speculation at the core of IR paradigms to better account for the dynamics of IR today.

More specifically, Symbiotic Realism preserves the enduring principles of realism while discarding its outdated assumptions. Through philosophical reflection informed by empirical insights into the emotional origins of human perception, it updates core realist conceptions of human nature and the motivators of state behavior. This understanding is then applied to explain state behavior in the contemporary international system, extending scientifically grounded conceptions of IR ideas to account for modern realities of interconnectedness and the transnational (and even transplanetary) nature of current and emerging threats to humanity.

This article aims to show the twofold value of bringing findings from life sciences to IR study. First, this approach bridges the gap between the intricate workings of the human brain and global politics, thereby deepening our understanding of state behavior and interstate dynamics. Second, it reveals new avenues for improving interstate relations by identifying key factors that harness humanity's potential for peaceful coexistence. Symbiotic Realism offers a novel perspective not only on our frameworks for understanding, but also on navigating the contemporary international system. It does so through a sensibility to the predispositions of human nature and how they might shape state behavior in relation to technological advancements, non-state actors, new strategic domains, shared civilizational risks, and transnational cultural schisms.

2 Methodology

This paper uses a transdisciplinary and concept-driven methodology rooted in theoretical synthesis to present a novel theoretical framework: symbiotic realism. The methodology initially involved a critical engagement with empirical findings from neuroscience, psychology, and evolutionary biology, particularly concerning human emotionality, self-interest, and moral cognition, thereby expanding the conceptual tools available for analyzing today's complex global landscape. These findings provided a foundation for interrogating the core assumptions of dominant IR theories, including realism, liberalism, and constructivism. Together, they build a new way of thinking about how states behave and why.

Rather than discarding established IR paradigms, the methodology for this paper involved a constructive deconstruction

of their foundational premises, followed by the selective integration of their most compelling elements. This synthesis was informed by contemporary scientific understandings of human behavior and insights from contemporary neuroscience—particularly research on the brain's emotional systems, reward pathways, decision-making processes and our emotional and motivational predispositions. The central idea behind this approach is that human nature plays a much larger role in shaping international politics than most IR theories currently acknowledge. To explore this, this paper draws on existing scientific research about how emotions are formed in the brain, how they influence behavior, and how people are motivated by specific emotional drivers. These insights are then connected to ideas from realist IR theory related to state interest, competition, and decision-making. By extending these insights to the level of state behavior, the paper proposes that international peace and stability require an acknowledgment of shared emotional drivers and the development of mutually beneficial, multi-sum relationships.

The methodology used in this paper involved identifying key patterns in how both individuals and states behave, and explaining these patterns through what neuroscience tells us about human emotions and motivations. This comparative analysis highlighted the framework's distinctive contributions and its capacity to reveal patterns and dynamics that traditional IR theories may overlook or misrepresent. To ensure methodological rigor, the study adopted a dual approach of conceptual and empirical triangulation. Conceptual triangulation involved drawing on multiple disciplinary perspectives to build a more integrative and balanced theoretical base. Empirical triangulation was achieved by applying the framework across a diverse set of geopolitical contexts, thereby reducing the risk of theoretical bias arising from reliance on any single case. Ultimately, this methodology enabled a reimagining of global politics, one that transcends disciplinary boundaries and re-centers the human condition at the heart of international relations theory. By doing so, the paper aims to build bridges between different areas of knowledge and create space for new forms of cooperation between disciplines—and ultimately, offer a more complete picture of how international politics work today.

3 Grappling with the human in international relations theory

John Ruggie famously asked, "What makes the world of international relations hang together (Ruggie, 1998)?" We live in a world made up of and by people, and world politics would not exist without humanity. There is thus general consensus on an undeniable link between human nature and interstate relations. On a very basic level, our nature influences how we act and how we perceive one another. This means human nature and our conceptions thereof, whether implicit or explicit, heavily influence our perception and thus our political perspectives and corresponding actions (Jacobi and Freyberg-Inan, 2015b).

Intuitive ideas about human nature have provided the basis for theory building in IR since the birth of the discipline. Classical realists of the mid-twentieth century acknowledged the notion that human nature significantly influences state behavior (Crawford, 2000).[2] As the realist paradigm developed, neoclassical realism began to extend its focus beyond material power to anticipate concepts from social constructivism (such as prestige and social norms) and underscore the importance of understanding actor motives. Still, it did so from a cognitivist perspective that ignores factors such as intuition or subconscious biases and their origins.

Despite its contribution to the study of human motivation in IR, realism broadly overlooks the many instances when conflict is less rational even as it positions considerations for emotions and affect secondary to the fundamental assumption of rational choice (Edinger, 2021, p. 1185). This fault is hardly limited to realism. The assumption of rational actors making choices accordingly underpins liberal IR theory, as well. Within this assumption lies a deeper one that pits the rational at odds with the emotional, as though the former can be examined in isolation from the latter. American political scientist Richard Ned Lebow stressed that reason and emotion are not as mutually exclusive as prevailing IR approaches have made out (Lebow, 2005). In fact, implicit ideas about a limited number of human emotions—such as fear, hate, and the lust for power—can be found in realist, liberal, and even Marxist accounts of foreign affairs. But overall, these ideas are largely speculative, poorly theorized, and overrationalized, implying the misconception of emotional motives as rational ones.

To illustrate, theories of liberalism tend to rationalize emotions into utilitarian self-interest (Ariffin et al., 2016). They consider human actions as motivated by a desire to better our condition, leading individuals to barter and exchange and making interdependency a gain for all. Similarly, realists perceive state struggles over influence in terms of national interest rather than as a lust for power, mislabeling their fear of failure as "risk assessment." Likewise, Marxism rationalizes emotions such as the grievances of expropriated classes into the concept of "class consciousness," describing the greed of dominant classes in economic terms as an "appropriation of surplus value" (Ariffin et al., 2016). IR literature not only rationalizes emotions but also depicts them as emerging separately from, rather than together with, cognition (Gammon, 2020).

On the whole, these approaches work with a flattened view of human beings. The problem with explaining the relationship between states based on static and reductionist conceptions of human nature is that it bears the risk of creating theories offering overly simplistic solutions to complex problems. According to Cynthia Enloe, we are left with a Superman comic strip for a portrait of IR when the reality is closer to a Jackson Pollock canvas (Enloe, 1996). Ultimately, the capacity of IR scholarship to explain the contemporary world rests on a range of implicit psychological assumptions rather than knowledge of the human drivers of state behavior (Goldgeier and Tetlock, 2001).

In their work on emotions and world politics, Roland Bleiker and Emma Hutchison review the inability of mainstream IR approaches to deal with human complexities (Bleiker and Hutchison, 2008). They attribute this inability to the predominance of the rational choice paradigm, which appeals to the nature of IR as a social science. Even constructivist approaches to IR, such as Alexander Wendt's reframing of the so-called "rational" actions of states and interpretations of anarchy as social constructions, locate the cause for state behavior in ideas (Wendt, 1992). While these approaches take up notions of identity and community or beliefs and understandings, they nonetheless subsume the social phenomena they address to cognition (as opposed to questions of affect).

On the whole, constructivist and poststructuralist theories tend to conceive of human nature as a tabula rasa on which the social is inscribed (Gammon, 2020). But this conflicts with neuroscientific insights demonstrating the existence of innate human predispositions and the bidirectional recursive interactions occurring between these predispositions and the social context (van Kleef et al., 2016). There is convincing evidence that our political behavior has "at least some basis in the biology of the brain" (Fitzduff, 2021, p. 14).[3] While cognitivist and poststructural IR studies acknowledge that the behavior of states is linked to perceptions about identity and interests shaped by emotions, they remain empirical in nature. The real problem, Bleiker and Hutchison (2008) explain, is that emotions are "too ephemeral to be understood exhaustively by the type of systematic inquiries that characterize the social sciences" (p. 117).

The solution they propose is a change in methodological mindset that would allow IR scholars to become more effective in their analyses of state behavior. This shift involves acceptance that knowledge produced from the study of the impacts of emotions on behavior is not necessarily objective and measurable. The task for IR scholars is thus not the development of a systematic theory of emotions, but an open-ended search for a sensibility that could conceptualize the influence of emotions even when and where it is not immediately apparent.

A transdisciplinary approach is concerned with the unity of intellectual frameworks beyond disciplinary perspectives. In this sense, I seek to unify a neuroscientific framework of human emotions with a realist understanding of IR. The realist perspective accurately portrays conflict as a manifestation of humanity's inherently competitive and dominating traits, but fails to sufficiently recognize the emotional origins of these traits. As Jervis (2016) observed, "realism has difficulty explaining why states sometimes behave in foolish or self-defeating ways". But humans often behave in foolish and self-defeating ways simply because emotions shape human behavior. Neuroscience provides empirical insights into the precise formation of emotions and the mechanisms through which they alter human behavior. With its sensibility to the emotions at the core of realist analyses, Symbiotic Realism advances this understanding to the behavior of states.

4 Symbiotic realism: bridging the human and the state with neuroscience

4.1 The emotional amoral egoism of states

States are egocentric in the sense that they are preoccupied with themselves and their own self-interests. Realists view the egoism of states as the result of forces inherent in human nature—forces that make us continuously strive to maximize our status, power, or wealth. The desire to maximize is a rational calculus in an anarchic, competitive world. But Symbiotic Realism offers a more nuanced account of human nature: emotional amoral egoism (see Figure 1). This account posits that all human beings are born with three powerful predispositions. These innate human tendencies manifest themselves differently depending on individual socialization within diverse contexts and in response to varying personal and political circumstances. Regardless of how they manifest, our emotional, amoral, and egoistic inclinations collectively affect our behavior.

The human predisposition to emotions plays a critical role in shaping behavior. In fact, affect and cognition are intertwined in the fabric of the brain "via a complex web of connections in ways that jointly contribute to adaptive and maladaptive behavior (Okon-Singer et al., 2015)".
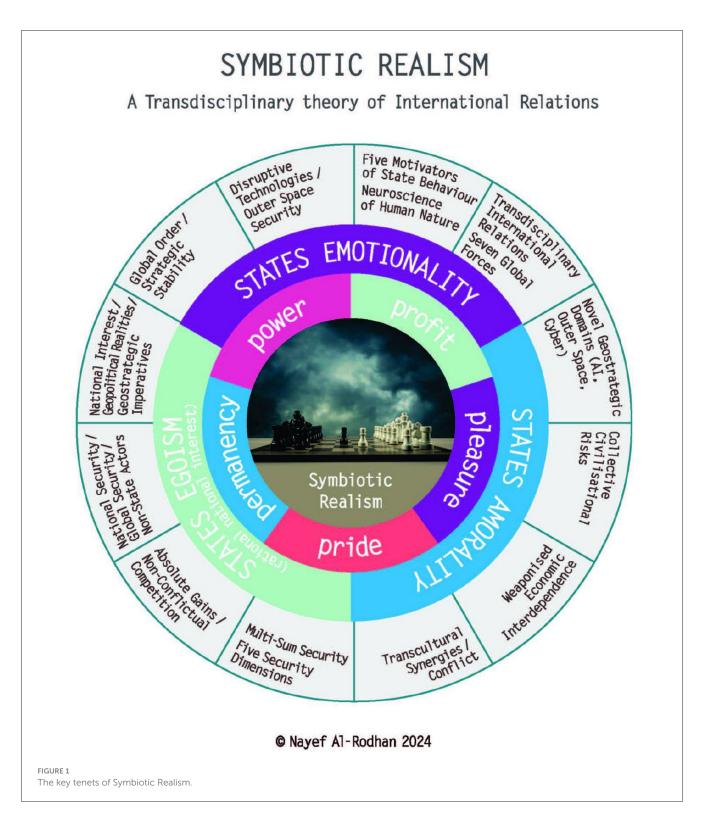
The predisposition to amorality understands human nature as amoral in the sense that individual values are not innate and inflexible, but acquired and malleable. They are the result of "a sophisticated integration of cognitive, emotional, and motivational mechanisms shaped through evolution, development, and culture (Decety and Wheatley, 2015)". Put differently, sociocultural and biological factors provide each of us with a unique moral compass that is constantly changing with the flux of circumstances, individual experiences, and emotions (Trommsdorff, 2020). Finally, the predisposition to egoism is particularly powerful in shaping human decisions and behaviors (Riva et al., 2016). Neuroimaging evidence shows that we are capable of caring about both ourselves and others—but the self takes precedence (Al-Rodhan, 2021b, p. 67).

Symbiotic Realism conceives of states not as strictly rational egoists, but as deeply emotional and amoral[4] egoists. This conception does not contradict the realist perspective so much as broadly assign greater significance to emotions in state decision-making (Al-Rodhan, 2023). States are emotional in the sense that emotions are not just a subjective individual experience, but intersubjective social phenomena that create a point of convergence among members of a group. Individuals identify with each other through shared history and culture. As a result, group-level emotions emerge that are irreducible to the individual experience.

For example, emotional connection to a country can be strengthened through state institutions and practices, such as memorial days and annual celebrations of nationhood. These can be conducive to synchronizing emotion and channeling it

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3 Evidence has emerged from disciplines including neurobiology, genetics, neurochemistry, and endocrinology (Fitzduff, 2021).

4 As with humans, the moral compass of any state is not set in stone. Instead, it fluctuates owing to various external factors that include domestic and international pressures. Together, these factors can significantly change the moral judgments shaping political decisions.

FIGURE 1
The key tenets of Symbiotic Realism.

into collective action tendencies that translate into state behavior (Gammon, 2020, p. 191). Even IR scholars have observed that emotional convergence shapes state behavior, particularly around the events of 9/11 when many noted how "fear engendered by terror can create moral certainty and lead otherwise diverse and disagreeing constituencies to swift, universal agreements based on basic principles and actions" (Bleiker and Hutchison, 2008, 119).

In terms of state egoism, realist accounts can be deepened by incorporating a growing body of evidence illustrating the intricate interplay between collective interest and perceived self-interest, which is conditional on our collective identity (Weeden and Kurzban, 2015, p. 42). Humans are primed to form group attachments that serve as "an important cognitive structure through which individuals navigate and participate in the political

and social world (Jardina, 2019, p. 4)." This deeply rooted inclination to prioritize and defend the interests of the group to which we attach could explain the tendency of states to prioritize narrow self-interests at the expense of broader considerations for global wellbeing. Research shows how individuals, and thus states, are often unaware of the extent to which their political attitudes are dominated by self-oriented motivations. Instead, actors tend to engage in unconscious self-deception to rationalize their political views and actions as fair while dismissing opposing positions as self-serving (Weeden and Kurzban, 2015, p. 22).

In terms of statecraft, the prevalence of emotions carries both positive and negative implications. On the one hand, it can facilitate effective decision-making and cooperation. Neuroscientist Antonio Damasio argues that emotions are central to decision-making as they exert a substantive influence on cognitive functions such as perception and problem solving (Bosse et al., 2008).

Empathy can be a crucial prerequisite for building trust between leaders as it has a de-escalating effect that can transform an adversarial relationship into a cooperative one (Wheeler, 2013). Marcus Holmes describes how face-to-face diplomacy provides signaling mechanisms that trigger mirror neurons, which simulate the mental states of others and are thus highly conducive to generating empathy. Holmes concludes that when meeting face-to-face, individuals are better able to understand each other's intentions. This leads to reduced uncertainty and makes state leaders more likely to cooperate (Holmes, 2013).

On the other hand, the influence of emotions does not equate to more moral decision-making. Over reliance on emotional responses can lead to impaired judgment, and biases stemming from emotions can even be a source of interstate tensions. For instance, fear can easily hijack the reasoning capacities of state leaders especially in situations of interstate conflict.

Fear responses range from full activation of what is known as the "panic system" to various forms of adaptive behaviors that ensure our survival (Adolphs, 2013). Across the globe, we are observing how long-simmering fears of change and loss of identity—whether national or cultural—are engendering worrisome processes of polarization that in turn shape relations between actors in the international system (Croucher, 2018). Throughout history, imagined or real threats have been mobilized as a political tool to advance policy objectives or a certain ideological agenda (Al-Rodhan, 2020). With fear comes a deep human need to inflict aggression on the source of the perceived threat. I refer to this phenomenon as "fear-induced pre-emptive aggression (Al-Rodhan, 2020)." Research on both inter-individual and inter-group conflict shows that the mere presence of a potential threat of an attack can be sufficient to lead to pre-emptive attacks (Simunovic et al., 2013).

In a symbiotic realist account of IR, then, states are emotional amoral egoists because humans are. Both are predisposed to behavior shaped by emotions at least as much as rationality, a flexible moral compass that can give rise to changing moral judgments and political decisions, and a general focus on the self over others. For states, emotions can be experienced at a group level that creates a tendency for collective action. The emotional pull of group identity and collective interests is strong, leading states to prioritize their own narrow self-interests for reasons beyond that of a rational maximization of status, power, or wealth. But emotions can exert both positive and negative influence over state decision-making, and fear is especially powerful when it comes to states and conflict.

4.2 Motivators of the state: the Neuro P5

At the heart of the emotional amoral egoism of both humans and states are five specific motivators that I refer to as the Neuro P5: power, profit, pleasure, pride, and permanency. Mainstream IR theories tend to broadly acknowledge these motivators, but without a specific understanding of how they might work to shape state behavior (Baldwin, 2016).[5] However, neuroscientific findings can complement ample historical evidence demonstrating the role of these motivators in shaping IR. Motivation, the driving force behind our actions, emerges through a structural and functional mechanism known as the mesolimbic reward center. This complex neurobiological system comprises the key components of wanting, liking, and learning.[6] Wanting refers to the anticipatory pleasure associated with the expectation of a reward. Liking captures the positive sensations experienced in the presence of a reward. Both wanting and liking are predominantly governed by the nucleus accumbens or the brain's pleasure center. The nucleus accumbens releases the neurotransmitter dopamine both when a reward is obtained and when stimuli predict pleasurable experiences (Schultz, 2016). Finally, learning enables an organism to associate respective stimuli with a rewarding experience.

Several regions of the brain are involved in processing reward-related information. For instance, the hippocampus helps us form memories that ensure we repeat the behavior associated with the reward (Rice, 2019). The human desire for reward can be distinguished between basic physiological motives (e.g., the need for food or reproduction) and cognitively more complex longing for what I call neurochemical gratification, which is delivered by immaterial rewards. Power, profit, pleasure, pride, and permanency are major purveyors of neurochemical gratification and, as with other emotions, they can be understood at the level of states.

Out of all of the Neuro P5, power has been studied most extensively and holds the greatest potential for both ensuring or undermining peace and security. While dominant IR theories widely acknowledge the striving for power as a main driver of conflict and war (Baldwin, 2016, p. 274), the life sciences illuminate the neurochemical and sociocultural factors that lead to vulnerability for, or resilience against, the corrupting effects of power. Research shows how power can refine a number of qualities required to succeed in life, but higher levels of power are also associated with tendencies toward overconfidence and self-centeredness (Fast et al., 2009). These tendencies can extend to a point at which the powerful are no longer able to empathize with others (Galinsky et al., 2006). When unrestricted by systems of accountability, power is likely to distort a leader's decision-making

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5   Most theories acknowledge that the quest for power is a primary driver of conflict and war. Baldwin (2016) reviews how the interdisciplinary literature on social power shaped IR's principal theoretical traditions.

6   The following description of the mechanism of the reward system is based on Berridge et al. (2009) and Berridge and Robinson (2016).

and undermine their empathy, leading to immoral and reckless behavior in the international arena.

Ironically, the skills most important to leading effectively are the very skills that deteriorate once individuals have unlimited power (Keltner, 2007). While all of the Neuro P5 can trigger behavioral aberrations and addictions, power creates a particularly strong "addictive high much like cocaine or other drugs, and the more unhinged power [...] [people] have, the more they will seek to increase it even at the risk of self-destruction (Al-Rodhan, 2021a, p. 151)." It is this reckless pursuit of power that lies at the root of conflict and wars. When the extent of power is kept within limits through well-designed processes of accountability, expert consultations, and consensus to prevent its abuse, however, power triggers merely a "like" rather than an addictive high.

The Neuro P5 purveyor profit has played a similarly important role in IR, partly by acting as a driver of colonial enterprise. Its effects on state behavior are demonstrable as the desire for gold, oil, land, and other scarce resources has ostensibly fueled numerous conflicts and continues to drive economic exploitation. Research indicates that over the past 60 years, at least 40% of all intrastate conflicts have been to some extent motivated by competition over natural resources (Matthew et al., 2009).

There is evidence of the impact of pleasure on state behavior as well, albeit to a lesser extent than on the individual level. A state's ideas of what is pleasurable are closely connected to its national habitus, or the shared habits, cultural values, and collective identity within a nation (Loyal and Quilley, 2020). This collective mindset influences how a nation perceives pleasure and desirable outcomes. A nation valuing individual freedom may be motivated to pursue policies that enhance personal liberties, for instance, finding pleasure in aligning with these cultural ideals.

Another major driver of state behavior in global politics is pride. Brice (2015) locates the importance of pride in IR by detailing how "throughout American history, the United States has actively used its sense of national pride in its foreign policy, whether implicitly or explicitly." Great power conflicts, too, can be understood through a lens of pride; competition over status and prestige shapes relations between, for example, the United States and China. Both states know that the most prestigious actor in the international system will be capable of achieving desired outcomes with minimal resistance from other states (Khong, 2019).

Finally, the quest for permanency also motivates state behavior on the international stage. This emotional motivator is linked to a primal drive to secure survival. From an evolutionary point of view, we are geared toward ensuring our survival both as individuals and as a group. For better or worse, the human quest for longevity has always shaped IR. On the one hand, it encourages human beings to create a positive legacy through meaningful contributions to human progress and international peace. Yet, at the same time, this drive can seduce state leaders into making risky decisions with disastrous consequences. The pursuit of permanency can bring about a desire for immortality in the recollections and affections of others. For states, this may mean seeking to create a collective memory that transcends generations and trying to prove their superiority over other nations, whether in sports, culture, or other domains.

To illustrate this, many commentators in the run-up to the Russia–Ukraine conflict saw such action as unlikely on the grounds that it would not fit Russia's cost–benefit calculus (Yilmaz, 2022; Meger, 2022; Hawn, 2022). But power, pride, and permanency—three crucial factors underpinning the Neuro P5—can help explain Russian motives. For centuries, Russia has seen itself as one of the world's greatest powers. The Russian calculus and subsequent conflict could therefore be explained, collectively, by Russian resentment linked to the humiliation of the Soviet Union's collapse in the early 1990s and diminished standing on the global stage, perceived geopolitical injustices and threats to its national security after the 2014 Ukraine coup, as well as Ukraine's potential membership of NATO (Kuzio, 2022).

Russia's quest for permanency, independence, and survival of its national and cultural character have long shaped Russia's great-power ambitions. It was deeply embedded within efforts to create an enduring political unity among Eastern Slavic states (Mankoff, 2022). Russia's pursuit of permanency is also expressed through the use of recurring historical references, such as praise for Peter the Great, and through the fact that the Russian polity has remained almost unchanged since the eighteenth century (Pomeranz, 2022).

4.3 Pragmatic, symbiotic, non-conflictual yet competitive cooperation

In realist theory, global politics can be conceived as a game in which a gain to one state comes at a loss to another; when the gains and losses are added up, the final sum is zero. In recent years, this logic has broadly emerged from deteriorating relations between the United States and China (as well as other countries) and crises within the European Union, among other sources, to characterize the decision-making of powerful states in global politics (Hillison, 2019). It has a rational basis because a gain acquired at the expense of a competitor maximizes power.

But a symbiotic realist approach holds that states are motivated by emotions and a shift away from narrow self-interest is thus possible. The power—and ultimately, security—of a state can be understood through a lens that allows for multi-sum outcomes. The "multi-sum security principle" posits that global peace and stability consist of five dimensions of security: human, environmental, national, transnational, and transcultural (Al-Rodhan, 2021b, p. 162). For security-seeking states, the question is not how to achieve narrow self-interests in light of civilizational frontier risks and other transnational challenges that transcend the capacity of any single state to address but rather how to "create international conditions so that all states enjoy a reasonable degree of security (Lange et al., 2017, p. 309)." Symbiotic Realism thus discards the zero-sum logic that requires one state to lose for another state to win and sees multi-sum outcomes as both possible and achievable, because states are emotional amoral egoists. Such outcomes can be achieved by actively shaping the moral judgments that influence political decisions. For this reason, symbiotic realism has a strong prescriptive focus.

Seeing the world through the realist lens of self-help and focusing on zero-sum games inevitably exacerbates injustice through unfair distribution. This injustice translates our innate emotional amoral egoism into fear and greed, which lie at the center of conflicting aspirations for regional and global hegemony and

exploitative hierarchies (Al-Rodhan, 2022b, p. 71). It also provides a fertile breeding ground for tribalism, racism, and xenophobia, which all have their roots in the innate egoistic tendencies and concomitant in-group favoritism of states (Bizumic et al., 2021, p. 53). In short, a self-help system centered around zero-sum games ensures that human neurochemistry (Al-Rodhan, 2024) and innate motivations inevitably lead to conflict.

By advocating for multi-sum games, Symbiotic Realism aims to leverage the interdependence of the world through what I call "reconciliation statecraft." In so doing, it departs from the traditional realist focus on narrow state interests to advocate for a balancing act between individual wellbeing, group or national interests, regional and transnational concerns, cultural and planetary interests, and morality. Tensions across this diverse array of interests—especially national, transnational, and planetary interests—constitute a major source of international conflicts and are aggravated by our inborn inclination to prioritize our self-interest. Only through balancing and reconciling these diverse interests can we unlock humanity's potential for peaceful coexistence.

In a multi-sum game perspective grounded in emotional motivators, states can achieve cooperation through reflection on their strategic cultures. How states perceive their regional and international roles, what security strategies they adopt, and which tools of statecraft they perceive as legitimate are shaped by their specific cultural practices, collective memory, and historical aspirations (Al-Rodhan, 2022a). Because sociocultural contexts heavily influence innate human predispositions, processes involving empathy, perception, memory, and perspective-taking can be culture specific (Fitzduff, 2021, p. 106). Evidence suggests that culture further influences how humans experience, express, and control their emotions (Chiao et al., 2010).

When history is interpreted in a way that emphasizes past injustices or conflicts, it can reignite and perpetuate old tensions and cultural schisms (Al-Rodhan, 2017). This could lead to a strategic culture governed by historical grievances. In such an environment, aggressive posturing and military solutions to international disagreements are more likely. But a critical review of the historical interpretations, legacies, and biases that inform current policy and strategy can foster a more empathetic understanding of the perspectives of other nations and effectively reduce the likelihood of conflict.

Fortunately, advances in debiasing research offer states tools to navigate past biases, Debiasing allows policymakers to approach global issues from a more objective viewpoint, reducing the likelihood of decisions based on flawed or biased information. This pragmatic empathetic approach paves the way for more constructive and symbiotically beneficial global engagements.

5 A symbiotic realist view of international relations in the twenty-first century

The emotional amoral egoism of states and their pursuit of the Neuro P5 can be understood in the contemporary context of global anarchy, which is the point from which mainstream

IR theory begins. In the twenty-first century, the landscape of global anarchy is shaped by technological progress, new strategic domains, civilizational risks, non-state actors, and transnational cultural schisms. This is the contemporary setting that ensures no state or authority has sufficient coercive power to impose order on the system of global politics, exacerbating the inherent egoism of states. Below, I explain how Symbiotic Realism understands the impacts of the predispositions of human nature on state behavior in the context of each of the seven key forces impacting contemporary politics.

5.1 Disruptive technological advancements

Emerging technologies are reshaping the international landscape, calling into question key assumptions underlying traditional accounts of global politics. Symbiotic Realism recognizes the immense impact of disruptive and intrusive emerging technologies on IR. Because geopolitical power depends heavily on technological prowess, technological progress plays a central role in global power dynamics. States engage in a relentless race for technological supremacy to secure more power over their competitors. Their quest for at least one purveyor of the Neuro P5 results in an intense competition for technological dominance and a rush to deploy emerging technologies without thorough consideration of safety concerns or long-term societal impacts.

Technology-driven international competition plays out in multiple arenas. Within insufficiently regulated domains, such as cyberspace or outer space, there is a heightened risk that states will pursue national self-interests at the expense of ethical considerations or global welfare. Without regulatory oversight, egoistic states are likely to prioritize their own technological advancement and power with little regard for the potential negative impacts on security, and the environment. As amoral actors with flexible values that can be shaped by external forces, their ethical standards can be sidelined in their pursuit of national prestige or dominance.

Technological advancements have also intensified historical schisms on a supra-national and transcultural scale. Communication technologies, in particular, have given rise to a hyper-connected global landscape where the rapid and widespread flow of information can inadvertently bolster nationalist sentiments, resurrect historical grievances, and propagate biased narratives. Tools designed to connect people can also deepen long-standing cultural rifts by leveraging emotional responses and inherent biases, exploiting human emotions such as fear, anger, or pride.

On the one hand, the emotional amoral egoism of states and the Neuro P5 motivate and shape the development, use, and regulation of emerging technologies. On the other, technological advancements influence how states express their emotional amoral egoism. From AI and quantum computing to synthetic biology and emerging neurotechnologies, states are racing for technological supremacy as part of their wider pursuit of self-interest, pride, power, and profit. This race leads to an overfocus on narrow national interests to the neglect of collaboration and information-sharing between nations. Lack of cooperation further impedes the

collective ability to address global challenges such as climate change or pandemics.

5.2 The changing role of non-state actors

Non-state actors are growing in importance to global affairs. In cyberspace and the use of drones, technological progress has significantly contributed to the empowerment of non-state entities in the international system. As costs have lowered and AI has become more commercialized, relevant technologies are increasingly accessible to non-state actors.

Access empowers non-state actors in realms once difficult to penetrate. For instance, AI enhances the cyberwarfare capabilities of non-state actors by allowing them to automate specific tasks such as sniping or drone strikes. It can facilitate cyberattacks through applications that locate weaknesses in computers, networks, and communications systems. AI technologies have also newly empowered non-state actors in the areas of misinformation and disinformation. Considerable improvements in natural language models, for example, have enabled the production of text that "mimics the style and substance of the content on which it was trained (Al-Rodhan, 2017, p. 10)". They can be used to create "credible news stories that could push disingenuous narratives," distorting public perceptions about the political or social environment (Al-Rodhan, 2017).

Through the expansive reach of cyberspace, entities ranging from extremist factions to organized criminal networks can extend their influence far beyond their physical locations. As a result, these groups punch above their weight, challenging state actors in ways previously unimaginable. The risks associated with AI in the military context are further exacerbated by the pervasive zero-sum mentality focused on outpacing rivals at all costs. Without appropriate regulation, the amoral nature of both state and non-state actors leads to an overfocus on self-interest at the cost of broader societal and global wellbeing, sparking conflicts in the digital realm.

5.3 The emergence of novel strategic domains

Technological advancements have further opened up new arenas for geopolitical rivalry. In a world characterized by the absence of a universally accepted set of moral principles, it is challenging to establish shared norms for governing emerging domains for competition. Inadequate regulation of these areas allows the emotion-driven narrow self-interests of both state and non-state actors to dominate, precluding their engagement in non-conflictual, win–win competition.

Cyberspace has become a critical arena for both state and non-state actors to project power, pursue strategic interests, and conduct warfare. For example, states are increasingly using cyberspace for espionage and infrastructure attacks. Tools such as social media platforms and deepfake technology have been co-opted as instruments of subversion, designed to manipulate public opinion and influence political dynamics across borders (Marion

and Twede, 2023). Actors ranging from insurgent groups and transnational criminal groups to terrorists can leverage cyberspace to manipulate public opinion or launch disruptive attacks on critical infrastructure, whether physical (such as power grids) or digital (such as financial systems).

Outer space is another critical "Global Commons' domain where the emotional amoral egoism of states and non-state actors creates tensions that translate into the increasing commercialization and escalating militarization of space assets, as well as the absence of consensus on responsible behavior in outer space. Space assets are of strategic relevance because they provide crucial geopolitical, economic, and military advantages. The possession of advanced space technology also serves as a deterrent, by showcasing a country's prowess and signaling its ability to safeguard its interests both on Earth and in space (Pigoni et al., 2017), given the intimate interplay between terrestrial and outer space security.

The pursuit of profit also drives states to engage in space activities as commercialization presents vast economic opportunities. These include digital-based economic pursuits, the extraction of minerals from asteroids and other commercial ventures. Growing interest in outer space from both state and non-state actors means that the domain is becoming increasingly congested, competitive, and contested.

The quest for pride plays a significant role as achieving milestones in space exploration and technology enhances a nation's global standing. Successful space missions, moon landings, and the development of cutting-edge space technology contribute to a country's prestige. During the space race between the United States and the Soviet Union, for instance, pride was a major motivation. Similarly, the quest for prestige continues to drive the space programs of various nations today, especially Russia and China (Hines, 2020).

Nonetheless, the drive for power, pride and profit can be channeled into a form of competition in outer space that is constructive rather than conflictual. It can be done through a robust regulatory framework alongside an international commitment to sustainable space practices. The absence of such a framework risks perpetuating the current trajectory of reckless exploitation by both state and non-state actors who prioritize immediate gains over the long-term viability of outer space as a shared resource for current and future generations.

5.4 The rise of collective civilizational frontier risks

New scientific frontiers will bring about both immense opportunities and civilizational frontier risks (Bostrom and Cirković, 2008). The main categories of civilizational frontier risks include advancements in weapons of mass destruction (hypersonic weapons or bioweapons); outer space security and sustainability; innovations in AI and computing; social media, disinformation, and cyber security; intrusive surveillance technologies; climate and biodiversity; pandemics; synthetic biology; neurotechnologies; and human enhancement, transhumanism, and posthumanism.

The nature of these risks carries expansive implications for the behavior of states. AI will likely affect every facet of warfighting in the coming years as it can be used for both manned and unmanned weapons platforms characterized by varying degrees of autonomy [Council on Foreign Relations (CFR), 2023]. Although there is no international consensus on the precise definition of autonomous weapons systems, fully autonomous weapons are generally understood as those that select and strike targets without human intervention. Such lethal autonomous weapons systems (LAWS) (International Committee of the Red Cross, 2019) are typically able to modify their strategic mission autonomously, without human involvement.

The risks associated with LAWS are manifold. While designed to adapt to unforeseen circumstances, fully autonomous weapons behave unpredictably in complex combat situations. Errors in AI systems can pose dramatic threats to civilians and critical infrastructure through misidentification and inadvertent fire. As algorithms neither have moral agency nor context sensitivity, their capacity to comply with the legal and moral requirements of the laws of war is questionable. A core principle of the laws of armed conflict is the principle of proportionality, which requires avoidance of actions that exceed a threshold beyond what is needed for military advantage. Ensuring adherence to this principle by autonomous systems remains a challenging and unresolved issue (Davison and Horowitz, 2021).

A short-sighted focus on national self-interest could lead to the premature deployment of AI weaponry that is not yet ready for the battlefield, heightening the risk of malfunctions (Marijan, 2022). The prospect of one state achieving superior military capabilities through AI creates a sense of threat among others, compelling them to advance their own AI weaponry to maintain strategic balance. Such a race can lead to a poorly reflected use of (and overdependence on) AI technologies. This includes self-evolving generative AI, which plays an ever-important role in intelligence operations. Absent adoption of a multi-sum approach to AI use, the pursuit of power and prestige could precipitate the reckless deployment of AI in military contexts and beyond, amplifying risks and destabilizing global security. Driven by emotions such as fear and motivators such as pride, states tend to neglect moral considerations in their quest for technological supremacy.

The implications of AI are hardly limited to the battlefield. One report recounts how of the top 11 countries with relevant capabilities, eight are in the Asia-Pacific region—a geographical area rife with security dilemmas (Marijan, 2022, p. 176). The United States and China, especially, are engaged in competition over the security and economic benefits of AI. While it is difficult to determine precisely how AI innovations will alter power equations in the future, there is no question that the challenges posed by such technologies extend beyond arms control to invoke fear among other emotions. A cooperative, multi-sum response to such emotions could include "innovatively structured dialogues" among governments that focus on "collaborative problem solving using data or algorithmic insights pooled by the participants themselves (Marijan, 2022, p. 176)".

Similarly, advancements in fields such as synthetic biology introduce new vulnerabilities to all states that place them at heightened risk for bio-terrorism and the potential for deliberately engineered pandemics. Such emerging threats require global preparedness and response strategies. Despite the critical necessity for international collaboration in this context, the emotional amoral egoism of states often leads to the use of emerging technologies primarily for self-interest. Underestimating the broader implications of this self-centric approach is likely to unleash adverse consequences on a global scale. These could include environmental degradation through the creation and release of genetically modified organisms.

Civilizational frontier risks can be managed through a multi-sum approach that involves establishing standards to encourage states to work toward solutions that benefit the broader international community. This includes providing scientists with room for innovation while safeguarding users from emerging technology hazards. The effective address of frontier risks demands not only enhanced global cooperation, but also balancing the needs of diverse stakeholders.

5.5 The weaponization of economic interdependence

Symbiotic Realism posits that the international system is characterized by instant connectivity and mutual dependence among various actors, including states, transnational corporations, and international organizations. This interconnectedness means that actions by one actor can have significant repercussions across the system and create vulnerabilities that can be exploited by states to exert coercive power over others.

In a system where economic interdependence can be leveraged for coercive purposes, the implications for the stability of the global order are profound. The coercive use of economic tools—such as sanctions, trade restrictions, or control over financial networks—as instruments of statecraft can achieve short-term objectives, but they undermine the mutual trust and cooperation necessary for long-term stability and security. These instruments and practices can lead to a breakdown in the symbiotic relationships that underpin global order.

Based on the "weaponised interdependence" concept originally coined by Farrell and Newman (2019), the Symbiotic Realism framework provides a critical lens through which to view the use of economic interdependence as a weapon, highlighting the importance of mutual dependence, dignity-based governance, and the ethical use of power in international relations. In doing so, it challenges the legitimacy of using economic interdependence as a weapon, as the latter can violate principles of fairness and mutual respect. Instead, Symbiotic Realism advocates for "Multi-Sum" security, where the economic security and prosperity of one actor are linked to the wellbeing of others.

5.6 The intensification of sub-/supra-national transcultural historical schisms

Symbiotic Realism challenges traditional notions of rationality by considering the substantive influence emotions exert on cognitive functions. It recognizes, for example, how the affective

dimension of information processing and decision-making expanded the repercussions of the Israel–Palestine conflict. When Hamas attacked Israel on October 7, 2023, the massacre revived a historically deep-seated anxiety, insecurity, and fear (Tuval-Mashiach, 2024). Emotions such as anger and a desire for revenge determined the Israeli response, which was swift and forceful, neglecting humanitarian considerations and its own longer-term strategic interests (Nakhoul et al., 2023).

Emotional, binary, and ultra-egoistic exclusionary approaches to decision-making complicate sustainable and fair solutions to conflicts because they tend to ignore underlying causes. In the case of the Israel-Palestine conflict, polarization has exacerbated cultural divides across national boundaries that are rooted in historical grievances, which I call "supra-national transcultural schisms."

Such schisms stir up tensions between different actors in the international system and preclude constructive dialogue because they diminish our ability to listen beyond the divide. The perpetuation of historical schisms can be better understood by considering research on how humans are guided by deep-seated emotions and cognitive biases in information processing. The latter include confirmation bias, our tendency to search for and interpret information in a way that confirms our pre-existing convictions—thus hindering the correction of distorted perceptions of reality (Star, 2018).

Research has found that we display a reduced neural sensitivity to the opinions of others in the posterior medial prefrontal cortex when such opinions do not correspond with our pre-existing views (Kappes et al., 2020). In addition, motivated reasoning creates emotionally preferable conclusions by making us resist facts that contradict the conclusion we want to be true (Information Resources Management Association, 2021). Affect is central in causing confirmation bias and motivated reasoning as well as the bias blind spot, which makes us believe that we are less biased than others. This ensures that individuals disregard the arguments and perspectives of others too easily, accentuating polarization processes and hindering dialogue (Mair et al., 2019). Social media further aggravates our inherent biases by enclosing users into filter bubbles (Cooke, 2018).

These phenomena are particularly strong for emotionally charged issues such as the long-standing Israeli–Palestinian conflict (Chaffin, 2021). Especially during the most recent, brutal iteration of the conflict, emotion-laden social media content has elicited strong reactions from people around the globe. Driven by affective processes, the intensification of supranational transcultural historical schisms increases the likelihood of reactionary state and non-state actors' behavior. A two-state solution, in line with international law and UN resolutions, is the only way to stop suffering on both sides and prevent spiraling instability in the Middle East. The global community can help achieve this by pressuring Israel to end its illegal occupation of Palestinian territories and stop fear-inducing discrimination such as confiscations, incarcerations and evictions. In doing so, the West must address perceptions that it has a blind spot and a double standard for Israel's illegal actions and Palestinian suffering that is rooted in evangelical, cultural and geopolitical motivations.

6 Discussion: the science of behavior and the politics of human dignity

Symbiotic Realism sets itself apart from other major IR theories by challenging their foundational assumptions and reassembling their most enduring insights through the lens of contemporary empirical understandings of human behavior. For instance, it preserves realism's focus on self-interest and power but reinterprets them as evolved neurobiological imperatives rather than mere strategic choices, in doing so updating update realist assumptions about international relations.

By challenging static, essentialist views of human nature and incorporating neuroscientific insights into cognitive processes as well as individual and collective critical dignity needs, Symbiotic Realism also aligns with post-structuralist critiques. It incorporates post-structuralist critiques by deconstructing rigid categories like "power" or "state," yet stays grounded in material realities rather than purely discursive analysis. From constructivism, it adopts the role of norms and social structures but views them as dynamic interactions between innate predispositions and environmental factors. However, Symbiotic Realism diverges sharply from constructivism in its view of human nature. Constructivism sees individuals as blank slates shaped by society, whereas Symbiotic Realism posits a "predisposed-tabula rasa": a mind biologically primed with tendencies that both shape and respond to the social world. This contrast is especially clear in the treatment of emotion. Constructivists view emotions as socially constructed, while Symbiotic Realism grounds them in neurobiological systems. It acknowledges cultural variation in emotional expression but emphasizes shared neural and hormonal foundations for emotions like fear, joy, and anger. In this sense, Symbiotic Realism is epistemologically situated within a transdisciplinary range of traditions that question rationalist assumptions and seek to uncover the emotional dimensions underpinning global politics.

Influenced by the predispositions of human nature, actor behavior in the context of each of the interdependent forces above can lead to catastrophic consequences for humanity. But when viewed from a multi-sum lens grounded in an understanding of the science of behavior, human predilections can be channeled into peaceful interstate relations under conditions of justice. This view is distinct from that of mainstream IR theories. For instance, (neo)liberal perspectives stress the interdependence of states and the prospects for cooperation through the cultivation of shared norms, mutual trust, and building of institutions (Heinze and Jolliff, 2011). Moreover, liberals continue to claim that networks of power relations have been decentralized and fragmented by globalization. This ignores the dynamics of great-power rivalry in a highly interconnected world, where economic and technological competition form the battlefields of global politics. As corporations increasingly become both the objects and instruments of foreign policy, liberals arguably do not pay sufficient attention to "weaponized interdependence (Farrell and Newman, 2019)," a prevailing practice by states to secure strategic advantage through leveraging global networks of informational and financial exchange.

Yet such thinking about state capacities for cooperation rests on speculative assumptions about human behavior (Al-Rodhan,

2022b, p. 71). It assumes that states care only about their own individual gains and are indifferent to the gains of others (Elman and Jensen, 2014). In contrast, Symbiotic Realism contends that no state can afford to be indifferent to the losses of others. This is because in an interdependent world, "developments at the local level—whether economic, social or environmental—can acquire almost instantaneous global consequences and vice versa (Held, 2004)". Even if the losses of others do not appear to affect a state's individual gains, the misery of others (no matter how distant) will affect them over the long term in one way or another.

Symbiotic Realism thus calls into doubt many of the core assumptions underpinning neoliberal policies, ideas, and institutional changes, such as the privatization of public assets, the deregulation of labor markets, or the vision of individualized competition in the marketplace as a means for reward distribution (Navarro, 2020). It maintains that these mechanisms are not effective pathways to progress, given findings about human nature from neuroscience and evolutionary biology (Nobre Faria, 2019). Instead, global justice and multi-sum games are the harbingers of sustainable progress and international peace for all.

Overall, technological progress has dramatically increased the reach and influence of non-state actors, challenging traditional state-centric models of IR. Critical IR theory has long interrogated the IR focus on the state and interactions between states as the unit of analysis, calling for a shift to include study of non-state actors (Charountaki, 2018). With their interest in economic interests and agency, (neo-)liberal IR theories expanded the object of their focus to include economic actors such as corporations and international economic institutions. But because the symbiotic realist conception of the state draws from empirical insights into human nature, its understanding of behavior can be extended to include interactions with or exclusively between non-state actors.

While realist theories have historically offered valuable insights into conflict and global politics, they struggle to address the complexities of today's international landscape. For realism to remain relevant, it must evolve further in two critical ways. First, the transformed global landscape demands an expansion of realism's analytical framework to consider the growing interdependence and instant connectivity of the modern world, along with transformative forces such as rapid technological advancements, the expanding influence of non-state actors, and the rise of novel strategic domains such as cyberspace or outer space.

Second, integrating insights from the empirical sciences could enable IR scholars to develop a more nuanced and precise understanding of human nature and its impact on international dynamics. Drawing on empirical insights from fields such as neuroscience, neurobiology, and neuroimaging, Symbiotic Realism provides a scientifically grounded and nuanced understanding of the animus dominandi, the drive for power. It also proposes strategies to tame this drive, drawing on empirical evidence that shows how human predispositions influence both conflict and pathways to peace. Developing a nuanced understanding of the predispositions of human nature is increasingly critical, as our innate tendencies profoundly influence how we manage interstate relations, leverage emerging technologies, and confront global risks like pandemics and climate change. With these considerations in mind, Table 1 summarizes the key understandings across the three mainstream schools of thought in IR.

In a departure from mainstream IR theory, Symbiotic Realism draws attention to the critical value of human dignity (in its holistic sense of nine dignity needs that guarantee not just the absence of humiliation, but the presence of recognition). Human history is rich with examples of unsustainable ideas and systems, leading to their obsolescence and ultimately their extinction. For ideas to be sustainable, they must account for the emotional, amoral, and egoistic attributes of our human nature. The neurochemistry of the mesolimbic reward system, which is universal, indicates what ideas we are most likely to favor or dismiss. Concepts that are equal, fair, and inclusive are inevitably more sustainable. In contrast, ideas that do not find acceptance across all segments of society cause unrest and are likely to lead to disruptions and crises in the international system (Bok, 2010). These insights into human nature carry important political implications. Human nature is fragile, malleable, and shaped by external factors both personal and political (Costandi, 2016); the task of establishing an enduring governance system (domestically and globally) requires harnessing innate human tendencies for the better.

This involves preventing our innate binary egoism and emotionality from generating conflict, aggression, inequality, and alienation. While emotions overwhelmingly influence our actions, there are instances where reason, reflection, and conscious moral judgments guide us toward symbiotic behavior, ensuring mutual benefit in non-conflictual competition (Liao, 2016). Whether our capacity for reason can flourish depends on an environment where our dignity requirements are met. Political freedom alone is insufficient as it can coexist with discrimination, inequality, exclusion, poverty, or the erosion of dignity at both individual and group levels (Al-Rodhan, 2022a).

The inherent attributes of human nature stand in a tug-of-war with our need for human dignity. Regardless of their structural configurations, the most sustainable political systems are those capable of managing this ongoing tension. In practice, this involves attaining balance by aligning emotionality (with reason, security, and human rights); amorality (with accountability, transparency, and justice); and egoism (with opportunity, innovation, and inclusion). Coined as "the ever-present tension principle," this delicate balancing act is essential. When the equilibrium is significantly disrupted, large-scale systemic disruptions are likely (Al-Rodhan, 2022a).

Like individuals, states are emotional, amoral, and egoistic actors. This tension thus also persists in transnational and transcultural relations. To remedy it and work toward sustainable global peace, universal dignity must be firmly anchored within the political order. Guaranteeing dignity for all—at all times and under all circumstances—is something most governance systems tackle insufficiently. In practice, it means that all citizens must be guaranteed a dignified basic standard of living as well as social, economic, and cultural inclusion and recognition. Dignity-based governance not only secures the consent of the governed but also unlocks the best in human beings. The specific form of political governance does not determine the stability of societies. The most decisive factor for stability is the sustainable, dignified,

TABLE 1 A Comparison of key perspectives on international relations*.

Core analytical dimensions	Classical/neorealism	Classical/ neoliberalism	Constructivism	Symbiotic realism
Key insights	In an anarchic world, self-interested states compete for power/security. The unequal distribution of capabilities across states compels them to act in certain ways.	In an anarchic world, self-interested states advance their interests through freedom, institutionalized cooperation, prosperity, and progress enabled by self-regulating free markets.	In an anarchic world, state behavior is shaped by ideas, collective norms, images, identities, and belief systems (especially those of elites).	In an anarchic world, **human predispositions** shape actor behavior in the international system. Conditions and **factors that promote the human capacity for peaceful coexistence** foster symbiotic interstate relations, reconciliation of national/transnational interests through multi-sum, win–win, non-conflictual competition.
Assumptions about human nature	Human nature seeks to maximize benefits and minimize losses. States are egoists who make rational decisions that maximize their self-interest.	Human nature is perfectible as human reason is capable of triumphing over fear and the desire for power. *Homo economicus* makes decisions on the basis of cost–benefit analyses.	Human interests and identities are malleable, shaped by historically and socially constructed norms, beliefs, and values.	Both humans and states have **emotional, amoral, and egoistic** predispositions. Their behavior is driven by five powerful **neurochemical motivators**.
Main forces shaping the international system	Anarchy, state sovereignty, power politics and balancing, security dilemmas	Free trade/market actors, economic interdependence, international institutions and norms, financial markets, soft power diplomacy	Ideational factors (ideas, beliefs, values, and identities), social norms and practices, social constructions of power	The predilections of human nature, disruptive technological advancements, the evolving role of non-state actors, the emergence of novel strategic domains in cyber space and outer space, the rise of collective civilizational frontier risks, the weaponization of economic interdependence, and the intensification of sub-/supra-national transcultural historical schisms.
Main actors in the international system	Sovereign states, the international system	States, individuals, international institutions, non-state or market actors	Individuals (especially elites), transnational networks, NGOs	Individuals, the state, non-state actors, collective cultural entities, international organizations, transnational corporations, the environment, natural resources, disruptive information and communications technology
Main state objectives and instruments to achieve them	Self-preservation and power-maximization. Power is both a means and an end. Force and deceit are effective tools for advancing national interests, and survival is achieved through state capabilities.	World peace and individual happiness. These are (indirectly) achieved through international institutions, global commerce, and democracy promotion. Tools include economic measures to encourage market competition.	Improved IR through shared normative frameworks, ideas, discourse, and community building.	International peace and security through **dignity-based governance** at the global and national level. Such governance reconciles the tension between emotional, amoral, and egoistic human tendencies and the dignity needs of others (absence of humiliation and presence of recognition) partly through a focus on **multi-sum games**.
Attitude toward cooperation vs. competition	Conflicts are inevitable and mainly resolved by force, with some limited potential for cooperation.	Mutually beneficial cooperation is possible when rational actors create institutions, share norms, and build mutual trust.	Global prospects for cooperation and conflict depend on prevailing ideas and values.	Peace is possible through **win–win, non-conflictual competition** and **symbiosis** (i.e. mutually beneficial multi-sum relationships) that allows all parties to benefit, albeit to varying degrees, rather than just simple cooperation.
Stress on relative or absolute gains?	Power politics are a zero-sum game. States increase their power by taking it from others. Relative power matters more than absolute gains.	States mainly prioritize their individual gains and are indifferent or less concerned with gains/losses of others.	Preoccupation with relative gains dominates relations with out-group members. A focus on absolute gains likely dominates social exchanges with in-group members.	Losses experienced by one state will likely impact other states in various ways over the long term. Absolute gains are thus critical owing to deepening interdependence, instant connectivity, supply chains, collective civilizational risks, new geostrategic domains, cultural schisms, and globalization.

*Sources: Steger and Roy (2021); Jackson et al. (2019); Jacobi and Freyberg-Inan (2015a); Griffiths (2013); Zehfuss (2002); Haynes et al. (2017).

and equitable delivery of basic needs of justice, peace, security, and prosperity for all.

Looking ahead, it is crucial for political and societal leaders to enhance their comprehension of the fallibility of human nature at all levels, understanding our motivations and driving forces. Integrating these insights into public policies across all levels of governance, including IR, is essential to effectively tackle the diverse needs of every segment of society and the global system at large. By doing so, we can stimulate the positive symbiotic(win–win) tendencies inherent in our collective predispositions. This will ultimately guide us toward governance frameworks that are more enduring, inclusive, and conducive to collective peace and prosperity by mitigating the inevitable complex and cascading frontier risks on Earth and in outer space.

7 Conclusion: moving toward symbiotic transdisciplinarity

This paper has aimed to address the speculative view of human nature underpinning mainstream IR theory and realism in particular. It has done so by providing empirical knowledge of affective processes and how they affect the behavior of both humans and the state (Jacobi and Freyberg-Inan, 2015a). I applied this knowledge to update core realist conceptions that have had an outsized influence on policymaking—conceptions of human nature, the drivers of state behavior, and the logic of competition under conditions of global anarchy. Transdisciplinary research goes beyond simply incorporating views from various disciplines; it seeks to forge deeper connections among researchers and practitioners, aiming to unify diverse disciplinary perspectives by moving beyond the confines of individual disciplines to conceptualize ideas in novel ways. Moreover, transdisciplinarity differs from interdisciplinarity by the extent to which it involves non-academic contributors in the research endeavor. A transdisciplinary approach is thus needed to illuminate how human predispositions shape recent developments in the international system, which are reshaping geopolitical dynamics in multifaceted ways.

With this transdisciplinary understanding, I presented a view of IR that understands states as emotional amoral egoists whose interests are neither inherently narrow nor limited to the self, but broadly shared. The calculus of policymakers need not always be interpreted as a rational zero-sum game that seeks to maximize power over other states. State behavior can also be understood in terms of the emotional motivators of the Neuro P5, which work through the brain's mesolimbic reward system to encourage the pursuit of power, profit, pleasure, pride, and permanency. The quest for power and profit, for instance, are particularly strong and lie at the root of much conflict in global politics. Related emotions, such as fear of the loss of power or profit, can induce pre-emptive aggression or other adaptive behaviors that shape actor relations in the international system.

Affective experiences can also facilitate symbiotic cooperation, helping to forge identification with a group

and shape collective interests. Through critical reflection on their strategic cultures, states can foster a more empathetic understanding of the perceptions of other states. Given their emotional amoral egoist nature, they can also be primed to pursue symbiotic (win–win) multi-sum outcomes that achieve long-term collective security. Reconciliation statecraft seeks to leverage symbiotic interdependence between states to reconcile disparate interests through an understanding of emotional motivators and with a focus on advancing justice for all. While recent empirical studies indicate that a multi-sum approach is vital to mitigating humanity's inclinations for violence and conflict, this article recognizes the challenge in persuading global leaders to incorporate neuroscientific insights, engage in de-biasing practices, and adopt foreign policies centered on symbiotic win–win practices and multi-sum strategies.

Recognizing the "is" of human nature and the dynamics of contemporary international systems, Symbiotic Realism seeks to identify the "ought" of managing IR to solve pressing transnational challenges that have their roots in human predispositions and limitations. While it offers answers to the question of how we should act, it must not be mistaken for a utopian vision. Instead, it is grounded in a pragmatic, empirically founded understanding of what enables sustainable progress given human nature as it is. Rather than normatively advocating for an idealized version of how humans should behave or global systems should operate, it describes how they currently operate and seeks practical ways to achieve sustainable progress within those parameters. In the light of recent neuroscientific findings, it emphasizes the necessity to move beyond zero-sum calculations conducive to an exploitative/extractive international environment that exacerbates the emotional amoral egoism of actors and their binary Neuro-P5 motivations, in the international system. Instead, it advocates for the creation of dignified living conditions through the pursuit of symbiotic (win–win), multi-sum, non-conflictual competitive relations.

Symbiotic Realism also recognizes the impact of disruptive emerging technologies on IR. This paper has sought to address shortcomings in mainstream IR accounts that generally overlook most of the defining elements shaping today's international system, focusing on a limited set of actors, behaviors, and conditions at the expense of a more comprehensive assessment of the international landscape. These shortcomings can be attributed partly to the nature of IR theory as a social science that aims to systematically advance inquiries to yield generalizable findings.

But a systematic theory of emotions is unnecessary when we have an understanding of how affective processes unfold in the brain to shape behavior. Transdisciplinary approaches that unify human and state-level processes can thus provide rich ground for IR theorizing. With such an understanding, we can infuse our interpretations of IR with a sensibility to the emotions of relevant actors that can clarify the cause for behavior where factual explanations fall short or rational choice analyses are unclear. This starting point can then foster collaboration and focus on mutually beneficial relations to channel our innate predispositions toward a more secure and prosperous humanity, without leaving anyone behind.

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