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Reframing the Ontology of Peace Studies

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Abstract

The academic field of peace studies suffers from a lack of ontological clarity, with peace researchers widely disagreeing on how to define “peace.” This internal incoherence has far-reaching implications for peace study’s scope, theories, and methodologies, and by extension, for peace practice in general. This article explores the possibility that at least part of this incoherence may be due to a fundamental misreading of peace study’s central object of study. Despite significant disagreement between peace researchers on a standardized definition of peace, there seems to be overwhelming consensus that "peace" – in all its varied academic conceptualizations – always relates to the social welfare of interacting sentiences. In a radical reframing of peace studies, this paper proposes that the field might be better operationalized as the multidisciplinary scientific study of the optimal social conditions for the continued evolution of the trait of sentience.

Keywords: *peace, definition, sentience, evolution, neuroscience, ontology*

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Reframing the Ontology of Peace Studies

Anders Reagan

The formal academic study of peace emerged in the 1960s and has grown in popularity since (Galtung, 1967, pp. 8–11; Starke, 1968; Kroeker, 2020, p. 60; Stephenson, 2022, pp. 127–128). However, peace studies has suffered since its inception from a pervasive lack of ontological clarity, evidenced by researchers regularly disagreeing on a definition of peace or even the methods by which they might seek to define it. The following quotes may be taken as evidence of this debate.

"There are many problems [in defining peace] - to use a mild understatement" (Galtung, 1967, p. 16). "The image of peace in peace studies is blurred as a result of conflicting definitions held by researchers" (Johnson, 1976, p. 7). "'Peace' has no inherent meaning" (Rasmussen, 2003, p. 16). "Although various definitions of peace appear in the literature, there is no consensus on a conceptually clear definition" (Anderson, 2004, p. 101). "The word [peace] itself has neither been acceptably defined, nor has there even been agreement on how to define peace" ("Peace," 2005). "Peace is discussed, interpreted, and referred to in way [sic] that nearly always disguises the fact that it is actually essentially contested" (Richmond, 2005, p. 5). "The concept of peace… remains open" (Gittings, 2012, p. 3). "The concept of peace has been under discussion in peace research from its start" (Gleditsch et al., 2014, p. 155). "The ambiguities and challenges in defining peace are both great and wide" (Kroeker, 2020, p. 60). "There is disagreement over the exact content of the field [of peace studies] and even over the definition of peace" (Stephenson, 2022, p. 115). "The definition of peace is…difficult to determine, as the term is employed in different ways and there is no consensus on its meaning" (Jackson, 2022, p. 906). "Probably the most serious division in the field of peace research occurs over the definition of peace…there is no agreement over what is the central object of our study" (Stephenson, 2022, p. 117). "The definition of 'peace' will continue to be

contentious for the foreseeable future" (Pieper, 2022, p. 347). "Defining peace and its dimensions is a difficult task. There is no single definition" (Richmond, 2023, p. 7).

Reading these quotes in succession, one might come to believe that the study of peace is so thoroughly wracked with foundational contention as to be inoperative. In fact, nearly all thriving scientific enterprises advance a healthy level of internal discourse regarding the meaning of specific terminology. Consider, for example, ongoing debates over the meaning of the term *society* within sociology or the meaning of the term *mind* within psychology. However, disagreement over the nature of peace seems more ingrained in peace studies than do other terminological debates in their respective fields.

Without a generally agreed-upon conception of peace, peace researchers coalesce into silos marked by divergent reactions to this seemingly intractable problem of definition. Some researchers elect to ignore the problem and operate as if the idea of peace has already been so thoroughly debated that it may now firmly support the ideological weight of the global peace movement without issue. Others suggest that the idea of peace is sufficiently broad as to encompass all conceivable conceptions of the term. This latter approach was championed by Rotary Peace Fellow Summer Lewis in her 2018 speech entitled, *What is Peace?* in which she challenged her audience to "Think about this question: 'What is peace?' I'm willing to guess that thousands of notions about peace just surfaced…. This is the beauty of peace…. There is no one way to define peace" (Rotaract Global Model United Nations, 2018).

Perspectives such as these contribute to a situation where "researchers are studying different problems and pursuing divergent goals, all under the banner of 'peace'" (Johnson, 1976, p. 7). As a result of this siloing, peace studies generally lacks "a research agenda that might clarify the contestation of the concept of peace. Instead, where there should be research agendas there are silences and assumptions" (Richmond, 2005, p. 6).

The lack of coherence across peace studies is problematic chiefly because, like health studies, peace studies has a normative dimension (Webel & Galtung, 2007). Peace studies seeks not only to understand what peace *is*, but also to *create* it, just as doctors seek to understand health in order to facilitate better outcomes for their patients. As theory informs practice, its elisions and assumptions impact the work of peace practitioners. These dedicated individuals, often volunteers, find themselves working divergently, ending up at cross-purposes, and infighting over valuable resources instead of focusing their efforts through cooperation. At the policy level, altruistic policymakers struggle to harmonize their work of adopting the policies, marshaling the resources, and deploying the programs required to build peaceful and resilient societies. This, while world leaders routinely appeal to the "pastoral allure of peace in their oratory and justifications, while pursuing the bloodiest of political courses" (Pieper, 2022, p. 347). Over the last 16 years, global protection for political rights and civil liberties has declined (*Freedom in the World: 2022*, 2022). Over a similar span of time, global peacefulness has deteriorated (*Global Peace Index 2022: Measuring Peace in a Complex World*, 2022).

To reverse these trends, we must first ask important analytical questions: What exactly is peace, and how can it be identified? What is its ontological essence and its characteristics? (Jackson, 2022, p. 914). To harmonize, substantiate, and fortify global peace efforts, peace studies must reject *assumed* stability within the ontology of peace and acknowledge that the concept requires serious and rigorous investigation. This paper seeks to advance the development of peace studies as a scientific enterprise by exploring common ground regarding the ontology of the concept of peace and suggesting a standardized framework for the field. It will directly investigate the central object of study for peace research and propose a research agenda that might conceptualize the essential qualities of peace, resolving disagreements over the concept. To this end, this study will explore the question: How might peace studies be

grounded in a standardized ontology of peace suitable to substantiating the field as a scientific enterprise?

For the purposes of this article, let us accept the use of the term *scientific* to mean "a mode of inquiry that aims to pose questions about the world, arriving at the answers and assessing their degree of certainty through a communal effort designed to ensure that they are well grounded" (Committee on Reproducibility and Replicability in Science et al., 2019, p. 27). As such, a science of peace would likely focus on (1) describing what peace is, (2) explaining how peace functions, (3) predicting how conflict leads to peace and vice versa, and (4) intervening in situations marked by violence and conflict in an effort to render peace. More specifically, I intend a scientific approach to defining peace to mean that, once standardized, peace should be defined with a view toward increasing reproducibility, replicability, and transparency across peace studies (Committee on Reproducibility and Replicability in Science et al., 2019, p. 46).

The argument advanced in this paper rests upon several axioms which remain unexplored herein due to limitations in length, but which future research should investigate (see Limitations and Calls for Further Research, below). The first of these is that all academic peace-related discourse relies on a notion of peace that has at its core some essential traits that can be revealed by means of thorough and dispassionate investigation. In this, I concede that I may be advancing a notion of essentialism concerning the idea of peace—that there is something essential to the very idea of peace, without which peace would not be peace. "Essential or defining features are the characteristics or features or conditions without which that kind could not be the kind it is, i.e. the kind has them necessarily" (Hibberd, 2019, p. 32). Issues with essentialism are routinely elevated in works ranging from Plato's *Parmenides Dialogue* (Plato & Scolnicov, 2003) to present-day biological taxonomy literature (Hull, 2006), with one modern systematist evoking widespread opposition to essentialism (Gould, 2002, p. 110). It

should be mentioned that despite this controversy, Hull defends the essentialist approach in stating somewhat humorously, “I think that essential natural kinds are essential to science” (Hull, 2006, p. 48).

As for my rationale in applying essentialism to peace studies, my impression is that one of two irreconcilable cases should be true. Given that the term *peace* is applicable in a variety of academic environments, including political science, sociology, history, anthropology, theology, psychology, and philosophy, either: (1) at least one element circumscribed by the concept renders its application accurate and meaningful in these environments, or (2) there exists no such element. If a common element informs the application of the term *peace* within and across all these areas, then surely peace studies would be well-served by an effort to make that element transparent and by a standardized framework of investigation built upon that foundation. If there exists no common element, perhaps the term *peace* should be abandoned, at least academically, in favor of more specific terminology. In either case, our academic discourse stands to benefit from the clarification of terms resulting from our exploration of a precise approach to defining peace.

Methodology

To conduct this investigation, I examine the extent to which it may be justifiably asserted that certain implicit assumptions and intuitions are ubiquitously present across all correlative concepts and discourses of peace studies, which may suggest a common theme or focus for the field. In doing so, I hope to identify such inextricable characteristics of peace that might satisfy all who understand and use the concept academically, regardless of context.

This investigation will consist of background research, an analysis, a discussion, and lastly a section reflecting on the limitations of this paper and calls for further research. In the background section, I will attempt to circumscribe the scope of contemporary peace studies to

understand all its dimensions of application. This section will lay out the academic topography that any scientific framework for peace studies must intelligibly account for.

In the section devoted to analysis, I will consider the scope of contemporary peace studies identified in the background research and attempt to evaluate whether it reflects any form of consensus regarding the nature of peace. If I can find any consensus in the field's treatment of the phenomenon of peace, I will then use it as the foundation of a proposed framework for peace studies in the hopes that such a framework might lend an element of scientific rigor to the field and make explicit its aims and operational protocols.

Lastly, in the discussion, I will apply my proposed framework to the full scope of contemporary peace studies as identified in the background section to evaluate the extent to which this investigation has yielded a credible analytical framework for peace studies. If I am successful, I should arrive at an understanding of what peace studies supposes the term *peace* to mean, thus contributing to a generalized unification of terminology in the field. If I am unsuccessful in this regard, then I may conclude that there is no common element present in all academic circumstances where the term *peace* is applied and that as a result, peace studies is perhaps guilty of aggregating unrelated phenomena under a common umbrella, potentially skewing its academic outputs and policy proposals.

Background

Peace studies operates across six dimensions: inner peace, interpersonal peace, intergroup peace, intercultural peace, international peace, and ecological peace (Oxford & Gregersen, 2021; Ross, 2021). For the sake of economy, let us collapse this list into three meta-dimensions: intrapersonal peace (or inner peace), interpersonal peace, and intergroup peace (encompassing intercultural peace, international peace, and ecological peace). Let intrapersonal peace refer to the state of inner peace within a person (Krug et al., 2002; World

Health Organization, 2014). Interpersonal peace will refer to interactions among two or more individuals where such interactions occur outside of group dynamics, such as two people striking an accord or fighting in a duel. Lastly, intergroup peace will encompass interactions among individuals engaging as representatives of intersectional groups characterized by factors such as family, culture, ethnicity, language, nationality, gender, political affiliation, or species. I acknowledge that each component of these three meta-dimensions features unique angles of analysis for peace studies, but it is sufficient for this article's purposes to group them.

Analysis

This section contains five sequential parts investigating consensus across peace studies in search of an essentialist framework for peace. If such a framework exists, I expect it to be consistently applicable across all three meta-dimensions identified above. I fully expect such a framework to satisfactorily explain what peace is, how peace works, how to build it, how to evaluate it, and why it is worth striving for, with respect to each meta-dimension.

1: What does peace studies study?

This paper will test the following hypothesis: Despite apparent internal incoherence within peace studies, there is one point upon which there is overwhelming consensus among peace researchers. Peace—in all its varied academic conceptualizations—always relates to the social welfare of interacting sentient entities. It is beyond the scope of this paper to address why sentience is of particular interest to peace studies; I will examine the notion that this *is* the case, not *why* it is so (see Limitations and Calls for Further Research, below).

Let us examine the following quote from a leading Ph.D. program on peace studies:

> [The study of peace is] an interdisciplinary academic field that draws on political science, sociology, history, anthropology, theology, psychology, philosophy, and other fields to understand the causes of armed conflict,

> develop ways to prevent and resolve war, genocide, terrorism, gross violations of human rights; and build peaceful and just systems and societies, (Kroc Institute for International Peace Studies, 2023).

War, genocide, terrorism, violations of human rights, and society-building all necessarily involve social interaction among sentient organisms (typically *homo sapiens*). With this in mind, I posit that peace studies is a scientific enterprise situated at the nexus of social science, evolutionary biology, cognitive neuroscience, and the philosophy of mind. This intersection describes a space appropriate to the study of sentience, including considerations of its origins and the ways in which social interaction continues to affect its evolution.

In this light, peace studies may be thought of as the scientific enterprise of distinguishing the social environments most conducive to the well-being of sentient organisms from those that are not. A social environment in which sentient organisms can freely build support networks, consume ample nutrients, and seek out comfort is likely conducive to the well-being of those organisms, and by extension to the advancement of sentience in nature. For these reasons, we might reasonably identify such an environment as peaceful. The notion of a just society is an example of a social environment where sentient organisms are supported in advancing their prosperity and well-being, thus facilitating the evolution of the sentience with which they are endowed.

In contradistinction, a social environment in which sentient organisms are prevented from building support networks, deprived of nutrients, or subjected to duress is likely to obstruct those organisms' well-being—and by extension to limit the advancement of the sentience with which they are endowed. For these reasons, peace researchers would identify such an environment as violent. War, genocide, terrorism, and human rights violations characterize

social environments in which sentient organisms are prevented from advancing their prosperity and well-being, thus negatively impacting the evolution of sentience.

Drawing on this distinction, I define peace studies as the multidisciplinary scientific study of the optimal social conditions for the continued evolution of sentience. This definition supports the following normative basis for peacebuilding. Peace is something universally worth striving for because it inherently benefits all sentient organisms to an equal extent. Any social environment that is made more peaceful by the application of the findings of peace studies necessarily benefits all sentient organisms equally because any sentient being would be similarly affected in a positive manner were they introduced into such an environment. Ultimately, then, the normative goal of peace studies is to contribute to the instantiation of social environments in which sentience can thrive and benefit both living and future sentient organisms.

2: What is sentience and how does it relate to consciousness?

A minority of researchers claim that sentience is more fundamental than consciousness (Godfrey-Smith, 2016, p. 79). I side with the majority. Let us begin with exploring consciousness.

Conceptions of consciousness include panpsychism, which supposes consciousness to be a ubiquitous feature of reality; dualism, which posits consciousness as a substance distinct from matter; and materialism, which favors a model of consciousness as a product of neural activity. Contemporary neuroscience accepts materialism as the predominant view. Despite this, no consensus has emerged as to how neural activity generates consciousness.

> We have no scientific theories that explain how brain activity—or computer activity, or any other kind of physical activity—could cause, or be, or

> somehow give rise to, conscious experience. We don't have even one idea that's remotely plausible. (Hoffman, 2019, pp. 22–23)

It is beyond the purview of this article to consider the workings of consciousness from a materialistic perspective. It suffices for our purposes to accept, as leading neuroscientists currently do, that "sentience [and consciousness] is a mental phenomenon apparently produced by physical structures," i.e., those of the nervous system (Chan, 2011, p. 7).

An initial review of the literature reveals two schools of thought addressing the nature and scope of sentience. The first school suggests that sentience relates only to the capacity for emotional awareness. The following three quotes exemplify this school: "Sentience means having the capacity to have feelings" (Broom, 2019, p. 1); "Animal sentience refers to the ability of animals to feel and experience emotions such as joy, pleasure, pain and fear" (Proctor et al., 2013, p. 883); "When legislators refer to sentience…they usually use a broad definition that includes both the ability to experience pain and pleasure" (Blattner, 2019, p. 125).

The second school reflects a broader notion that sentience relates to the awareness of experiences beyond and including emotions. Again, let us consider quotes from the literature that summarize this school. Merriam-Webster defines sentience as being "responsive to or conscious of sense impressions" ("Definition of Sentient," 2023). "Sentience is the ability to experience sensations" (Marvizon, 2019). Bekoff defines sentience as "the ability to feel, perceive, or be conscious, or to experience subjectivity" (Bekoff, 2013). "Sentience is a multidimensional subjective phenomenon that refers to the depth of awareness an individual possesses about himself or herself and others" (Marino, 2010, p. 132).

Regardless of which school of definitions one prefers, one fact seems to be implicit: Sentience is a compound phenomenon born of interacting types of consciousness. This description of sentience merits further explanation.

According to overlapping consensus between neuroscience and the philosophy of mind, consciousness is understood to be a multifaceted phenomenon, generally categorized into four distinct types: (1) phenomenal consciousness; (2) access consciousness; (3) self consciousness; and (4) monitoring consciousness.

Phenomenal Consciousness. We are phenomenally conscious of an experience if there is something that it is like to have that experience (Nagel, 1974). For example, there is something that it is like to see a sunset, so we can be phenomenally conscious of a sunset (Ravenscroft, 2005, p. 169).

> We can say that a subject is phenomenally conscious when there is something it is like to be that subject, and a mental state is phenomenally conscious when there is something it is like to be in that state. Phenomenally conscious mental states include the experience of seeing colors, feeling pains, and experiencing mental images and emotions. All of these involve a certain qualitative, experiential character. (Chalmers, 2007, p. 197)

Access Consciousness. We achieve access consciousness of an experience if it is available for the control of speech and behavior, and as a premise in a wide range of inferences (Ravenscroft, 2005, p. 169). For example, if you have a feeling such that you recognize that you are having that feeling and can describe it in speech, then that feeling is access conscious. For example, if you are aware of the hum of your computer, then you are access conscious of the experience of the hum.

Self Consciousness. An organism is self conscious when it applies the concept of a self to itself (Ravenscroft, 2005, p. 170). Self consciousness refers to the understanding that one's mental states relate to the self and that the mental states of other conscious organisms may be different and are at any rate distinct from one's own.

***Monitoring Consciousness*.** The term *monitoring consciousness* is a label for the meta-cognitive ability to track changes in phenomenal-, access-, and/or self-conscious mental states over time (Ravenscroft, 2005, p. 170).

Four degrees of sentience. For the purposes of this article, I assert that sentience exists in four gradations of complexity reflecting unique combinations of the preceding types of consciousness. I offer that there are four degrees of sentience (and not 4! = 24), for the following reasons.

Ostensibly, both self consciousness and monitoring consciousness require either phenomenal or access consciousness before they emerge. Therefore, the first and most minimal level of sentience must necessarily be one in which a mental state is phenomenal or access conscious without necessarily being self or monitoring conscious. Consider the most elementary definition of sentience in which "sentience means having the capacity to have feelings" (Broom, 2019, p. 1). The experience of having feelings, of being consciously aware of them, cannot exist in a mental state that is *only* phenomenal conscious or access conscious. Granted, a pure mental state of a feeling could exist in the form of a phenomenally conscious mental state only; however, that is not what the above definition of sentience refers to: it explicitly limits itself to the awareness of feelings. This definition references a conscious acknowledgment of the emotion by its subject, a dynamic that necessitates phenomenal consciousness together with access consciousness. A phenomenally conscious mental state that is not access conscious (or vice versa) is not being experienced because the subject is not *aware* of it (Block, 1995). Two additional levels of sentience may be added to the spectrum for each addition of a kind of consciousness (self and monitoring), and a final level of sentience would encompass all four kinds of consciousness.

Within this framework, I suggest that there are four possible gradations of sentience.

- Weak sentience is a mental state that is both phenomenal- and access-conscious.
- Self sentience is a mental state that is phenomenal-, access-, and self-conscious.
- Monitoring sentience is a mental state that is phenomenal-, access-, and monitoring-conscious.
- Strong sentience is a mental state that is phenomenal-, access-, self-, and monitoring-conscious.

In this view, self sentience and monitoring sentience exist on a middling level of complexity, while weak sentience and strong sentience occupy positions at the ends of the spectrum. The evolution of sentience may be described as a progression beginning with the separate emergence of phenomenal consciousness and access consciousness, followed by the entanglement of these, succeeded by the addition of self consciousness or monitoring consciousness. The evolution of sentience as we currently understand it is completed with the addition of the last remaining form of consciousness. This is not to say that an organism endowed with strong sentience enjoys the zenith of the evolution of consciousness; undiscovered kinds of nervous systems may well support other forms of consciousness. I am however suggesting that strong sentience is the most robust currently known form.

3: Does peace studies necessarily encompass all four kinds of sentience?

According to the foregoing reframing of peace studies, the presence of social interaction is necessary for the application of analysis. What strength of sentience is necessary in two sentient entities before their interactions become social? If two sentient beings endowed with weak sentience happen to encounter each other, can we really call the event a social interaction and study it to see if it is peaceful or violent?

I offer that a minimum prerequisite for two sentient beings to interact socially in a way that is relevant for peace studies is that they have interests related to the evolution of sentience

which are impacted, either positively or negatively, by the interaction. By "interests related to the evolution of sentience," I mean an innate drive to conduct oneself in a manner consistent with the dictates of one's interests, which are themselves attuned to fitness payoffs in nature. By "interests attuned to fitness payoffs," I mean those interests that help an organism survive and procreate and are thereby conducive to the continued evolution of the multiplicity of traits with which that organism is endowed—in the case of peace studies, the most important of these is the trait of sentience.

How do we as peace researchers evaluate whether a given sentient being has these interests? According to moral philosopher Peter Singer, "the capacity for suffering and enjoyment is…not only necessary, but also sufficient for us to say that a being has interests – at an absolute minimum, an interest in not suffering" (Singer, 2002, pp. 7–8). Therefore, an organism's capacity to suffer and enjoy is a sufficient condition for that organism to have interests.

In terms of sentience, what minimum criteria exist for an organism to suffer? An organism that exists in a noxious state but that is neither phenomenal- nor access-conscious of its suffering would not be aware of it on any level and would be akin to a Cartesian automaton unconsciously living out its biological programming (Descartes & Hall, 2003). It would therefore not develop any interest relative to that noxious state or its suffering in that state. Moreover, an organism that is suffering (one that is phenomenally conscious of its suffering) but is not aware of its suffering (is not access-conscious of the suffering) will likely not develop any interest related to that suffering. Likewise, an organism that can correctly identify that it is suffering (is access-conscious of its suffering) but that does not feel the suffering (is not phenomenally conscious of its suffering) would also not necessarily develop an interest related to the suffering. However, an organism that is suffering (is phenomenally conscious of its suffering) and is aware of its suffering (is access-conscious of its suffering) should, *ceteris*

paribus, have a vested interest in escaping that suffering. As such, for the trait of sentience to continue to evolve in nature, its host organisms must be at least phenomenal- and access-conscious of interests that are themselves attuned to fitness payoffs.

It follows that the subjects of a study of peace must exhibit at least weak sentience. Two organisms endowed only with weak sentience are capable of interacting socially with each other, even if they lack a conception of self and the meta-cognition necessary to consider the benefits their social interaction might render. Consequently, peace studies may be applied to any instance of interaction between sentient entities, at least to a minimal degree.

The phrase *to a minimal degree* is highly relevant. Let us assume that certain studies of peace are quite broad while others are relatively narrow. For example, a peace researcher studying a social interaction between two sentient beings, interested only in whether the interaction is in a general sense violent or peaceful, would be conducting a broad study. I consider this study to be broad because, within the context of this paper, all studies of peace necessarily include some exploration, implicit or explicit, of the peacefulness or violence of a social interaction between sentient organisms. At the other end of the spectrum, a narrow peace study might focus on specific phenomena such as war, terrorism, or society-building; here, the greater the specificity of the phenomenon under study, the narrower the study of peace.

With this generalized gradation of studies of peace in mind, I assert that a broad application of peace studies necessitates subjects endowed with at least weak sentience, whereas the narrower a study becomes, the more limited the researcher will be to those subjects endowed with stronger forms of sentience. War, genocide, terrorism, and human rights violations cannot reasonably be committed by individuals who wander through their lives with only a dull awareness of pain and pleasure and no sense of self or meta-cognition, for example those endowed with weak sentience. Only strong sentience allows for the meta-cognitive awareness

of in-groups (allies) and out-groups (enemies) and the ability to conceive of and maintain strategic goals, both of which are required to undertake warfare, terrorism, genocide, and society-building.

Consequently, all sentient entities, regardless of the type of their sentience, can interact socially and are therefore relevant for peace studies; however, not all studies of peace may be applied in equal scope to subjects endowed with any given level of sentience.

4: How can researchers identify which organisms are sentient, and to what degree they are sentient?

"Many scientists consider that we can never be completely sure that an animal is or is not sentient, but only formulate our best belief through the accumulation and review of evidence" (Scottish Animal Welfare Commission Secretariat, 2021, p. 6). In terms of formulating that "best belief," there appear to be two methods: materialistic and behavioristic.

Materialistic methods focus on the machine of the nervous system and how it generates consciousness. Considerable work in this vein has been conducted at the intersections of cognitive neuroscience, neuropharmacology, neurophysiology, neuroanatomy, and computational neuroscience. For example, the Cambridge Declaration on Consciousness asserts that some "non-human animals [alongside humans] have the neuroanatomical, neurochemical, and neurophysiological substrates of conscious states" (Low et al., 2012). The presence of these substrates may be taken as evidence of consciousness, if not also of sentience. Evaluating these substrates can be done based on either phylogenetic proximity—that is, the evaluation of neurological similarities between a species under investigation and a species we already know to be sentient, such as human beings—or by neuroanatomical functioning, i.e., looking at the substrates themselves and their impact on various neural correlates of consciousness (NCCs) (Andrews et al., 2013; Sneddon et al., 2014; Martin & Gerlai, 2018;

Walters, 2018; Hoffman, 2019; Mellor, 2019; Winlow & Di Cosmo, 2019; Scottish Animal Welfare Commission Secretariat, 2021; Animal Ethics, 2022).

Materialistic methods are surpassed in utility by behavioristic methods, which infer an organism's consciousness or sentience from the spontaneous intentional voluntary behaviors it exhibits (Macknik, 2006; Jozet-Alves et al., 2008; Mather, 2008; Hanlon et al., 2009; Voss, 2016; Amodio et al., 2019; Sneddon, 2020). "The most common marker for sentience is behavior" (Véliz, 2016). Intentional behaviors are modes of conduct undertaken by an organism as means towards ends identified by that organism as valuable—its interests. These behaviors are said to be spontaneous if they do not necessarily conform to observers' predictions, thus increasing the likelihood that they are not merely reflexes. "One might think that perhaps we could trust machine behavior as evidence for sentience if it was spontaneous" (Véliz, 2016).

Behavioristic markers are relevant to the identification of strong sentience because they may be taken as circumstantial evidence for self and monitoring consciousness, thereby functioning as a sort of Turing Test for the presence of strong sentience (Turing, 1950). For example, if an organism spontaneously and voluntarily utters the phrase, "What a beautiful orange sunset I am seeing—much lovelier than the one yesterday," researchers can take this as evidence of self consciousness and monitoring consciousness due to the statement apparently reflecting a mental state of subjective memory recall. They might further assume that this statement was uttered in testament to the existence of strong sentience in the organism that expressed it.

5: The precautionary principle of the presumption of sentience

No peace researcher, neuroscientist, or philosopher can yet know for certain whether any given organism is truly sentient. In fact, "We can never prove conclusively that any organism is sentient. Subjective feelings are just that – subjective, and available only to the animal

experiencing them" (Duncan, 2006, p. 14). Given this, how ought peace research to proceed when we are unsure about whether a potential subject is sentient or not?

If ever a question should arise as to whether an organism's behavior is evidence of sentience, it is ethically better to suppose that the organism is sentient and to treat it according to a principle of compassion than to assume that that organism is unconscious and treat it according to a principle of utility (Birch, 2020). Consequently, as in the juridical principle of the presumption of innocence, peace studies ought to operate with a precautionary principle of the presumption of sentience and aim to treat all organisms capable of exhibiting even minimal degrees of spontaneous intentional behavior as sentient until proven otherwise.

In the worst-case scenario, peace studies researchers will treat some pre-sentient or unconscious organisms as though they are sentient, in which case their studies may be skewed. I propose that it is worse to err in the other direction and treat sentient organisms as though they are not sentient and risk harming them.

Discussion

Let us now apply the sentience-based framework outlined above to the three meta-dimensions of peace studies identified in the background section and evaluate whether our framework can coherently account for what peace is, how peace works, how to build it, how to evaluate it, and why it is worth striving for across each meta-dimension.

Intrapersonal meta-dimension

How might our framework explain what peace is and how peace works within the intrapersonal meta-dimension? How do concepts like inner peace, that localize an instance of peace entirely within a single organism, relate to the foregoing framework, which stipulates that peace studies is the study of social interaction between sentient beings?

During the last few decades, the life sciences have determined that human beings are not individuals—they are "dividuals" (Harari, 2016, Chapter 8). The human brain comprises two hemispheres connected through a neural highway called the *corpus callosum*. Voluntary experiments on people with a severed *corpus callosum*, so-called split-brain patients, reveal that their two hemispheres exhibit distinct preferences (Sacks, 1985, pp. 73–75; Hoffman, 2019). This is taken by some as evidence that each hemisphere of the human brain contains a separate conscious entity.

> The evidence as we see it favors the view that the minor hemisphere is very conscious indeed, and further that both the separated left and the right hemispheres may be conscious simultaneously in different and even conflicting mental experiences that run along in parallel. (Sperry, 1974, p. 213)

Under normal circumstances, when the *corpus callosum* is intact, it is hypothesized that these two conscious entities constantly interact, making them difficult to distinguish. In split-brain patients, it becomes easier to interact individually with each hemisphere of the patient's brain. For example, if an examiner asks a split-brain patient their favorite color and encourages the patient to answer verbally, they will get one response. However, if the examiner asks this question while encouraging the patient to write down the name of the color with their left hand, they will get a different answer. A common explanation of this phenomenon hypothesizes that the half of the patient's brain that controls speech has one preference for color while the other hemisphere, which controls movement in the left hand, has a different preference.

It should be noted that debate regarding split-brain theory is ongoing (Munevar, 2012). But if split-brain theory is valid, then it seems that one dividual can indeed contain multiple "sentiences." Further, these sentiences would likely have distinct interests and would thereby

interact socially across the *corpus callosum* to govern the dividual's body and commit it cooperatively to certain behaviors in pursuit of those interests.

Consider the case of a meditating woman. It seems intuitive to consider her as being peaceful. If we accept that each half of her brain contains at least one sentient entity, we can fairly hypothesize that the act of meditating—of listening inwardly to both sentient entities and taking their interests into account in a calm and inwardly empathetic manner—would advance the social welfare of both sentiences within her brain. In this situation, the *corpus callosum*, across which both halves of her brain are communicating, can be seen as the social environment being evaluated by the peace researcher as being peaceful. The fact that this environment is inside a person's brain seems irrelevant for a broad study of peace.

Peace within this meta-dimension could be conceived of as a certain quality of a dividual feeling in balance with themselves and being able to pursue their various interests. In practice, peace would be a measure of social welfare of the sentiences interacting within a dividual, evaluated in terms of the extent to which each may actualize their respective interests through the medium of social interaction across the *corpus callosum*.

How then might we build peace and evaluate it within this meta-dimension? The application of therapy could readily be interpreted as a form of peace practice conducted to alleviate discord across the *corpus callosum* between two sentiences within a single person. As such, introspecting the diverse interests of one's own sentiences and developing the agency to actualize those interests would represent an effort to build peace in the intrapersonal meta-dimension. How might a peace studies-certified therapist go about this process? Inner peace might be evaluated in three phases. The first would focus on evaluating the degree of sentience of each brain half of a given patient (weak, self, monitoring, strong); the second would evaluate whether the subject's varied interests are all attuned to fitness payoffs; and the third would

focus on the subject's scope of agency. Taken together, these evaluations would speak to whether the subject's sentiences are interacting in a self-nurturing (peaceful) or self-destructive (violent) way.

The most significant limitations of this peace analysis would be 1) the therapist's ability to distinguish responses from the subject as originating from a given hemisphere of the subject's brain, and 2) the subject's capacity to introspect and report on their mental states and interests. These are limitations not readily overcome by researchers or therapists (Ryle, 2009, p. 34). To cope with the first limitation, a therapist may come to rely on the subject's self-reporting of their emotional states as a generalized heuristic of whether there is conflict among the various interests of the subject's sentiences. A report of inner harmony would be taken as indicative of interests that are compatible. A report of inner conflict would be taken as indicative of interests that are incompatible. Granted, this method of addressing the first limitation places a great deal of weight on the second limitation. The challenges posed by these limitations do not necessarily impinge upon the logical coherence of the framework itself.

Finally, why is peace worth striving for in this meta-dimension? When dividuals are aware of their sometimes conflicting interests, they are more able to, through introspection and negotiation with the self, achieve a state of internal social welfare. This welfare can be experienced as a unification of intention, guiding the dividual to realize specific interests through action and reconcile or relinquish others. From an evolutionary perspective, these varied interests guide the dividual towards attuned fitness payoffs that advance their sentience by securing their holistic well-being.

Interpersonal meta-dimension

In accordance with this article's framing of peace studies, peace on the interpersonal meta-dimension may be described as a measure of social welfare of the sentiences of interacting

dividuals, evaluated via the extent to which each may actualize their respective interests through social interaction. Fulfilling these interests promotes the continuing evolution of the sentiences involved, provided that their mental states are attuned to fitness payoffs. Therefore, to build further peace in this meta-dimension, a peace practitioner would maximize the ability of interacting sentient dividuals to act upon their respective mental states. To introduce more peace into the interaction, a peace practitioner would facilitate each participant in introspecting their own interests and maximizing their agency and volition within the interaction.

Researchers might evaluate peace in the interpersonal meta-dimension with tests similar to those proposed above for the intrapersonal meta-dimension. Each dividual involved in the interaction could be evaluated on three levels: the first would focus on the degree of each subject's sentience; the second would evaluate whether each subject's mental states are attuned to fitness payoffs; and the third would focus on how the social interaction under evaluation impacted each subject's ability to introspect their mental states and actualize their interests through volition.

Peace would be worth striving for interpersonally for the same reason as it is in the intrapersonal meta-dimension: the more each dividual's interests are attuned to fitness payoffs and realized through social interaction, the more conducive each dividual's behavior is to the continued evolution of sentience.

Intergroup meta-dimension

Peace on the intergroup meta-dimension is a measure of the social welfare of the sentiences of interacting groups of dividuals, evaluated according to the extent to which each subject is able to actualize their respective interests through social interaction. In this meta-dimension, the task of applying a peace studies framework is complicated by the number of dividuals involved in each array of interactions. A group in this meta-dimension may consist of any social

group, ranging from a family to an entire country's citizenry. For example, if two families interact in such a way that each family member can freely and fully act upon their respective interests, which are themselves attuned to fitness payoffs, then the interaction would be peaceful. The same goes for two interacting countries or nations.

Building peace at this level is complicated by the complexity of social networks. At the community level, official and unofficial mediators could be engaged to develop and support social structures that engender modes of interaction intended to maximize the extent to which each group of dividuals involved may actualize their respective interests. Locally, this may come in the form of informal chats among members of different families or community-wide town hall meetings. Nationally, it may resemble an open, transparent, deliberative, participatory, and egalitarian model of democracy. Internationally, the process of peacebuilding in the intergroup meta-dimension may resemble a similar model of democracy, with each nation represented, as it is in the United Nations General Assembly. Other methods may also be effective in fostering productive social interaction among groups.

No peace researcher or group of researchers can be expected to study and interview every citizen of an entire nation to gauge how peaceful that nation's interactions are with its neighbors. For this reason, we must use more generalized data to gauge, on a macro level, the extent to which a nation's citizens may freely conduct spontaneous intentional behaviors to actualize their interests.

Here, peace researchers could examine a nation's science-related education policies with the assumption that poor education and low scientific literacy inhibit people's ability to comprehend and express their interests and thereby to actualize them. To evaluate the extent to which a citizenry can actualize their interests, peace researchers could examine a nation's social safety and security records related to the prevalence of criminality, political stability and terror;

freedom of expression and the freedom to demonstrate or protest; and ongoing domestic and international conflict. Such an approach assumes that high levels of fear among a population would prevent people from voluntarily and spontaneously undertaking specific modes of intentional behaviors. The evaluations would be broad and general yet practicable in all cases. They would be undertaken with the understanding that dividual self-determination, measured by the extent to which dividuals are free to exercise spontaneous intentional behaviors, is a fundamental requirement for the actualization of interests attuned to fitness payoffs, the attainment of well-being, and more generally for the continued evolution of sentience.

For examples of this kind of high-level analysis, see (1) the Global Peace Index offered annually by the Institute for Economics and Peace (*Global Peace Index 2022: Measuring Peace in a Complex World*, 2022); (2) The Human Rights Measurement Initiative (*Human Rights Measurement Initiative*, 2022); and (3) the United Nations 2030 Agenda for Sustainable Development, particularly its focus on promoting human security (*Transforming Our World: The 2030 Agenda for Sustainable Development*, 2015).

Summary

The sentience-based framework introduced in this paper accounts for contemporary insights within academic peace studies across all three meta-dimensions. I tentatively confirm my hypothesis in concluding that there do indeed exist such core components of the academic conception of peace which, when made explicit, support the instantiation of a unified framework for peace studies and peacebuilding. I offer the framework described here to the academic peace studies community as a springboard for further analysis and discussion.

A significant advantage of the foregoing framework is its empowerment of researchers to measure the extent to which a given social interaction is peaceful or violent by measuring how well the sentiences involved are able to exercise spontaneous voluntary intentional behaviors,

specifically those indicative of self consciousness and monitoring consciousness. These modes of intentional behaviors can be standardized both as indicators of the presence of (strong) sentience and as metrics of the social interaction's impact upon the actualization of the subjects' interests. Because the basis of this reframing of peace studies is the unit of social interactions between sentiences, these metrics of peace can theoretically be applied wherever sentiences interact, regardless of the dimension or context. The field of peace studies would be strengthened with improved degrees of reproducibility, replicability, and transparency if it were to engage this route of inquiry.

Limitations and Calls for Further Research

The approach described in this paper is constrained by two significant limitations. The first is that the three axioms on which this paper's argument depends ultimately lie beyond this paper's analytic scope. Future studies might further explore each axiom to scrutinize the tenability of the framework presented here:

1. The first axiom is that all peace-related discourses rely on a notion of peace that has at its core some common trait(s). This assumption is not universally accepted by contemporary researchers. Future research may test this axiom in seeking out academically valid conceptions of peace that fall outside the scope of the reframing of peace studies suggested here.
2. The second axiom is that sentience is of central importance to peace studies. Future research ought to explore 1) whether all conceptions of peace implicitly focus solely on the social interactions between sentiences or whether something more abstract is in play, and 2) if it is true that sentience is always involved in studies of peace, and if so, why sentience is interesting for peace studies. At the time of this writing, I do not see

how an analysis that excludes sentience or social interaction can have the study of peace as its aim, but this should be verified transparently and in depth.

3. The third axiom is that being sentient is valuable to sentient beings, thus grounding the normative aims of peace studies. From an evolutionary perspective, one reason why this might be the case is that any sentient organism that did not value its own interests and well-being would likely have died off because it would have found no reason to remain conscious and thereby alive. Only those sentient organisms that prioritized their own survival and propagation have remained alive and passed on their genes. However, it is beyond this paper's scope to explore the question of why sentience is inherently valuable. Such a study would necessitate a review of value theory. Future research might take up this challenge just as medical research delves into the innate value of health and well-being.

The second limitation of this paper is that its exploratory conceptual nature prevents it from delving into precisely how its reframing of peace studies might be practically deployed across each meta-dimension and dimension more specifically. To further explore the utility of the framework described here, researchers might attempt to develop quantitative and qualitative metrics of the extent to which sentient organisms can exercise spontaneous voluntary intentional behaviors in each meta-dimension. Development of such metrics would enable practical testing of the framework, which would be useful in evaluating whether it produces results consistent with contemporary peace studies modeling. Consistencies here would perhaps indicate that this paper has contributed to peace studies in revealing universal ontological foundations supporting overlapping analytical and practical intuitions within the field.

Lastly, future research might 1) investigate how the peace studies framework described here might be applied across the three dimensions of peace circumscribed by the intergroup meta-dimension (intercultural peace, international peace, and ecological peace), 2) examine how the framework impacts upon other approaches to conflict and peace, such as psychoanalytic theory, structural theory and practice, and narrative approaches, and 3) explore how the framework intersects with other peace-related paradigms such as human rights, human security, justice, democracy, ethics, environmentalism, and cosmopolitanism.

With the instantiation of a more unified conceptual framework, the field of peace studies might be inspired toward further substantiation, harmonization, and fortification as a scientific enterprise. What we stand to gain from this nascent framework, provided it does what it purports to in revealing an implicit consensus across peace studies, is a standardized understanding of peace, which in turn may yield an effective predictive model for resolving conflict. As with health studies, a standardized study of peace would likely render peace practice more effective. The potential of the framework described in this paper remains to be explored. This article offers an initial hopeful gesture toward this potential.

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