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Contrasting Visions of Inquiry for an Open Society: Henri Bergson and Karl Popper Between Humane and Rational Openness

"All the thickness, concreteness, and individuality of experience exists in the immediate and relatively unnamed stages of it, to the richness of which, and to the standing inadequacy of our conceptions to match it, Professor Bergson so emphatically calls our attention"
William James, Lecture IV, A Pluralistic Universe
http://www.fullbooks.com/A-Pluralistic-Universe2.html

Abstract (200): This paper discusses the meaning of openness as a guiding principle for scientific inquiry within democratic societies. To this aim, it contrasts Henri Bergson's and Karl Popper's takes on the open society, proposing Bergson's interpretation as instantiating a *humane* interpretation of openness, while Popper privileges a *rational* one. The bulk of this paper compares the humane and rational visions of openness provided by Bergson and Popper, thereby highlighting the commonalities and differences between these views and their subsequent legacies. I then use this distinction to examine the history and current socio-political role of open inquiry – and particularly of research processes now carried out under the heading of 'open science'. The final part of the paper briefly examines how humane and rational openness relate to current debates on open science and related disagreements over the procedures, goals and outputs that scientific research should incorporate and encourage to support societal advancements. In conclusion I argue that while Popper's take on open inquiry has so far won the day in inspiring research policy and governance, contemporary debates on open science and its role in society would benefit from considering Bergson's approach, thereby paying attention to the centrality of connections (intellectual as much as emotional) among human beings as backbone to successful communication, constructive critique and creative exchange.

Keywords: Open Science; science policy; science governance; research practice; collaboration; scientific exchange.

Introduction

Even within philosophical circles, it is a seldom remembered fact that the first person to use the term "open society" was not Karl Popper but Henri Bergson, the trail-brazing French philosopher now best remembered for his metaphysics of duration and his views on creative evolution than for his political and social philosophy.[1] And yet, Bergson's metaphysical views were developed alongside an active political life and matching intellectual engagement, which saw him engaged in international diplomacy and in the founding of transnational organisations, as well as in dialogue with many of the foremost social theorist of his age. In that respect, Bergson's interests and motivations are comparable to Popper's: both men were invested in a cosmopolitan ideal of transdisciplinary dialogue, in the fostering of peaceful debate over violent clashes, and in the advancement of society through constructive confrontation among its diverse members. It should be no surprise, then, that both men were interested in the idea of an open society, and that Bergson's elaboration of the concept became an important source of inspiration for Popper. What makes this communality so striking is the magnitude of their philosophical differences in many other respects, which ended up translating into very different interpretations of what an open society may consist of, and how this may fuel understandings of openness within empirical inquiry such as exemplified by the natural sciences. Both men emphasised the creative significance of going beyond the boundaries imposed by one's own intellectual stance, cultural background and position within society. However, Bergson fostered an emotive notion of openness as a non-selfish, non-goal-directed form of love: the adoption of a caring attitude of respect for the world in its irreducible complexity, paying attention to what may be different from oneself and what one already knows, and thereby freeing oneself from narrow-mindedness tied to preconceived interests and motivations. Popper instead emphasised a notion of openness as critical exchange within the boundaries of the rules of law and rationality, where emotions give way to a lucid evaluation of evidence on the basis of commonly recognised standards. This is an oppositional way of conceptualising openness that, when applied consistently, may help forge ever more refined (in Popper's interpretation, *progressive*) ways of living, thinking and knowing.

In what follows I reconstruct and elaborate on Bergson's proposal as an instance of *humane openness* centred on meaningful social relations, while I refer to Popper's view as *rational openness* centred on the exchange of ideas and materials. My aim is to use this comparison and the resulting distinction towards understanding the history and current role of open inquiry – and particularly research processes, infrastructures and initiatives in science and technology now carried out under the banner of 'open science' – within democratic society. To this aim, the bulk of this paper is devoted to an examination and comparison of the humane and rational visions of openness provided by Bergson and Popper, paying particular attention to Bergson's given that relatively little has been written about it so far. I thereby set up an imaginary dialogue between these two philosophers and the different traditions, ideals and values they stood for. In the final part of this paper, I briefly discuss how humane and rational openness relate to the history and current discussions of open science and related disagreements over the mechanisms, values and outputs that such an approach to research

[1] Popper (1945) mentions (with no specific reference) Heinrich Heine as inspiration for the concept of open society, but the terminology does not come into its own and is not systematically discussed until Bergson. For an example of typical anglo-american scholarship on Bergson's philosophy, see Gunter (2023), which is focused on the metaphysics of duration.

should incorporate and encourage. In conclusion I argue that while Popper's ideals –as appropriated by neoliberal economics - have so far won the day in structuring research policy and governance, the open science movement should also consider Bergson's approach, thereby paying attention to the centrality of connections (intellectual as much as emotional) among human beings as the backbone of successful communication, constructive critique and creative exchange. I note how the humane and the rational views of openness may act as complementary guides towards a responsible, inclusive and effective culture of open inquiry within and beyond science, while also raising important questions around what openness in contemporary society can and should mean.

Bergson's humane openness: Open society and the nurturing power of social bonds

> "The open society is the society which is deemed in principle to embrace all humanity"
> Bergson DS 256

After spending the first half of his life ascending the academic ladder to star-like philosophical fame (Herring 2024), Bergson became active in policy circles by first representing France in diplomatic missions during the First World War - most notably to the United States in 1917, with the objective to convince President Wilson to join the war effort - and later spearheading efforts to found the League of Nations through his 1922 appointment as president of the League's International Commission for Intellectual Cooperation (precursor to UNESCO). Such roles evidence Bergson's commitment to intellectual dialogue without national boundaries and to research and education as crucial grounds to foster cosmopolitan exchange and peaceful interactions among countries and traditions. Bergson was no idle thinker and worked tirelessly to make such a vision a reality by establishing venues for such exchange, ranging from publications to conferences and institutions. He thus attempted what pragmatist and empiricist philosophers of his time, in both Europe and the United States, also aspired towards: that is, to significantly influence the history of philosophical thought in ways inspired by and intertwined with political activism. In Hannah Arendt's sense, Bergson's was a *vita activa*, conducted in awareness and relation with the sociopolitical reality of his time. And indeed, Bergson's late philosophy was strongly influenced by his policy experiences, resulting in various essays focused on political themes – though not perhaps intended as works in political philosophy per se (Lefebvre and White 2012, 4).[2] It is in the context of his engagement with international policy that Bergson formed the ideas underpinning his final book "Les Deux Sources de la Morale et de la Religion" (hereafter referred to as DS), published in 1932 and translated in English in 1935 under the title "Two Sources of Morality and Religion"; and it is in that book that he introduces the idea of the open society and contrasts it with its opposing tendency, that towards the closed society.

The 'open' and the 'closed' tendencies of life are what Bergson conceptualises as the two sources of morality and religion. The former denotes dynamism, indeterminacy and

[2] Bergson's more political writings did not find as much of a following (especially in the English-speaking world) as his writings on metaphysics, while leaving a significant mark on events of his time. As Lawlor (2022) argues, Bergson's contributions to political life may have been largely forgotten over time also due to the disappearance of his personal correspondence and private writings, which he ordered his wife to destroy after his death - a loss which has made it harder to reconstruct his broader thinking and the relation between his perception of sociopolitical events and his philosophy.

unsettledness, as in the ideas of open-endedness and inclusion – with an emphasis on how recognising and evaluating different perspectives from one's own involves identifying diverse standpoints, understanding their roots and motivations, and learning from such confrontation including eventual differences in opinions and perceptions. This notion of openness is therefore closely related to concepts of liberty (since one needs to retain freedom to confront the unexpected), equality (given that open-endedness is incompatible with prejudice) and fraternity (in the sense of recognising the commonalities underpinning human existence and treat all human beings respectfully). The closed tendency of life, by contrast, denotes determinism and exclusion, boundedness, and ideas of authority, hierarchy and immobility (Lefevbre 2013, 90). It is what drives stable social relations and what Philip Kitcher later called 'well-ordered' deliberation, that is, rule-bound, institutionalised forms of interactions and democratic channels of consultation and decision-making (Kitcher 2001). Bergson associates closedness with adherence to 'moral obligations' entrenched in religion or politics or other sources of routinised social guidance (DS 256), thereby viewing all constraints imposed on human interactions as ways to delimit and coordinate social interactions, thereby making them manageable but also less inclusive and dynamic.

For Bergson, the constant iterations and irreducible tension between the opposing tendencies of openness and closedness is what sustains life itself – as made abundantly clear already in his early masterpiece *Creative Evolution,* where he emphasises how "life tends towards self-preservation, reproduction and stability, *and* toward continuous and unpredictable change" (Bergson 1975[1907]; see also citation and commentary in Lefebvre and White 2012, 7). In the *Two Sources*, Bergson extends his earlier intuitions by focusing on how the tension between openness and closedness animates social life and the multiple ways in which humans organise themselves in groups. On the one hand, closedness plays the crucial role of preserving the integrity and stability of a group, by ensuring that its members look out for each other, establish stable norms for social interaction, and defend the group against external pressures and/or intruders. It is a natural consequence of such closedness, in Bergson's view, for conflicts to erupt, as humans strive to preserve their communities and cultures, and manifest suspicion and fear vis-à-vis ways of life which may subvert existing habits. War is the extreme outcome of such conflicts, which may manifest themselves in multiple ways and degrees of intensity. On the other hand, creativity and change can only come from some degree of challenge to the status quo, including forms of closed social interaction, and from the willingness to engage in what is as yet unknown and unintelligible – which is what the open tendency of life promotes.

Bergson recognises the difficulties with which humans may foster an open attitude, given the many reasons to resist change and the disruption and unpredictability that can come of it. As he points out, there are however examples of humans able to transcend such closure through attempts to make openness constitutive of everyday social interactions. This includes not only individual role models, such as intellectuals and politicians breaking the mould and proposing novel ideas, dialogues and interventions, but also institutional and political initiatives set up specifically to facilitate openness – such as for instance institutions like the League of Nations that aim to defend the universality of human rights, thereby focusing on the common needs of human societies and challenging existing social norms and constructs. Bergson views this understanding of openness and related notions of inquiry as more than an intellectual or procedural stance, conceptualising it instead as an all-encompassing way for humans to experience the world. Openness is, in other words, an *attitude* rather than a specific action or procedure: a mental state 'involving not just a cognitive component but also an affective and a conative component' (Schwitzgebel 2024). The key means to instigate and

maintain an open attitude is *love*: that is, in Bergson's view, the capacity to care and reach out to a form of life 'other' than oneself, thereby breaking out of the cycle of hostility caused by the tendency to close down groups, habits and ways of life. Love is not intended here as romantic or abstract, but rather as a biological reality and the foundation for political institutions such as democracy. As Lefebvre and White put it in their excellent analysis of Bergson's political philosophy, "his point is that such institutions would be unimaginable (in terms of genesis) and incomprehensible (in terms of everyday practice) were we not able to see at their core a nonpreferential love irreducible to closed morality. In Bergson's treatment, therefore, love is a concrete and practical political force" (2012, 9); it "enables human beings to participate in the essence of life itself: creation, unpredictability, newness." (ibid., 10).

Bergson acknowledges that love permeates *both* the closed and open tendencies of life. Indeed, love is often understood as an emotion based on preference and exclusion: romantic love, for instance, is addressed to someone in particular, and is thereby exclusive and 'closed'. Bergson stresses that "man was designed for very small societies" (DS 264), noting the significance of securing and protecting tight bonds that grounds recurring social structures such as the nuclear family and communities of like-minded peers (a reading backed up by contemporary research on 'core configurations' as essential cognitive and agential components of sociality; Caporeal 1997). At the same time, Bergson claims, love can also be universal and non-directed, such as the love for humanity expressed in visionary documents such as the Universal Declaration of Human Rights and related advocacy. This is a love that is not motivated by esteem, attractiveness or convenience; it manifests without specific reasons or motivation, and unattached to a specific object to which it can dedicate itself. As Bergson puts it, "its form is not dependent on its content" (DS 1006-7/38). In this respect it is similar to the Christian notion of "charity": open love is a way of living, a disposition rather than the mark of a specific relationship between an individual and a target.[3] In Parel's reading, "openness for Bergson is a [..] disposition of the soul to love man qua man and to render him absolute justice. [..] first of all a moral and spiritual virtue, and only secondarily an intellectual virtue" (Parel 1974, 32). Crucially for Bergson the distinction between open and closed society as one of kind, rather than degree: in Germino's interpretation, open love requires a radical "broadening out" of existing conceptions of humanity, by embracing the whole of mankind (Germino 1974). Similarly, Lefebvre (2013, 101) notes how for Bergson an open tendency of morality "does not involve a struggle *against* our evolved nature; instead it involves a struggle between the two tendencies *of* our evolved nature."

Given this background, the key insight that Bergson reaches in the *Two Sources*, which I take as a grounding principle for what I shall call the humane version of openness, is *the incessant dialectic between open and closed tendencies of life*. In Bergson's view it not only possible but necessary to reconcile the closed and open tendencies of life, for human beings to form meaningful connections with each other. He remarks how, while this may look paradoxical at first glance, open love is a gateway towards achieving truly meaningful and satisfactory forms of 'closed', exclusive love. This is because "Only a love that is not dependent on its content can appreciate, and attach itself to, the singularity of the other. It is open love (and not closed love) that finds itself attached in the closest possible way to its content" (Lefebvre 2013, 95). Thus *openness does not remove the possibility of attachment to singular ways of*

[3] Levfebre considers the notion of human rights as a key example: "if the purpose of human rights is to preserve us from the destructive emotions of the closed tendency, and if only an emotion is able to check another emotion, then at the core of human rights we should expect to find an emotion. And this is precisely Bergson's thesis: the essence of human rights is love" - a "qualitatively different" kind of love, because against the closed tendency to only love what is already known and shut others out" (Lefebvre 2013, 70).

life; rather it makes it possible to appreciate such singularity in relation to the many other ways in which life can be lived, and thus choose to invest one's attention and energies in it. Only through open love can one fulfil the closed tendency of life without extinguishing the vital force that animates human experience; and viceversa, open love requires anchoring in concrete, singular relationships to acquire substance and meaning, since otherwise openness may lead to a form of equanimity that results in detachment from fellow humans.

Following Deleuze's interpretation of Bergson, we can best understand this view of love as first and foremost a *mode of attention* meant to guide and inform human life in all its aspects (Deleauze 1991; see also Lefevbre 2013, 96). Love inspired by a closed tendency of life is inherently selfish, motivated as it is in some narrow sense by a short-term assessment of the other. The open tendency of life favours a wider outlook and inspires an inclusive form of love can act as a counter-point to a narrow and self-motivated focus. Such open love manifests independently of specific motives and immediate exigencies, making it possible to transcend prejudices and better contextualise and situate one's own life vis-à-vis the rest of nature. By detaching the individual from their immediate circumstances, openness makes it possible to consider and appreciate a wide variety of ways of life, and make choices about which behaviours, attitudes and objects one may wish to commit to going forward. In that sense, and somewhat paradoxically, open, undirected love makes it possible to focus one's attention in ways that are more inventive and surprising, and less dependent on tradition and routine. At the same time, the tendency towards closedness can facilitate deep human attachments, which are crucial to forming long-term social bonds. Those attachments are most meaningful and creative when forged through open consideration of what life has to offer, rather than closed following of entrenched habits. Bergson's key intuition is that "love will never be universal if it attaches itself to a particular object (even – indeed, especially – if that object happens to be 'humanity'), all the while showing the unique forms of attachment that such love creates" (DS).

Many commentators have interpreted Bergson's stance as a critique of politics conducted solely upon the premises of the closed society, and therefore "geared for war" (Germino 1974, 2). This interpretation is compounded by Bergson's seeming retreat into religion and mysticism when discussing openness and related forms of love, and his fascination with how love is embodied and exemplified through the deeds of exceptional individuals ("mystics") who separate themselves from society to pursue a different way of life. A closer reading and contextualisation of Bergson's philosophy does not however, in my view, justify this interpretation. One reason for this is his overarching view of love as constitutive of biology in the broadest possible sense, embracing social life among humans and non-humans alike – a post-cartesian conception of the subject that sees no rigid demarcation between rational and irrational self, nor between different degrees of self-awareness across organisms (Soulez 2012). Far from being a revindication of conservative forms of populism, as Popper would later have it in his quick dismissal of Bergson's views (see below), Bergson's appeal to the affective constitution of politics recognises that emotions – and particularly care and affection - are a core vehicle for human cognition and capacity to pay attention and structure/plan courses of action.[4] Hence *Bergson's placing of love at the centre of open-ended tendency of life does not constitute escapism from politics and social life, but rather a reconciliation of the motivation and means for socio-political projects*. The motivation is emotional and affective, grounded on a recognition of the universality as well as the deep

[4] Such views are echoed by contemporary scholarship on care in science and technology studies, e.g. de la Bellacasa 2011).

variation and diversity of human experience; the means are rational deliberation and planning, made possible by the choice of goals and directions that best suit such a universal appreciation for (human and other forms of) nature. It is in this sense that political institutions become "the actualisation, hence the bearer, of an irreducible mystical intuition" (Lefevbre and White 2012, 18).

Let us now summarise what conception of openness emerges from Bergson's understanding of human nature and society.[5] Openness, understood as an attitude of love bestowed without cause or motivation, enables an understanding and contextualisation of singularities (whether they consist of individuals, groups, places, institutions, species, planets) that grounds emotional attachment as well as intellectual and political engagement. The open tendency helps to overcome the closed tendency to love someone or something in ways bounded solely by specific motivations, self-oriented interests and personal experience. "The open society is the society which is deemed in principle to embrace all humanity" (Bergson 1935, 256): in other words, an open society is what makes an inclusive morality possible and fosters a creative imagination of the future. Openness pushes humans to go beyond their own experiences and perceptions, consider different ways of life, and foster the capacity to challenge and change one's worldview, thus encouraging indeterminacy, instability, dynamism. All this works because openness is in productive iteration with forms of closedness, without which humans would not be able to focus on singularities and goal-directed actions at all. Love informed by both openness and closure can help engage someone or something for what they are, beyond what one wants them to be for their own purposes; while at the same time encouraging care for fellow living beings, with no preordained limits.

This is why I am characterising Bergson's version of openness as quintessentially *humane*, in the textbook sense of "showing kind, care and sympathy towards others, especially those who are suffering" (Cambridge English Dictionary 2024). Bergson's openness cannot exist in separation from the human capacity to focus on specific relationships and form exclusive attachments. It is the iteration between closed and open tendencies that makes openness humane: on the one hand, openness and the related capacity to change gives meaning to the ideas of liberty and equality, which need to be constantly adapted and reinvented to suit ever-changing conditions, time and place; on the other hand, closedness and the related capacity to focus provides concrete meaning to what would otherwise risk remaining an abstract 'love for humanity' (DS 271).[6] In sum, humane openness involves the capacity to perceive the world beyond the boundaries of one's own experience, and use that augmented perception to fuel emotional and intellectual commitments to specific processes, whether they be people, projects and/or institutions. Such capacity is, in turn, what fuels inquiry and particularly scientific research.

[5] I here take much inspiration from Lefevbre's extensive work in reconstructing and framing Bergson's views on the open society. As he notes (2013), Bergson spends much more time in the *Two Sources* discussing at length, in critical terms, the closed tendency, while no corresponding discussion can be found, in constructive / positive terms, of the open tendency - a task which Lefevbre set himself in a series of books and articles. I here endorse Lefevbre's interpretation of this aspect of Bergson's work, and extend it to support a contemporary Bergsonian reading of Open Science.

[6] As Theilard de Chardin, who strongly influenced Bergson in exchanges that preceded the posthumous publication of his writings, also preached: one needs a source of optimism about the meaningfulness of natural processes, while also emphasising man's capacity to transcend these processes and what has been understood to be their limits (1959: 11).

Popper's rational openness: Open society as critical confrontation, personal choice and progress

Popper's path towards the idea of openness is seemingly more instrumental than Bergson's, given how his interests shifted from methods and epistemology to political philosophy in the 1930s in reaction to Austrian politics and the failure to stem the populist tide that eventually brought about the annexation and, later, the war. However, just as in Bergson's case, the seeds for the thinking underpinning much of Popper's seminal book *The Open Society and Its Enemies* (written during WWII and published in 1945) were arguably sown in 1920s Vienna, when a young Popper flirted with left-wing politics, becoming quickly disillusioned by what he saw as a lack of critical engagement and independent thinking across the whole political spectrum. Popper's yearning for challenging the status quo and entrenched conservatism found an outlet in his characterisation of the scientific method as involving relentless critical challenge and rigorous testing via systematic observations and experiments – which, in Popper's view, put him in direct conflict with approaches that are not 'falsifiable', such as Marxist or Freudian theories. This is the approach that animated Popper's seminal first book, the *Logic of Discovery* (first published in German in 1935) and in my view provides a crucial background to understanding his liberal interpretation of openness and the role of inquiry in society (see also Hayes 2009; Harrmersley 2023, 5).

In the introduction to the homonymous book (hereafter referred to as OS), Popper defines the open society as one "in which individuals are confronted with personal decisions". Thus starts a disquisition that oscillates between, on the one hand, a strong emphasis on personal freedom and the right of the individual to make up one's own mind, and, on the other hand, concerns around what kind of society – and institutions – may best encourage such a critical attitude at the individual level. Popper acknowledges the plurality of viewpoints within society at large and values such plurality as an indispensable tool towards the incessant exchange of ideas among individuals which he views as grounding human progress. Hence the structure and presumed advancement of science constitutes a crucial reference point for Popper. The key to social exchanges that may facilitate individual well-informed choices – and with it, the very meaning of human existence - is the identification and critical evaluation of the reasons underpinning one's beliefs and related courses of action. This in turn requires some social engineering, in the form of venues, institutions and rules fostering critique over dogmatism, exchange over closure, and active deliberation over passive acceptance. In his words: "if we wish to remain human, then there is only one way, the way into the open society. We must go on into the unknown, the uncertain and insecure, using what reason we may have to plan as well as we can for both security and freedom" (OS, 189).

Contrary to Bergson's emphasis on a dynamic and generative tension between closed and open tendencies, Popper argues for a wholesale transition from closed to open society, which in his view "can be described as one of the deepest revolutions through which mankind has passed" (OS 175). While attachment to rituals, emotion and mysticism keep humans tied to potentially misguided and groundless intuitions, the rational testing of ideas – where possible through experimental methods – can in Popper's view free mankind from such prejudice and foster a more equitable social order, within which objectivity takes the place of subjective judgements and whoever can provide the most robust rationale for action gets to determine what happens next, regardless of social background. This form of openness is for Popper the overarching goal and aspiration for humanity, and one towards which key ideals such as democratic rule, pluralism and critical engagement should be directed.

Popper's account of openness is tied with his views on the logic of inquiry and the importance for individuals to adhere to such logic, rather than letting emotions get in the way. This version of liberalism was quick to seize the imagination of intellectuals from all sides of the political spectrum, with left-wing activists attracted by its promise to overcome entrenched social prejudice (including around race, gender and class) and right-wing pundits appreciating the libertarian emphasis on personal freedom and individual agency. Popper's interpretation of the open society was swiftly appropriated by free-market ideologists such as his friend and supporter Frederick van Hajek, who seized on Popper's imagination of openness to push for individual freedom, understood as lack of constraints and regulation and ideally enabled by the free market as key condition for the effective exchange of information. This interpretation is arguably to the detriment of Popper's own sociological imagination, which took inspiration from his philosophy of science in proposing a federation of *disparate* institutions and collectives, each of them custodians of different perspectives but committed to constantly testing such views against each other and modifying where required by evidence and rationality. Popper envisaged such 'piecemeal engineering' as the required institutional set-up for an open society. This would consist of the systematic coordination of existing social groups with different epistemic perspectives, who would be incentivised to regularly interact with each other and evaluate each others' views, thereby ensuring that free, pluralistic, rational exchange animates decision-making going forward. There is a clear humanitarian interest underlying Popper's position. His proposal for piecemeal reform is to 'minimize suffering", including via state impositions which Popper is suspicious of, given the experience of Nazi regime (Moore 2014, 17); and liberal democracy constitutes the most appropriate political set-up to "promote critical rationalism and to provide non-violent regime change" (Moore 2014, 15). Indeed, Popper's idea of openness is accompanied by an emphasis on democratic rule as the only realistic means to obtain free exchange and support pluralism in society, as well as the encouragement of criticism and dissent that constitute the core of his epistemology. Notably, Popper repeatedly points to respect for the rule of law as providing the boundaries within which critical engagement can meaningfully take place (including any required constraint on markets and whichever form of protectionism may be needed to shield individuals from economic exploitation; Schearmur 2014, 35-40). This aspect of Popper's legacy has been underemphasised in contemporary readings, particularly within the neoliberal tradition, and yet it is crucial to Popper's take on openness – which does concern the ability of individuals to communicate and engage with each other's views, but where institutions and rule-governed behaviour are needed to ensure that such exchanges happen fairly and with as little prejudice as possible.

In sum, Popper's view of openness is one steeped in *well-informed, rational deliberation grounded on the exchange of ideas and related methods and materials*, where a key concern is how institutions and public venues may be designed so that those with political power can do the least harm by interfering as little as possible with intellectual exchanges. Given this central concern, Popper is suspicious of individuals acting as role models, and strongly critiques Bergson's emphasis on 'mystics' as people with exceptional moral strength and visionary qualities (OS 201) – in Popper's view, it is the free interaction among individuals that makes society open, and the logic of inquiry needs to guide such interaction so that they remain grounded in well-justified beliefs and rational argument, and far from vested interests and political agendas.

The practice of open inquiry: Comparing rational and humane openness

It is clear from my brief exposition of Popper's approach to openness that his rational view, despite common points of departure, contrasts with Bergson's humane interpretation. This is despite Popper's explicit acknowledgment of Bergson as a key inspiration for his own focus on openness and constructive dialogue. Popper puts the difference between himself and Bergson thus: "my term indicates a *rationalist* distinction; the closed society is characterised by the belief in magical taboos, while the open society is one in which men have learned to be to some extent critical of taboos, and to base decisions on the authority of their own intelligence (after discussion). Bergson, on the other hand, has a kind of *religious distinction* in mind (OS 202)". [7]

Popper rightly perceives his rational take on openness as being in tension with Bergson's emphasis on love and subjective human experience. Popper's version of the open society is inspired by his understanding of the process of scientific discovery as a matter of verifying the veridicity of existing beliefs through testing and critical debunking. Popper is therefore suspicious of individuals acting as role models in ways that cannot be reduced to specific (and falsifiable) methods and beliefs, and critiques Bergson's emphasis on 'mystics' as people with exceptional moral strength and visionary qualities – in Popper's view, it is the interaction among individuals that makes society open, and the logic of inquiry needs to guide such interaction so that they remain grounded in well-justified beliefs and rational argument. Just as in Popper's take on scientific epistemology, an open society is one where individuals championing different beliefs can discuss their differences and critically evaluate the merits of each other's views with reference to common criteria. In this interpretation, the open society is as far as possible from the acceptance of dogma that Popper identifies with religion; in fact, the open society is premised on a relentless quest for open inquiry, where dogmas are regularly challenged and social norms are aligned with ever-evolving cutting-edge knowledge of the natural and social world, as ascertained through the scientific method.

Popper's condemnation of Bergson's views on openness and its role in inquiry and society is not, however, altogether fair. It disregards Bergson's views on sociality and the role of individuals within it; and is grounded on the assumption that Bergson's appreciation for religion makes his work irrelevant to secular sociopolitical life. And yet, just like Popper, Bergson is critical of dogmatic attitudes and is partial to humans being rational decision-makers (Germino 1974, 13). The difference consists in how the two thinkers conceptualise inquiry and the roles played by intelligence and rationality within it in the first place - and thus the place of belief, intuition and emotions in the quest for knowledge and understanding,

[7] I will not here engage in an extensive discussion of precisely what Popper took from Bergson, and how deeply he engaged with his work – partly since this is not the goal of this paper, and partly because I have not had access to Popper's correspondence in Stanford to be able to investigate this beyond published writings. In his Unended Quest: An Intellectual Autobiography (1992) Popper states that he thinks Bergson's theories related to "vital force" were wrong, but that he had a certain validity to his intuition. He states that vital force is a product of life, and organismal processes, rather than being a part of the "essence" of life, a concept which he is skeptical of. Ultimately, only tangentially related to questions of openness and the Open Society. We also find passing references to Bergson in Popper's (1972) On Reason and The Open Society: A Conversation and his (1991) lectures The Open Society Today: Its Great Yet Limited Success.

as well as the processes through which openness can be fostered as a motor for scientific inquiry as well as societal advancements more broadly.

Popper views intelligence and rationality are starkly separate from any appeal to emotion or intuition. In his words, "open societies function largely by way of abstract relations, such as exchange or co-operation" (OS, 104) – and it is such abstract relations, independent of specific links among human beings, that make it possible for people to consider and discuss each others' views without prejudice (a view now widely known as Popper's 'critical rationalism'). Popper thus assumes a view of rationality centred on logical, axiomatized reasoning, in alignment with the logical-empiricist tradition – and regards the standards for what constitutes logical thinking as uncontroversial, just as he regards the demarcation between science and pseudoscience as a relatively straightforward endeavour where any claim that is not directly falsifiable may be regarded as pseudo-scientific and potentially irrational and unreliable. Bergson instead takes a view of rationality that *includes* appeal to intuition and emotion, as well as embodied social interactions. In this sense, Bergson's views are a precursor to what is now known as the 4E view of cognition (Damasio 2000) as well as process-oriented views of science as underpinning the "philosophy of science in practice" movement (Soler et al 2014). In Bergson's version of openness as a non-selfish, non-goals-directed form of love, what frees humans from prejudice is the ability to expand existing social links while also bringing what is learnt from such openness back into 'closed' relationships, thereby ensuring that deep and meaningful social links are born out of open consideration of what life could be like, rather than simple habit and/or lack of creativity.

In what follows, I shall briefly consider three immediate consequences of the difference between humane and rational openness as championed – in my reading – by Bergson and Popper. The first concerns *the role played by emotional experiences and attachments in relation to open inquiry and the role of knowledge-making and discovery within society*. Popper recognises that his individualistic view requires humans to live in an impersonal, asocial manner, "abstract" in his words – and that this takes a toll, since men have social needs that cannot be satisfied in an abstract society. However, Popper maintains that this extreme libertarianism is a price worth paying, since it supports free choice – in his words, "the endeavour to be rational, to forgo at least some of our emotional needs [is] the price to pay for every increase in knowledge, in reasonableness, in cooperation and mutual help" (OS 176). Increases in knowledge are thus conceptualised as meaningful in and of themselves and justify any social arrangement. Popper thus explicitly condones forms of authoritarian government that, despite relying on exploitation and abuse of some parts of the population, do foster critical exchange and the quest for reliable knowledge, such as what he calls the "right kind" of imperialism (of which Athenian democracy is an example, insofar as it fostered dialogue and cosmopolitanism but relied on slavery as a crucial part of the social order). Bergson is instead adamantly against forms of governance that may discriminate parts of society in ways that are exclusionary and discriminatory. He also explicitly affirms an anti-colonial model of governance, where inquiry is born of consideration of diverse cultures in ways that remind of Helen Longino's principle of "tempered equality" (Longino 2002) – with the recognition that authoritarian, dominant regimes tend to obfuscate rather than encourage rational inquiry, and therefore should be countered with explicit support for representation of different perspectives.

A second consequence of Bergson's and Popper's different attitudes to rationality is a disagreement over *the extent to which a shift towards open inquiry requires a radical social transformation*. For Popper, the open society is the cumulative achievement of a highly

distributed set of activities by various social groups (hence the idea of conceptual engineering as a distributed and federated practice). This is achieved through steadfast implementation of procedures for open inquiry – which Popper interprets as systematic and critical exchange and verification. Rational openness is hence a gradual transformation, brought about through everyday efforts to critique and verify existing knowledge claims. For Bergson, the quest for openness implies a more radical break with existing habits, precisely because it constitutes an attempt to escape existing clan mentalities and warring instincts, focusing instead on building bridges across human activities and transcending the specificity of local habits, and thus fostering the ability to consider other forms of life, experience and reasoning. In Paola Marrati's analysis,

> "The openness that interest Bergson, namely the possibility of a morality and religion not grounded in a communitarian principle of inclusion and exclusion, cannot be achieved by degrees. Men and Women dream of it from time to time, and sometimes this dream of an open society manages to break through the enclosure and realise a part of itself before society once again closes itself up and falls back into that network of habits that constitutes the whole of social obligation. What takes place during such moments is a qualitative rather than a quantitative change, a leap rather than a step forward in a given direction" (Marrati 2012, 311).

Following from such disagreement on the processes through which openness may be achieved and retained within society, the third comparative aspect I wish to consider is *the role of individuals versus groups as enablers of open inquiry*, and thereby the quest towards a more open society. As mentioned above, Bergson places a strong emphasis on individuals as crucial agents of change. Individuals can have the kind of insight, courage and vision that is required to focus away from habit and traditions, and open new horizons by considering new forms of life. These are the individuals that Bergson describes as 'mystics' – that is, gifted people who can role model for their communities and the rest of society. Popper is, on the face of it, less pessimistic than Bergson on the role played by communities in implementing open inquiry. In fact, in his framing open inquiry is only possible through collective action, and specifically through the interaction between individuals and groups committed to critically examine each others' views. Prima facie it therefore seems that Popper is proposing a much more collectivist view of openness, where social interactions are at the core of the processes of rational deliberation that underpin open, rational inquiry. However, and despite his conceptualisation of individuals as thought leaders, Bergson also places emphasis on collectives – though his attention is more centred on how society may be organised to facilitate the attitude of love exemplified by gifted individuals. Bergson's view of institutions is not as engineers and enforcers of rational exchange, but rather as promoters of the open attitude to life and the related recognition of diversified forms of reasoning and care. Hence Bergson's emphasis on overarching human morality beyond cultural differences results in a more diversified understanding of scientific and social progress, which is less tied to individuals 'freely' exercising the same form of rationality. Bergson is happy to accept various versions of the idea of human advancement as viable ways to further open inquiry. His acknowledgment of cultural and moral differences in research and knowledge-making practices is the very reason why he advocates openness in the first place – he wishes humans to be able to go beyond given assumptions, including assumptions around what constitutes rational reasoning and convincing evidence for given claims. Despite its revolutionary tones, Popper's rational openness is not as open-minded, grounded as it is on a very specific idea of what constitutes adequate deliberation, which is in turn linked to the Western tradition of rational thinking as the best way of conceptualising inquiry (see Harding 2015 for a critique).

Popper's view is arguably more clear-cut and easier to implement, and it is no surprise that the Popperian framework is often invoked by contemporary scientists to demarcate science from non-science and keep misinformation (what Popper would have called 'pseudo-science') at bay (Goldenberg, Boumans and Leonelli under review). However, it is also predicated on a rigid paradigm of rationality that sees Western democracies and a monistic take on scientific method as the seat of progress – not a particularly 'open' view in this sense.

Conceptualising open inquiry within contemporary open science

Comparing Bergson's and Popper's views, and focusing on their commonalities and differences, is instructive not only as an exercise in intellectual history, but as an examination of the diverging origins and subsequent history of the conceptualisation and institutionalisation of relations between science and society. While it is relatively uncontroversial to identify some version of 'openness' as a core value for scientific inquiry particularly within democratic societies, debates over what precisely such openness may amount to, and how its concrete implementation within research may inform and foster a more open, inclusive and harmonious society going forward, continue to animate policy discourse both within and outside academia. In this final section, I relate my reflection on Bergson's and Popper's views to contemporary views on openness as instantiated within the Open Science movement, thereby capturing both some of the internal tensions among such views and their broader relevance to societal understandings of openness.

To this aim, it is useful to briefly reflect on the significance of open inquiry and related processes of discovery – so clearly instantiated within the sciences and particularly within publicly sponsored academic research, with its drive towards transparency and accountability to diverse publics ('taxpayers') - as part of social life and sociopolitical transformations. Current debates over the importance of open science for society have highlighted the relevance of critical scrutiny and therefore of access to knowledge processes and outputs to democratic decision-making. Over the last two decades, policy-makers around the world – and particularly the European Commission - have made sustained efforts towards establishing guidance, policies and infrastructures to foster and maintain openness in research in the face of strong pressures towards closing down the dissemination of scientific methods and outputs – pressures which include intellectual property regimes to monetise knowledge and prevent unfair competition, measures to prevent mishandling of sensitive information, and security measures to prevent abuse of dual-use technologies (Burgelman 2019). Open science measures range from the obligation to publish results promptly and in ways that are easily accessible for all (so-called open access) to a push to include expertise from outside academic circles (under the heading of citizen or community science) and to ensure that scientists communicate clearly what they are doing, and how, at every step of the research process (through open data, open methods and open source, for instance).

Such measures are predicated on an understanding of open inquiry as a matter of sharing one's work as widely and accessibly as possible, to make it available for scrutiny and constrictive challenge, thereby facilitating revisions and advancements (Leonelli 2023). This in turn often relies on the commodification of the research process and its outputs into objects – whether these be data, articles, notes, models, instruments or code – that can be freely circulated and traded among scientific groups, thereby fuelling reciprocal feedback and learning, as well as the opportunity to critique and revise one's views. In this *object-oriented* understanding, openness in science is a matter of providing unlimited access to any research

elements at any time to anyone who may have an interest, thereby making it possible for all to participate in research, no matter where they are based and what background they have. This in turn relies on having a digital infrastructure and communications that can support such access, with online tools well-positioned to guarantee entry to anybody who is able to connect to the internet.

This view neatly aligns with Popper's understanding of inquiry within an open society, and indeed may be argued to embody his intellectual legacy – especially when filtered through the neoliberal interpretation of his views promoted in scholarship and policy through the 1980s and 1990s. On the back of a century-long tradition (and related lobbying) of conceptualising science as a market just like other social endeavours (Conway and Oreskes 2023), it seems perfectly reasonable to operationalise openness in science as a commitment to share research objects as freely, transparently and accessibly as possible. Note that Popper's emphasis, just as in contemporary opensScience policy, tends to be on dissent and exchange among individuals as crucial to open inquiry, and on the achievement of consensus about what may be accepted as true claims as a key – if unattainable – goal for science and society. This runs parallel to contemporary discourse around reproducibility as the key to improve research quality and the reliability of research outputs, which is grounded on the idea that knowledge can be evaluated and improved through attempts to critique and replicate, in ways that are modular and informative no matter who implements them. In adopting and fostering ideas around reproducibility, and particularly computational reproducibility, the open science movement assumes an atomised view of knowledge as composed of specific claims that can be evaluated universally and in relative isolation from each other – thereby eventually producing a cumulative understanding that constitutes scientific advancement (Leonelli 2018, Leonelli 2023).

Current attempts to implement openness along these object-oriented lines have, however, encountered numerous challenges – as has the model of inquiry and discovery underpinning them. The cosmopolitan ideal underpinning trust in a scientific free market is failing, as most blatantly exemplified by current geo-political tensions around data sharing across Chinese, American, Russian and European borders – with attempts to build transnational resources, such as the European Open Science Cloud, becoming a political battleground for the extent to which publicly funded scientific efforts in one country should feed innovation in others (Burgelman et al 2019). The research landscape is also notoriously unequal, with some institutions wielding much more power, resources and visibility than others, and thereby driving the agenda for what may count as significant, cutting-edge research (Klebel et al 2025). Much of this inequity has a colonial heritage, which is worsened by increasing reliance on expensive technologies and related infrastructure as necessary to engage in research efforts: while many open science tools presuppose access to stable and powerful internet connection, for instance, this presupposition fails in many parts of the the majority world. The fact that few corporate actors, so-called big tech companies such as Meta and Google, have taken control of the data landscape worldwide – thereby making many datasets of relevance to research inaccessible or overly expensive – is not improving the situation, further demonstrating the failure of the free market to protect open scientific exchange. The confusion surrounding debates on open access, where again some corporate actors – in this case, commercial publishers – have cornered the market for scientific communication, is another instance of the trouble associated to object-oriented views of openness in science, with the Gold (author-pays) Open Access model proving too expensive for most scientists to engage with, and the Diamond (institutions-pay) Open Access model proving unsustainable for most academic institutions and scholarly societies.

As for the epistemological problems encountered in views of knowledge development grounded on critique, these have long been discussed by philosophers in relation to Popper's critical rationalism. At a minimum, adherence to this view pushes questions around the ground on which falsification can happen to the side, as if the criteria and standards judged to be acceptable for critique were self-explanatory, especially in how they are to be implemented in scientific practice. This view eschews the crucial question of who decides the criteria on which inquiry is to be evaluated, why and with which respects; while also peddling linear understandings of truth, progress and scientific advancement which do not seem to tally with contemporary readings of scientific knowledge-making (Soler et al 2014).

This is where considering Bergson's humane openness provides useful inspiration to contemporary open science and a necessary complement to Popper's legacy. Bergson's work highlights the value of *openness as capacity for novel meaning-making*: the ability to identify, receive and assimilate information in ways that increase one's ability to think and act, thereby creating new knowledge. Similarly to Popper, Bergson emphasises how openness entails making oneself vulnerable to criticism and change. However, rather than resolving such vulnerability through standardised procedures of evaluation and trial and error, like Popper does in his critical rationalism, Bergson "stays with the trouble" (to use Donna Haraway's 2016 terminology): he concedes that allowing for change may mean very different things depending on the situation, and that learning requires not only a logical procedure but also a specific attitude, the strength to challenge oneself whose emotional toll is part and parcel of the cognitive and social effort required to open up. Open inquiry requires a breaking of habits, which in turn demands a creative energy – Bergson's *elan vital* – that needs to be taken into account and explicitly supported. Here is the humane component that Bergson brings in: the need to account for the social, emotional, personal relations, connections and interactions that support and maintain open inquiry. Sabina Leonelli defended a similar view of openness for research, called *process-oriented*, where the emphasis is not on exchanging objects but on building meaningful and judicious connections among the humans responsible for creating, curating and interpreting those objects. In this analysis, it is imperative for open science initiatives to invest in robust intellectual, material and emotional connections among research participants as backbone to communication, constructive critique and creative exchange. Social agency in this sense is prior to the access to and manipulation of objects as part of the research process: trust among collaborators requires creating intimacies and reciprocal understanding that go beyond the trade of objects. Notably, not any social connections will do. Judgement needs to be exercised in determining what forms of relations may be most relevant to inquiry in any given situation. Thus substantive engagement to determine what constitutes relevant context, and whose expertise is relevant to better designing and interpreting one's experiments, is part and parcel of any investigation (Leonelli 2023).

Similarly, openness as conceived by Bergson is about conceding the limits of human cognition and social planning, and making such limits part and parcel of the process of developing new knowledge. Full control over the process of inquiry is impossible and it is futile to seek it, also because it stops the very open-endendness that makes inquiry creative and challenging. Hence it is ill-advised to pursue knowledge that is 100% safe, trustworthy and reliable, as sometimes advocated within reproducibility debates – this is not what research in open societies is supposed to look for. Rather, *one should pursue knowledge that is safe, trustworthy and reliable in relation to the social situations within which it is utilized*, thereby retaining openness towards the audiences and uses (and related different

interpretations) that may come in the future. Forgetting the humane, contextual dimensions of knowledge and its situated interpretations means indeed closing down inquiry: giving social relations among inquirers a secondary place in knowledge-making practices can constrain change and learning going forward. In sum: Popper's rational views can be easily assimilated – and seen to conceptually ground – the understanding of openness as sharing resources. By contrast, Bergson's humane take on openness constitutes an intellectual antecedent for the interpretation of openness as judicious connections.

Conclusion: Pursuing Humane Openness with a Rational Touch

This paper proposed an interpretation of Bergson and Popper's views on openness and their implications for contemporary understandings of open inquiry and open science. I noted the differences between Bergson's humane interpretation and Popper's rationalist views, while also stressing how both thinkers are provide anti-relativist approaches to pluralist inquiry, where openness does not involve an 'anything goes' approach to scientific methods and practices, but rather a constructive and progressive dialogue across perspectives. Both thinkers are committed to supporting a diverse, multi-faceted intellectual conversation, whereby established views may be continuously challenged. This brings them both to consider the role of openness, as a constitutive value and a practical commitment, in relation to both scientific inquiry and social life – an approach that is compatible and arguably inspired by pragmatist epistemology.

At the same time, I have argued that the differences in how Bergson and Popper conceptualise openness have important legacies for contemporary views on open science. Popper sees a clear direction of progress and rationality, which can be instantiated through critical engagement and the modularisation of knowledge as 'piecemeal engineering'. This is predicated on an object-oriented view of knowledge that has found clear expression in contemporary interpretations of openness as sharing, e.g. in the open science movement focused on uploading materials such papers, data, code and models on the internet as a way to implement openness and promote critical engagement. Bergson by contrast allows for ambiguity and diversity around what may constitute rational methods of inquiry and, ultimately, human progress. His view of knowledge is not modular but processual; and he places humans and their relationships at the core of meaning-making and knowledge production. I therefore maintain that Bergson's humane vision of openness aligns with what Leonelli's view of openness as 'judicious connections', which places human relations at the centre.[8] This view addresses chief features of openness such as: *mobility*, i.e. the capacity to change and respond to a dynamic environment; *publicity*, i.e. the performance of activities in the public rather than the private sphere, which makes it possible for unpredictable social interactions to unfold; and *diversity*, i.e. the awareness and contact with a wide variety of viewpoints, rather than an adherence to a uniformity of beliefs and practices (Germino 1982, 3-8).

It is not possible within the scope of this paper to address the extent to which the humane vision is realistic and realizable, especially at scale. The analysis proposed here suggests rather a framing for how open inquiry may be conceptualized going forward: that is, as a humane enterprise emphasizing continuing social engagement among inquirers (à la

[8] Link to Pugh's emphasis on the significance of 'connective labour' (which she defines as "the forging of an emotional understanding with another person to create valuable outcomes"; 2024).

Bergson), complemented by procedures and institutions aimed to coordinate well-ordered procedures and deliberation on specific policies and outcomes (à la Popper). Popper's emphasis on individual agency is very useful in informing conduct and norms for social interaction, while his focus on what constitutes rationality is usefully supplanted by Bergson's attention to engaged forms of openness that facilitate critical engagement with a variety of ways of reasoning and intervention, beyond the object-oriented, falsificationist framework that proved limiting in its support for a pluralistic and inclusive implementation of openness within and beyond research. The idea of openness is valuable as a place of responsibility as well as hope (Lefevbre and White 2012, 19), where the open tendency to life finds an expression and means of realisation (Lefevbre 2013, 104). This is manifest in the charisma and leadership provided by trailblazing figures in the open science movement, as documented in the history of gene data sharing for instance (Jones et al 2018). At the same time, serious community effort and institutional regulation are required: as long as open science efforts don't translate into research cultures with sympathetic institutions and habits, thereby becoming somewhat more closed and routinized, open inquiry cannot be meaningfully implemented and affect society at large. What is required is humane openness inspired by Bergson in terms of role of emotion and social connections among individuals and communities, while norms, standards and rules play an important role (as recognised by Popper's rational approach) not only as weapons of closure but also as enablers of engagement and change. This framing recognizes the Bergsonian focus on nurturing connections among human inquirers. At the same time, the piecemeal engineering advocated by Popper remains significant as means to bring individuals and groups in regular connection with each other and their broader collectives, thereby keeping creative paths towards open inquiry accountable and sensitive to local requirements (ranging from scientific/epistemic to social, emotional, political and so forth). Combining Popper's and Bergson's visions, thereby bringing humane and rational views of openness to bear on each other, provides a rich philosophical grounding for open inquiry in the future, and particularly for openness in the service of progressive, democratic societies.

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