# Restoring Biological Processes. Rethinking Connections between Human and Natural History through a Comparative Reading of Bergson and Ruyer

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# Restoring Biological Processes. Rethinking Connections between Human and Natural History through a Comparative Reading of Bergson and Ruyer

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SUMMARY: "*The climate emergency that we are currently experiencing calls for a reconsideration of the human race's place in the living world. While human civilization increasingly relies upon an unprecedented development of technique, it is confronted by the impasses of a technical interventionism that is incapable of resolving specifically biological and environmental questions. Contrary to a unilateral conception of our relation to other species, mainly focused on domination and exploitation, this crisis leads to a deeper exploration of the notion of anthropological ambivalence. Although access to a universe of meaning and value – made possible by the complexification of our nervous system and consequently of our psyche – distances us from nature and the rest of organic life, we are however the product of a natural history that transcends us, and we remain profoundly dependent on other forms of life. In this article, our*

*ambition is to look more deeply into this ambivalence on the basis of an examination of history: specifically, an examination of the relationship between human and natural history.We have inherited this historical point of view from the thinking of Henri Bergson and Raymond Ruyer, who lead us to make the following two arguments, without contradiction. If, on the one hand, the inclusion of human history within evolutionary history must lead us to take into account our profound continuity and dependence with regard to living beings – notably in the solutions we may offer to the current crisis – it must on the other invite us to consider the human specificity of a collective and critical reexamination of our practices in the biosphere, a reexamination that could change the course of the history that we are constructing in tandem with the rest of the living world. This will lead us to expose and critique the theoretical and practical presuppositions of the solutions that are usually considered in dealing with the urgency of the climate crisis, while in return emphasizing the utility of interspecies collaborations in order to revive the evolutionary dynamics that our technique can accompany but never replace."*

The climate emergency confronts us with two issues: the extraordinary power of our technique, and our inability to resolve the problems it has caused. This paradox has its roots in the question of our role among other forms of life: we live as a species that is both separate, as a result of our incommensurable power over other species, and profoundly dependent on the rest of the living world. The theory of evolution has contributed to this paradoxical status, by making humanity the quite temporary culmination of a natural history that precedes and transcends us. However, we continue to deal with environmental challenges by using a domineering and technicist approach that reveals both our optimism and a certain inability to reassess our relationship to other living beings. On the basis of an examination of history, the objective of this article is precisely to question the theoretical and practical presuppositions of our response to the climate emergency, presuppositions that result from a fallacious conception of the place of the human in the living world. This involves studying the deep-rootedness as well as the specificity of our history within natural history. Consequently, we would also like to show that the well-understood intrication between human and evolutionary history must, on the one hand, lead us to take note of our profound continuity and dependence with regard to living beings, particularly concerning our solutions to the current crisis. On the other, however, this intrication must also invite us to consider the inherently human specificity of a simultaneously collective, reflexive and critical reexamination

of our practices in the biosphere. This realization could change the course of the history, and therefore the destiny, of the other living beings as well.

To do so, we reassess the idea that evolution is an *advance*, in order to consider it along the lines of Bergson – who follows Darwin on this point – as a *process* of *divergent* lineages. This leads to the conception of the human race as a temporary culmination, *among others*, of evolution's movement, and to the questioning of humanity's role within natural history. We will then pursue our line of thinking by way of a reading of Ruyer, who apprehends the specific way in which human history extends the movement of biological history. In conclusion, these two authors will allow us to contemplate a new relation to living beings, one that would be at once theoretical – a new understanding of life – and practical. This understanding will allow for a true grasp of what we can do to protect the vitality and diversity of the biosphere.

## *Human History as the Extension of Evolution Through Divergence: A Bergsonian Reading*

### *Evolution Through Divergence and the Impossible Hierarchization of Species*

The idea of a unilinear evolution culminating in mankind is purportedly a product of Darwin's theory of evolution, and yet it is hardly Darwinian at all. The one diagram in *The Origin of Species* does not illustrate a rectilinear progression of the species, but rather the divergence of lineages, which relies on the fact that "the modified descendants of any one species will succeed so much the better as they become more diversified in structure, and are thus enabled to encroach on places occupied by other beings."[1] This means that natural history does not advance by means of the accumulation of adaptations: it evolves by means of the dissociation of lineages. This point, which is fundamental in comprehending evolution through natural selection, functions as a safeguard against a vision of evolution with the human race as the goal. Evolution cannot act in a single direction, since it takes place through divergence. In the sixth edition of *The Origin of Species*, Darwin shows on the one hand that it is hard to find a criterion with which to evaluate the advancement of a given species, and on the other that this criterion must change depending on whether one is discussing vertebrates, insects or plants.[2] There is therefore no advancement of organization in general: instead, there is an advancement of the adaptation of *each population* to its

environment. There is no single apex of evolution, but rather several, as a function of lineages, and of the environment to which these lineages belong.

Bergson, who occasionally criticized Darwinian theory, did however borrow the idea of a divergent descent. According to him, species do not evolve in a linear fashion, but rather "accentuate their divergence as they progress in their evolution." As each lineage progresses independently, it is therefore impossible to create a hierarchy of species: "The cardinal error […] is to see in vegetative, instinctive and rational life, three successive degrees […], whereas they are three divergent directions of an activity that has split up as it grew."[3] Mankind is therefore not a separate species of the living world as a result of its adaptive success: human history appears as one of the directions taken by evolution alongside other evolutionary histories that were just as successful.

*Evolution as Elan Vital*

Furthermore, in order to fully understand the place of humanity within evolution, we must take a deeper look at this idea of "an activity that has split up as it grew." For Bergson, the divergence of species corresponds to the dispersion of a single impetus: "life […] is the continuation of one and the same impetus, divided into divergent lines of evolution." Therefore, despite the differences, there is a "unity of life [that] is to be found solely in the impetus that pushes it along the road of time." In Bergson's writings, this image of an impetus, an *élan vital*, is used to give an idea of the dynamics of living systems, which can only be understood through the efficacy of *duration*, i.e. through the continuity of a history. Species do not share an origin so much as they share an impetus, which manifests itself through the effort of each living being to create its mode of existence out of matter. Evolution is therefore not a sum of passive adaptations, but rather a creative impetus with which life reacts in the face of the determinations imposed by nature, that "effort to engraft on to the necessity of physical forces the largest possible amount of *indetermination*."[4] Evolution thus appears as the history of that constantly pursued effort – since it is constantly frustrated – to extract as much as possible from matter.

The individual history of each living being participates in the larger history of evolution. The unique character of each biological situation, the mixture of determination and

contingency that characterizes it, contributes to an unpredictable transformation of the very process of evolution. For Bergson, this is where the *creativity* of evolution resides: it is *open* to the future, and therefore essentially indeterminate.[5]

*Human History and Natural History*

What place does Bergson assign to the human race? While it is true that humanity is not "the culmination of evolution as a whole," it occupies a special place through the complexity of its nervous system. Through that complexity, humans have the ability to choose. Reflex or instinctive actions are not forced upon them: this freedom is the prerogative of human intelligence. Only humans are truly *free* in their relationship to matter, insofar as their power of action is unlimited: they constantly invent new ways of inhabiting the world. "Man, then, continues the vital movement indefinitely."[6]

Human history thus participates in evolutionary history, and also seems to be its continuation: evolution produces it and it produces evolution, insofar as it is an extension of the *élan vital*. While Bergson says in *The Two Sources of Morality and Religion* that history is subject to "biological laws," it does not depend on them the way an effect depends on its cause, since biological evolution is not a mechanism. He does not consider the various species as passive products of an external mechanism (natural selection), but as contributors to the increase in the effort of the *élan vital*. Consequently, human history is not *predetermined* by biological evolution. "[Human] action on the move creates its own route, creates to a very great extent the conditions under which it is to be fulfilled, and thus baffles all calculation."[7]

How then can we understand the place of the human in the movement of life, and that of human history in natural history? Although Bergson examines the biological dimension – a vital aspect of human societies – he does not really look into the relationship between human and natural history. However, we may find the outline of his views on it in his practical philosophy. For Bergson, the real driving force of the greatest advances in human history is what he calls "mysticism": a certain theoretical relationship to the *élan vital*, which involves a critique of our technicist conceptual tools, in order to go "beyond the human condition"[8] toward shared experiences with other living beings. This theoretical relationship is

therefore both an understanding of the dynamics of evolution, and the recognition of a level of sympathy between organisms. Bergson does say that this transcendence is expressed in an open soul whose love will not only embrace all humanity, but "may extend to animals, to plants, to all nature."[9]

However, the subject of *The Two Sources* is not humanity's relation to other species, but morality and religion considered in their relationship to specifically human history. In order to look more closely at this idea of humanity's unique position in the evolutionary dynamics of living systems, we must now turn to Ruyer.

## *Ruyer: Incorporating the Human Race into the Teleological Movement of Life*

### *The Question of Humanity*

In order to lay the foundations of a new role for humans within the biosphere, it may be enough to share nature with other living beings while differentiating ourselves from them through access to a universe of meaning and values in which they do not fully participate. A look at Ruyer's philosophy will allow us to establish this.

For Ruyer, the continuity of humanity with all other life forms appears problematic from the outset, given that humans, through culture, evolve in a world of meaning that distances them from the rest of organic life: "Man, as a creator of culture, moves within a new kind of environment, within a nature, or super-nature, that is probably not foreign to nature itself, but which seems to obey different laws, and which has its own unity."[10] And yet this apparent break between humans and nature is not Ruyer's last word. On the contrary, he endeavors to position the human psyche – the source of cultural creations – as an extension of organic life, and to see humanity as part of a wider nature, without however diminishing its singularity. In Ruyer's view, the widespread idea of human exceptionalism comes from a spontaneous tendency toward "obliviousness [*inconscience*]," a mixture of narcissism and anthropocentrism that means that we are obsessed by the question of humanity to such an extent that we forget our place in nature as well as the existence of the infinite variety of the

living world. To forestall that inclination, we must start with a decentering, which is dependent on a salient attentiveness to organic phenomena and vital behavior patterns, whose goal is to show that humans are living beings like any other. Once this reinsertion into the natural community has been accomplished, we can then start thinking about the characteristics of a human singularity that has been circumscribed beforehand.

We would like to reexamine this reasoning in Ruyer's anthropological thinking on the basis of the relationship between human history and the evolution of species. Our question is this: what does the reincorporation of human history into natural history that Ruyer carries out tell us about humanity's special status within nature?

*The Naturalization of Finality and of Consciousness*

An increased interest in the dynamics of history, whether human or natural, requires a reconsideration of the driving forces behind human activity and all organic processes. Ruyer opposed explaining everything in the world through mechanical causality and extended the sphere of finality well beyond human activity, given that he applied it to natural phenomena and in particular to the dynamics of embryogenesis.

For Ruyer, it makes no sense to accept finality for consciousness while at the same time refusing it for organic life, from which human consciousness emerged. By overemphasizing rational, finalist activity as an anthropological exception, we isolate humans from other forms of life, making each person a "metaphysical foundling."[11] On the contrary, we must reenvision life as that which is capable of bringing forth the human spirit, and we must understand that our mode of projective action is the product of a teleology that is deeply rooted on an organic level. That said, the primary finality that encompasses all forms of life is more fundamental and primitive than what is known as secondary finality, i.e. intentional finality, which is specifically human.[12] While the second is presented as a mental representation that preexists its realization and distances the subject from the task to be accomplished, the first recaptures the kernel of truth within any finality: to be the meaning that is immanent to any true activity, true in that it is an integral part of the subject that comes into being through it.

This naturalization of finality is reflected in what constitutes its ontological condition: consciousness. Just as the meaning of finality splits in two and expands in order to apply to living beings, the meaning of consciousness splits into primary and secondary consciousness. Primary consciousness is understood as the (spatial) domain that possesses itself through immanent survey (i.e. where the survey does not take place at a distance from what it surveys). Secondary consciousness is derived from primary consciousness: it is simply human, intentional consciousness. The first translates the unitary envelopment of any individuated being that is not an aggregate of parts connected end to end. In particular, the self-construction of an organism is a finalized activity, albeit a non-intentional and non-representative one, that presupposes the work of a primary consciousness. As a result, before being an opening to the world, before being knowledge, consciousness for Ruyer is a mode of linkage that translates a form of self-organization. This naturalization of consciousness, in the sense that physical or biological individuation takes place only through the action of the primary consciousness, makes a generalized thematism possible. Any individual, and in particular any living being, in its instinctual behavior or in its organic development, attempts to carry out themes inherent to its species, i.e. relatively indeterminate norms of a psychic and semantic nature, that direct the action of individuals while enriching themselves through their own actualization.

Ultimately, human consciousness is a continuation, and merely an evolutionary refinement, of an organizing organic consciousness. Although continuity with the living world is reestablished, Ruyer still asserts the specificity of the human psyche. To be sure, the brain does not create either finality or consciousness, but through its connections to the sense organs, it brings a new kind of consciousness into existence that does not coincide with what it organizes but may keep it at a distance, in the form of a mental representation. This disposition conditions what Cassirer called "the symbolic function" that lies at the origin of all creations of culture (language, religion, art, etc.) And yet this function is what places the human race in a special regime in relation to the rest of the living world: "Unlike animal behavior, human activity is not only *thematic*: it is *symbolic*."[13] The brain is thus the focal point of anthropological ambivalence: as consciousness *qua* organization, it is a living tissue like the others, but as consciousness *qua* knowledge, it involves the human mind in the transcendent dimension of meaning and values.

Isn't the break then complete? Isn't the "super-nature" that Ruyer mentioned, which is just the sphere of the mind, irremediably closed to the natural world? We must not forget, however, that finality is above all organic. Living beings do not merely function according to the game plan of a blind mechanism: they try to focus on specific ends or themes that have meaning. Consequently, this thematism also involves them in the "transspatial," i.e. the dimension of meaning and values that is transversal to space and time. Moreover, the co-belonging to this unique dimension of meaning is justified by the natural continuity between, on the one hand, the organic themes, and on the other, human essences or values, which are admittedly more abstract than the themes but just as semantic. Thus the access to meaning is not synonymous with a break, but rather with the shared, though differentiated, participation in an expanded nature, including spatiotemporal reality and the region of the transspatial.

*Human History as the Extension of Natural History*

Does this shared belonging to a nature that is imbued with primary finality make it possible to establish a reinscription of human history within universal history, since the first is driven by the same guiding principles as the second? Ruyer's response to that question is in two parts: first, he conceptualizes evolution as a history in the strongest sense in order to then describe it as the history of the technical improvements attributable to nature, where human technique merely builds upon those improvements.

Seeing history as a blend of individual chances and actions, Ruyer initially deduces that the evolution of species has its own historical form:

> The history of genera and species is truly a history in the strong sense of the term, in other words: an inextricable mixture of chances – fortunate or unfortunate, internal (mutations) or external (variations in climate, segregation, etc.) – and of fortunate or unfortunate uses of these chances by the species or the genus at issue.[14]

Ruyer – guided by the search for isomorphisms and noticing the resemblance between the dynamics of evolution and those of human history – establishes their community of nature. As with history, the driving force of evolution cannot just be

individual finality, and still less the "finalist guidance" of divine providence, nor can it be exclusively attributable to the vagaries of mutations that have been sifted through natural selection. In short, if evolution is so similar to human history, it is because they both make their marks on the basis of a combination of chance and finality. However, unlike human initiatives, the finalist direction of evolution is not located on the level of individual intentions but deeper down, within the spontaneous unfolding of organic life.

Moreover, this analogy of the two histories is coupled with a reduction in the distance between nature and human art. According to Ruyer, life is essentially "an invention of forms with a view to an end."[15] Technical invention is therefore not the prerogative of the human race: it is only the extension of natural technique. If there is a connection between biological organs and factories, it is because organs are still considered as machines produced by an organic finality, which is the culmination of the evolutionary series of past attempts and inventions. The human nervous system is therefore not the principle of any invention of tools, since it is itself an invented tool, and thereby presupposes a more fundamental capacity for invention, which it does not control. This biological "technicism" is what drives Ruyer to make natural history a universal history of technical improvements, where human technical progress is merely one mode among others: "A sort of 'generalized technicism' is indeed applicable to biological evolution [...]. The history of life is essentially a history of the technical improvements of organisms, and human history is no exception to this."[16]

There is nevertheless one essential difference, which is due to the symbolic function of the human brain. Unlike natural history, human history is cumulative: symbolism enables the cultural capitalization of knowledge from past civilizations. While work in ethology has demonstrated the occasional existence of cultural transmission among some animals, this cumulative principle of human culture, which means that every new generation can start where the previous one stopped, is what makes human history unique. What's more, strictly speaking, natural history is only a history by virtue of humanity's constant preoccupation with inquiring about the immemorial ages of our world and with recording the history of evolution.

Now we need to see how this specifically human memory leads to a reconsideration of our relationships with the other living creatures in the context of the current climate emergency.

## *Toward a New Relation with Life in All Its Forms*

Reconceptualizing human history as a continuation of universal history first means understanding that humanity cannot be alienated from the living world: it must be resituated in a global history whose dynamics elude it for the most part. In this last section, we would like to show that it is possible to build upon the thinking of Bergson and Ruyer by making that anchorage of the human race in universal history the basis for a virtuous reactivation of evolutionary movement, one that humans must set in motion. This approach must reject two complementary traps: the fatalist vision that consists in putting humanity and the other species at the same level of powerlessness, and the illusion of the human race's technical, salvational omnipotence. In our view, the specificity of humanity resides above all in the possibility of a conscious and collective reconsideration of the modes and the impact of our action upon nature. This reconsideration could spark a profound upheaval in the logic of our relations with other forms of life.

### *Two Intertwined Histories*

Human history is not just written according to intrinsically human laws, the interplay of individual initiatives, the power struggles between social classes, or the dynamics of economic, political and cultural structures. It is a fact that entities unknown to our world can suddenly appear in the arena of human relationships and set off such a seismic shift that the course of collective history is changed. Obviously, the epidemic of Covid-19 – the result of the spread of a coronavirus that has shaken the neoliberal trading system and disrupted the movement of people worldwide – is the most notable illustration of this in recent years. Other living beings are capable of becoming, despite themselves, decisive figures in our own history, well beyond the instrumentalized roles to which human aims have limited them. This idea leads us further than Ruyer's idea of a structural analogy between natural and human history. It is not just a matter of a resemblance between two separate orders that nevertheless share the same dynamic structure: there is a deep

interrelationship between them. Human history does not develop on another level from the evolution of species. Similarly, this idea of a sudden intrusion of certain organisms (bacteria, viruses, etc.) in the course of human events must not mislead us: these two dynamic orders do not affect each other at wide intervals, episodically: on the contrary, they are tightly linked and constantly condition each other. One may object that the framework of human history often eludes the logics of living beings in order to obey its own laws: likewise, the evolutionary dynamics between species are sometimes independent of human actions. Their relationship is not on the level of all or nothing: they can, at either extreme, follow an independent path (although this is never true in reality) or conversely be interwoven with each other to the point of being *really* and even *logically* indistinguishable, but the infinite range of intermediate degrees is more the rule than the exception. This intertwining, however, is only possible because the two trajectories are both open histories, made of finality and chance, enabling the fortuitous encounter of necessities at every level, in the course of both human and natural events. Ultimately, far from transcending Ruyer's diagnosis, the acknowledgment of the interpenetration between the two histories can have no other basis than his assessment.

That said, these two histories can never blend into one another, given the relationship of remembrance that the human being maintains with history in general. Unlike what happens for other species, our past is not only co-present to the present insofar as the first conditions the second, but it is also present in the form of a conscious recollection, and therefore as historical knowledge that is perfectible ad infinitum. But the well-understood place of the human within nature is perhaps due less to this particular relationship to the past than to what it makes possible: instances of collective awareness and more precisely the will to transcend the framework of technical intelligence in order to consider the dependence of our history on evolutionary dynamics. If humans have a special place in the living world, it is perhaps because unlike other animals, they are able to modify their conceptions and the kinds of actions that result from them. Not all animals are bound to their instincts: in particular, mammals – primates above all – demonstrate an ability to learn that nullifies any attempt to liken them to instinctive automata. They are, however, incapable of that reflective recall that allows human beings to become aware of their place in the living world, and consequently to replace a relationship of domination over other forms of life – which was hegemonic for a long time but historically constructed – with one that is interdependent and collaborative.

We will now see that this awareness is both one of our power over the biosphere and one of our powerlessness in the face of life's unfolding, which transcends us.

*Extending Evolutionary Dynamics, Not Replacing Them*

Perhaps the most important lesson to be drawn from the climate crisis we are living through is that human intervention cannot be carried out without taking into consideration our dependence on the dynamics set in motion by other species. Darwin already formulated this necessity in a book on *The Formation of Vegetable Mould Through the Action of Worms*, a work in which "Darwin, the geologist, essentially says this: 'Soil does not exist, it must be manufactured, and this is the earthworms' task. […] Without knowing it or wanting it, they make a habitat out of the earth, for themselves and for other living creatures.'"[17] And although only humans can become aware of the threats that hang over the earth we share, they cannot reconstruct, on their own, the conditions of life that were only made possible through collaboration between species. One remarkable example of this is the restoration of the soil in the Crau plain, located in the Camargue region of southern France, after a spill of crude oil from a pipeline leak in 2009. In order to remediate the site, soil was transported from a zone several kilometers away. But the operation was expensive from an environmental perspective: the machines used created pollutants, and the source for the new soil was destroyed. Moreover, the procedure did not allow for the restoration of plant life. In the event, the typical vegetation of the plain only reappeared after harvester ants (*Messor barbarus*) were reintroduced into the soil. These ants, which are predators of several kinds of seeds, participate in their spread by scattering part of their harvest as they move along.[18]

Therefore, by coordinating human action with natural processes, we can truly build on the creative dynamics of living beings through our own efforts. For if the human race extends biological evolution in the sense that its action influences the becoming of other species, we must remember that it is also an emanation of that evolution. It is therefore, by its very nature, borne along by the evolutionary dynamics in which it must include itself if it intends to develop them. As Bergson says, while humanity, through its intelligence, has an unlimited power of creation over matter, thereby extending the *élan vital*, it cannot reproduce all of the potentialities of the dynamics of living systems: "Created by life, […] how can [our thought] embrace life, of which it is only an

emanation […]?"[19] There is an error in judgment here. Humanity is not all-powerful in the face of nature: it is *in* nature. In order for our action to become a genuine, viable part of nature, we must above all be able to take into account both evolutionary processes and our place within evolution.

Our interventionist technicism cannot claim to supplement the evolutionary dynamics at the heart of biodiversity. This insufficiency is particularly apparent in the context of the problem posed by the loss of genetic diversity in seeds. One of the solutions has been to constitute gene banks by freezing seeds (for example at the Svalbard Global Seed Vault in Norway). But biologists like Pierre-Henri Gouyon sharply criticize the limits of this technique. For a start, the frozen seeds do not maintain their capacity for germination forever: it is therefore necessary to sow them regularly and harvest their descendents, leading to a loss of diversity with each generation. Over the long term, this is not a viable solution. There is also the error consisting in believing that the current state of diversity is sufficient to cover future needs: in other words, that all it takes to alleviate the climate crisis is to maintain the genetic resources as they exist today.[20] More fundamentally, this solution relies upon a fixist and therefore incorrect understanding of biodiversity as a sample of species to be preserved, instead of seeing it as the result of complex evolutionary dynamics. It thus tends to preserve existing species but does not allow for the maintenance of the dynamic process of biodiversity.

### *The Dynamics of Living Systems: Between Extinction and Creation*

This does not condemn us to inaction. Instead, it encourages us to subordinate our practice to a real understanding of the processes of evolution and recognize that our technical power can only be deployed if the natural dynamics on which that power is based are allowed to flourish as well. If there is a lesson to be drawn from Darwin, it is that the species are *perpetually* diverging, and that this divergence can only be explained by an advancement involving both the selection of the most adapted organisms and *the extinction of the others*.

> As […] natural selection necessarily acts by the selected form having some advantage in the struggle for life over other forms, there will be a constant tendency in the improved descendants of any one species to supplant and exterminate in each stage of descent their predecessors and their original progenitor.[21]

Extinction is therefore only problematic when it is no longer offset by the selection of new varieties. This is why it is crucial to grasp the *dynamic* aspect of living processes. Bergson already said it: human progress can only be accomplished by undergoing a transformation similar to "those that have produced the successive species in the organized world": "humanity could now continue the vital movement."[22] The specificity of the human race also expresses itself in this ability to recapture the movement of evolution, and to extend it.

Gouyon calls for a politics based upon an understanding of living processes, for the loss of genetic diversity in seeds is less a product of extinction itself and more one of the considerable decrease in genetic exchanges caused by industrial concentration. In order to "restart the dynamic process of generating biodiversity," it is necessary to take into account the processes of metapopulation, in other words the exchanges between the populations of one species, which mean that the extinction of one of those populations is offset by the recolonization of the empty territories by the other populations of that species.[23] Restarting these processes that generate variability would therefore infer "that every farmer owns their own seeds and that they exchange some of them with their neighbors."[24] It is not a matter of refusing the innovations offered by biotechnology, but of using them not only in the service of the conservation of the existing diversity but also and especially in the service of the natural processes that enable its maintenance and its transformation. There is a decentering of technique at play here that is concomitant with a decentering of the human race: technique should be used less to intervene in biological process and more to guarantee that those processes can flourish.

## *Conclusion*

In this article, we wanted to consider the place of humanity in the living world through the relationship between its history and that of the evolution of other species. This particular point of view, adopted on the basis of Bergson and Ruyer's conceptions regarding living beings, thus invites us to put human exceptionalism into perspective, without ever denying it. Human history builds upon the history of living beings and follows the logic of the unfolding of the *élan vital*: it nevertheless stands out by virtue of the complexification of the human brain. As a result, among all living beings, only humans have reason-based access to the realm of ends and

values. This does not mean that they must rule unchallenged over the rest of the biosphere, for just like all the other creatures in this world, they owe their existence to evolutionary dynamics that transcend them. We wanted to demonstrate that humans, from their privileged place in the living world, were perhaps the only beings who could become aware of their close dependence on the other life forms whose constant activity makes our shared land habitable, and that consequently, they are the only ones who are capable of undertaking interspecies collaborations that could overcome this crisis through the construction of a shared history.

*Translated from French by Allyn Hardyck*

## Endnotes

**1.** Charles Darwin, *The Origin of Species*, 6th edition (London: John Murray, 1873), 90.

**2.** Darwin, *The Origin of Species*, 97-100.

**3.** Henri Bergson, *L'Evolution créatrice* [1907] (Paris: PUF, 2007), 88, 136 [*Creative Evolution*, trans. Arthur Mitchell (New York: Modern Library, 1944), 98, 149].

**4.** Bergson, *L'Évolution créatrice*, 136, 53, 104, and 116 [*Creative Evolution*, 149, 60, 115, and 127].

**5.** See Bergson, *L'Évolution créatrice,* 127 [*Creative Evolution*, 139]: "Indeterminate, i.e. unforeseeable, are the forms it creates in the course of its evolution."

**6.** Bergson, *L'Évolution créatrice,* 266 [*Creative Evolution*, 290].

**7.** Bergson, *Les Deux sources de la morale et de la religion* [1932] (Paris: PUF, 2008), 313, 315 [*The Two Sources of Morality and Religion*, trans. R. Ashley Audra and Cloudesley Brereton, with W. Horsfall Carter (New York: Henry Holt, 1935), 293, 296].

**8.** Keith Ansell-Pearson, *Bergson: Thinking Beyond the Human Condition* (New York: Bloomsbury, 2018).

**9.** Bergson, *Les Deux sources de la morale et de la religion*, 34 [*The Two Sources of Morality and Religion*, 38].

**10.** Raymond Ruyer, *L'Animal, l'homme, la fonction symbolique* (Paris: Gallimard, 1964), 90.

**11.** Ruyer, *Néo-finalisme* [1952] (Paris: PUF, 2012), 19 [*Neofinalism*, trans. Alyosha Edlebi (Minneapolis / London: University of Minnesota Press, 2012), 16].

**12.** André Conrad, "La finalité-harmonie," *Philosophia Scientiae* 21.2 (2017).

**13.** Ruyer, *L'Animal, l'homme, la fonction symbolique,* 261.

**14.** Ruyer, *Néo-finalisme*, 180 [*Neofinalism*, 168].

**15.** Bertrand Vaillant, *La Philosophie de la vie de Ruyer* (PhD diss., Université Paris 1, 2020), 120.

**16.** Ruyer, *L'Animal, l'homme, la fonction symbolique,* 23.

**17.** Roland Schaer, *Répondre du vivant* (Paris: Le Pommier, 2013), 243.

**18.** Thierry Dutoit, François Mesléard, Olivier Blight and Tania de Almeida, "Restaurer la nature, un travail de fourmis?" *The Conversation*, theconversation.com, 27 September 2020, Web, 6 December 2022.

**19.** Bergson, *L'Évolution créatrice,* VI [*Creative Evolution*, XX].

**20.** Pierre-Henri Gouyon, "Aux origines de la biodiversité: les ressources génétiques," in *Aux Origines de l'environnement*, ed. Gouyon and Hélène Leriche (Paris: Fayard, 2010), 99-111.

**21.** Darwin, *The Origin of Species*, 93.

**22.** Bergson, *Les Deux sources de la morale et de la religion*, 188 [*The Two Sources of Morality and Religion*, 179].

**23.** Gouyon, "Aux origines de la biodiversité," 106.

**24.** Gouyon, "Aux origines de la biodiversité," 106.