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# Meaning of Life, Human Nature, and Delusions

## How Tales about Love, Sex, Races, Gods and Progress affect our Lives and Earth's Splendor

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*Love does not consist of gazing at each other, but in looking outward together in the same direction.*
*(Antoine de Saint-Exupéry)*

*I dedicated my last book—which was about how evolution is mainly driven by organismal behavior—to Tots, an exceptional member of the species Canis lupus that was crucial for my understanding of biological evolution and was a true companion, 24/7, until her very last breath. Therefore, I dedicate the present book particularly to Alejandra—a truly fulfilled person with a broad interest in knowledge, arts, people, life, and the pursuit of happiness—and to our naturally "wild" Salehe, a name that in Swahili and Arabic basically means, in a very simple but also profoundly deep way, "Good man." My hope is that my passion and enthusiasm for life in all its diverse, beautiful, and amazingly fascinating combination of chaotic, contingent, and random events will be passed to him and to the broader public, particularly the new generations, and will give them the necessary tools to help them escape from the chains of Neverland once for all, and live in a world of reality with much less hate, oppression, discrimination, inequalities, wars, famines, animal abuse, ecological disasters, and delusions.*

# Praise for the Book

*Rui Diogo is becoming the Slavoj Zizek of evolutionary biology* (Marcelo Sanchez-Villagra, Director of the Paleontological Institute and Museum of the University of Zurich).

*I applaud the enormous work that Diogo has invested in this follow-up to his widely acclaimed Evolution driven by organismal behavior book, and the challenge of getting people to think beyond and outside of our usual set of definitions and expectations. The case-studies provided in the book are fascinating and insightful* (Drew Noden, Emeritus Professor, Cornell University).

# Standing on the Shoulders of Farsighted Humans

*One glance at a book and you hear the voice of another person, perhaps someone dead for 1,000 years. To read is to voyage through time. (Carl Sagan)*

*Why should I fear death? If I am, then death is not. If Death is, then I am not. Why should I fear that which can only exist when I do not? Long time men lay oppressed with slavish fear. Religious tyranny did domineer. (Epicurus)*

*For fools admire and love those things they see hidden in verses turned all upside down, and take for truth what sweetly strokes the ears and comes with sound of phrases fine imbued. (Lucretius)*

*Sublime Lucretius' work will not die, until the day the world itself passes away. (Ovid)*

*I have never thought, for my part, that man's freedom consists in his being able to do whatever he wills, but that he should not, by any human power, be forced to do what is against his will. (Jean-Jacques Rousseau)*

*Those who can make you believe absurdities, can make you commit atrocities. (Voltaire)*

*I am in this endless lack of solitude an animal of light corralled by his mistakes and by his foliage. (Pablo Neruda)*

*Two types of choices seem to me to have been crucial in tipping the outcomes [of the various societies' histories] towards success or failure: long-term planning and willingness to reconsider core values. On reflection we can also recognize the crucial role of these same two choices for the outcomes of our individual lives. (Jared Diamond)*

*A bank is a place where they lend you an umbrella in fair weather and ask for it back when it begins to rain. (Robert Frost)*

*When the last tree is cut down, the last fish eaten and the last stream poisoned, you will realize that you cannot eat money. (Prophecy of the Native American Cree people)*

*White people cannot live with the idea of living aimlessly. They think that work is the reason for their existence. They enslaved so much 'others', that now they need to enslave themselves.. as if becoming 'civilized' was our destiny. They can't stop and experience life as something that is simply part of a marvelous world. This is their religion: the religion of civilization. (Ailton Krenak, leader of an indigenous movement in Brazil)*

*The Earth is 4.6 billion years old…let's scale that down to 46 years…we've been here for 4 hours…our industrial revolution began 1 minute ago…in that time we've destroyed more than 50% of the World's Rain Forests…this isn't sustainable. (Greenpeace)*

# Preface

*Before the creation of the universe, God did nothing, apparently…suddenly, one day he decided to create the Universe, we don't known why or for what…according to the Bible, he then made the Universe in six days, six days only, six days…then he rested on the seventh day, until today. He did nothing, ever again. Does this make any sense?! (Jose Saramago)*

Our tendency to wonder for "why" life is as it is and what is its "purpose" is often considered to be among the most "noble" features of humanity. This book is the first to provide a multidisciplinary account showing that while this propensity does play crucial functions such as help coping with death and a plethora of societal troubles, thus decreasing depression, it is also profoundly linked with some of the darker moments in our history, including atrocious wars, animal abuse, colonialism, slavery, misogyny, and racism. The central topics discussed here are beautifully shown by **Jacopo Bassano**'s (ca. 1510–1592)—an Italian painter also known as **Jacopo dal Ponte**—stunning painting displayed in Fig. 1. **Saint Jerome** (340–420 AD)—a monk who lived for 4 years in the Syrian desert where he devoted himself to the practice of penance and the study of Hebrew and the Scriptures—is often shown in paintings contemplating the skull as a reminder of the inevitability of death and the vanity of worldly events. The dark tone of the painting and the skull at the bottom show very well the obscurity of death and the anguish of St. Jerome—and of humans in general—when confronted with death's inexorableness. This point is also stressed by the saint's body showing its marks of age, and the menacing sky suggesting that death might be near. In this book I defend that our awareness of the certainty of death and randomness of both our lives and demise—an aptitude that seems to be uniquely found in humans—is profoundly related to our peculiar, compulsive tendency to create, and believe in, complex teleological imaginary narratives. Such tales are based on the notion that everything has a "special" cosmic purpose or use, or meaning. These imaginary stories can therefore be either religious or non-religious, as are for example tales about a purposeful "Mother Nature" or many narratives characteristic of atheistic humanism.

Accordingly, on the right portion of the painting one can see clear symbols—including Christ himself, crucified on the cross—of complex teleological narratives: in this case, those of Christianity. That is, within the main ideas discussed in the

**Fig. 1** Jacobo da Ponte's splendid painting of St. Jerome

present book—and not necessarily within those defended by Jacoppo when he did this painting as they are still controversial—moving from left to right, one sees the inevitability of death (left), how it leads St. Jerome—and humans in general—to be profoundly anguished when confronted with it (center), and consequently to create teleological narratives (right) about a cosmic purpose of life: that our existence is "meant to be." Lastly, reflecting perhaps the most peculiar and in this sense essential take-home message of this book is the idea that this quest for a purpose of life actually leads to some of the darker moments of our human history. This point is reflected in the painting by details suggesting the self-flagellation of St. Jerome. Using this as metaphor for the ideas of this book, it can remain ambiguous if the flagellation was knowingly done by him or unconsciously self-imposed during a delusional dream about supernatural deities. Within the context of this book, it is particularly relevant that the flagellation shown in the painting is very likely related to the popular story about St. Jerome's dream, in which he saw himself being flagellated by angels of God *because* he studied classical literature—often symbolizing knowledge about the *world of reality*, including historical texts and scientific ones such as those of Aristotle—more than the Bible—one of the most emblematic examples of complex imaginary narratives created by humans. That is, one could say that the flagellation of St. Jerome represents both the conscious and unconscious self-flagellations that humans imposed, and continue to inflict, to themselves over and over again by creating, believing in, and blindly acting—or being obliged to act, either by force or due to social norms or peer pressure—according to such imaginary tales.

A critical point is that my aim is not to present a detailed, encyclopedic account of all the diverse subjects discussed, and references mentioned, in this book. Most

of these issues have been widely analyzed separately in numerous publications and by countless thinkers. As an avid reader I could not resist to read, in most occasions, the originals, even if they were written centuries, or even millennia, ago. However, I try to not provide too many details in many cases, as they can be fascinating to some readers, but can bore others, or at least distract them from the main ideas elaborated in this book. Therefore, I often provide an introduction to each of the many topics analyzed, so readers can understand what is being discussed and where they can then find more information, in case they are particularly interested in knowing more about a specific topic. This is because the main aim of the book is precisely to put together all these topics in a broader way than what is often provided in other works and in particular within what can be defined as empirical or scientific philosophy. That is, using scientific—including experimental—data to discuss in an holistic way broader questions that have fascinated humans for a long time. In other words, I do not want to provide details about each and every small branch of the tree, but instead to provide a uniquely multidisciplinary, far-reaching analysis of the tree as a whole. In that sense, this book literally contains "a thousand different voices," including empirical data, historical accounts, and points of view from authors from numerous different backgrounds, places, cultures, and times, from the first epic stories and religious texts written millennia ago to current discussions on artificial intelligence (AI) and virtual reality. Similarly, as I intend to have the ideas analyzed in this book read, discussed, and hopefully taken into account by a wide audience across the globe, I also had to make the difficult decision to leave out numerous references and fascinating case studies, and reduced the use of jargon to the maximum. At least, I can surely say, humbly and respectfully, that I really tried to do my best in order to do so: this is a book directed to everybody—whatever you are from, or how many years you were at school, or if you are religious or not, this book is for you. So, what I can indeed guarantee is that whatever is your background or interests, there will be something in the book that will engage you, make you learn something new, and more importantly, lead you to think deeply about critical aspects of your daily life, from how you have sex to how you love, from what you eat to the physical activities you do, from how you see other people to how you deal with them, with other animals, and with the planet in general.

Washington, DC, USA Rui Diogo

# Acknowledgments

*If our brains were simple enough for us to understand them, we'd be so simple that we couldn't. (Ian Stewart)*

I would like to acknowledge the hundreds of colleagues, students, and friends with whom I had the privilege to collaborate and discuss numerous topics covered in this book. I have been very lucky to meet and interact with people interested in so many different fascinating issues, and this book would have never been possible without them. Among all those people, my most profound admiration, and gratitude, is to Michel Chardon, former professor of the University of Liege and advisor of my first PhD thesis. As I always told him, for me he was in a way the last emblematic example of the so-called Old Europe: a true humanist, savant, and caring person and sage. We desperately need more people like him—he was and still is the main inspiration for my academic life. I also want to thank my parents, Valter and Fatima—since I was a small child they emphasized the importance of reading, traveling, and thinking "outside the box," which was further stimulated by my brothers, Luis and Hugo. I also want to thank Howard University, particularly its mission. Being part of one of the most renowned historically Black Universities clearly made me more aware of, and dedicated to address, a plethora of societal problems and the long-standing and still prevailing fictional stories that have chiefly contributed to them.

# Contents

# List of Boxes

*I think that God, in creating man, somewhat overestimated His ability. (Oscar Wilde)*

# Chapter 1
# Introduction


*We are like dwarfs sitting on the shoulders of giants…we see more, and things that are more distant, than they did, not because our sight is superior or because we are taller than they, but because they raise us up, and by their great stature add to ours.*

(John of Salisbury, excerpt from 1159 treatise Metalogicon)

## 1.1 Standing on the Shoulders of Others

*What Descartes did was a good step…you have added much several ways, and especially in taking the colours of thin plates into philosophical consideration…if I have seen a little further it is by standing on the shoulders of Giants. (Isaac Newton, letter to Robert Hooke in 1676)*

Let's first talk about what this book is about, and what it *does* not aim to be. The book indeed stands on the shoulder of not only giants, but of all those other scholars, thinkers, historians, and lay people that have been interested on the broader topics discussed here, which are those that have basically fascinated the most people since times immemorial. Why are we here? What is the purpose of life? What is its meaning? Are we progressing towards any direction? Will we thrive? Therefore, this is a "popular book" in which I compile the information provided in previous works by other authors in a relatively simple way so the broader public can understand it, think about it, discuss it, and most importantly take it into account in their daily lives. Accordingly, I avoided the excessive use of scientific and philosophical jargon, and when I do so, particularly when I cite the works of others, I usually provide brief definitions of terms that might not be so familiar to readers. A major, and somewhat peculiar, characteristic of this book, which is in a way a logical follow-up from what I did in my 2017 book *Evolution Driven by Organismal Behavior*, is that I often cite brief excerpts of the original texts of other authors.

I consider that we, scientific writers, should not only clearly mention, but also actually pay a direct tribute to authors who have influenced our ideas or a large number of people, either because we agree with them or because by not agreeing



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with them, they make us re-think and analyze a topic from a different perspective. My viewpoint is that we should be humble, and not pretend that we invented the wheel: we do need to recognize, unambiguously, that *we do stand on the shoulders of others*, and that is why I opted to refer *directly* to their original works—particularly those that don't agree with some of the ideas defended in the current volume—so that, in all fairness, you can make an impartial judgment about which ideas you agree with. It is just too easy to criticize ideas or authors by misrepresenting them, and I don't want to do so. I recently read a book review that commented that one of the major strengths of the book that was being reviewed is that it *did* include numerous direct citations of other works, and that, by doing so, it literally contained "*a thousand different voices*." This applies to the present volume: voices from authors from very different fields of science or knowledge in general, from very different times and places and cultures, and with very different perspectives on life, politics, love, sex, "races," and another number of greater-than-life topics, from texts written in ancient "civilizations" to works published about Covid-19 or Artificial Intelligence just a few weeks ago, at the end of 2020.

Regarding the use of brief definitions, I need to explain what I mean, when I use the terms "**cosmic meaning of life**" and "**cosmic purpose of life**." Obviously, we all often have some aims, or "purposes" that we want to fulfill when we wake up, either the same day or week or year or during our life in general. This morning I had the aim of spending a few hours writing this book. But in the way the terms are used in this book—and commonly in philosophical or biology works and broader discussions about the "meaning of life"—such specific aims refer to our ***purpose in life***. That is completely different from the discussions about and quests to find a "*cosmic meaning of life*" or "*cosmic purpose of life*," which have nothing to do with specific tasks such as going shopping or cleaning a bathroom or writing an article, that is, to purposes *we set up* to be fulfilled *in* our lives. Instead, they refer to much broader, transcendent "purposes" *of* life in the cosmos as a whole that *a supernatural deity such as* ***God*** *or* ***Mother Nature*** *or another type of agent set up* for you, or others, or for humans or life in this planet in general. Theists usually argue that God created the universe as well as life, and that this means we are here for a reason, as part of **God's purposeful "masterplan."** But, importantly—and too often neglected—the quest for the "cosmic purpose of life," or the "meaning of life," is not only undertaken by theists: many atheists follow ways of thinking that are actually very similar to those followed by theists and talk about cosmic "purposes of life." This is done by **humanist atheists**, which often argue that humans have some kind of "purpose" or "duty" to "make a better world," or "protect the planet," or the living beings that live in it. As we will see in this book, basically the vast majority of people from our species *believe*, and have always *believed*, that there is some kind of cosmic purpose of life.

Regarding specifically the two terms with "of," that is *meaning of life* and *purpose of life*, some authors argue that the former is a psychological concept that is focused on the significance of life, while the latter is a spiritual concept of life. Other authors argue that the latter is related to a belief that everything has a use or a reason for being, while the former refers to the value or values that are assigned to that belief. However, for the context of the present book what is important to stress

is that both terms are similar in the sense that they refer to something more abstract and transcendent than the mere specific short- or long-term aims or goals, that is the *purposes in life*, that *we* set up to accomplish in a material universe. In other words, in a very simplified way *purpose or meaning of life* would refer to something as saying "the reason I am here, as a human being living in this planet, is to change the world by being a science communicator, this is what I was meant to be by God, Mother Nature, or the interactive energy of the Cosmos." Accordingly, in this book I commonly use the term *purpose of life* because the word "purpose" is more directly related to the term ***teleological narratives,*** which are precisely often related to the notion that things have a "special" *purpose* or *use*, or "**telos**." Specifically, the word *teleology* builds on the Greek *telos* ("purpose," or "end") and *logia*, which refers to "a branch of learning."

Similarly, I should make another distinction: in biology and various other scientific areas, "**how questions**" and "**why questions**" are normally associated with, respectively, "proximate" and "ultimate" causes. However, when I refer in this book to "why-questions," I am doing this more as it is often done by scholars that discuss these types of "broader-than-life" issues, such as philosophers or theologians: that is, to refer to ***teleological why-questions***. A biologist could answer a ***scientific why-question*** such as "why are humans in this planet" with a naturalistic answer like "because our ancestors were apes and then there were ecological changes and consequently there were anatomical and genetic changes in the ancestors of the lineage that lead to our species." Such an answer would not invoke any cosmic "purpose" or "masterplan." However, within the sense applied in the present book, a typical answer to the ***teleological why-question*** "why are humans in this planet" would involve something about a cosmic purpose or goal, for example imaginary tales such as "because God wanted so," or "because Mother Earth wanted a better world and needed humans to do so" or, alternatively, "wanted a species that would destroy numerous others so that there would be a renewal of life in the planet."

As it might already be obvious to you, one of the main take-home messages from the compilation of the extensive amount of scientific data that is discussed in this book is that there is *no* cosmic *purpose of life.* This includes the clear inconsistencies that exist between the different cosmic teleological narratives created by different groups of people, between them and the available scientific evidence, between the different parts of a single tale or single religious monograph, or cross-cultural studies about what people from different groups believe, or how differently they "feel" or "see" "death" and "afterlife" in near-death experiences. Many events in life including its very end—death—are mainly arbitrary, but our brains often try very hard to attribute them a "meaning," a "purpose," or connect them within inexistent patterns. Within an endless number of examples available in the literature and in the media, some that most shockingly illustrate how life can be so empathetically absurd and ephemeral are the cell-phone "**selfies**" that were taken just seconds or minutes before the people that are displayed in them died, almost always for reasons that were completely unpredictable just days before they happened.

One emblematic example of this is provided in a dignifying article from the *Cosmopolitan*, which was published with the approval, and including interviews

with, the family of **Collette Morenos**, and was accordingly entitled "*The real story of Collette Moreno's viral 'selfie death'*." Collette's family was particularly disappointed that the media, and the broader public in general, tried to quickly conclude that Collette's death occurred "*because*" she and her friend took a "selfie," while actually the car crash that led to Collette's death occurred after a few minutes and at a different place in which that selfie was taken. Therefore, apart from the dignifying mission of telling the truth about what really happened and of not blaming the selfie for Collette's death, I refer to this specific case because it does emphasize a critical point of this book: how random and ephemeral life is. As noted in the *Cosmopolitan* article:

> Collette Moreno was on the way to her own bachelorette party, and she was choking. The truck in front of her and her best friend, Ashley Theobald, was spewing fumes that were aggravating Moreno's asthma, but Missouri Highway 5 had a double yellow line; they couldn't pass. Her friend tearing up, Theobald craned her head to the left. The coast looked clear. She tilted the wheel, guiding the Chevy Malibu across the lines, speeding up to make the pass quick. But as the Malibu sped forward, a Dodge Ram came cruising up a slight hill that neither of them had seen. Theobald swerved, but the Dodge swerved with them. The cars collided head-on. On June 20, 2014, 26-year-old Collette Moreno died five weeks before her wedding, leaving her 5-year-old son motherless.

Few cases reflect how transient our lives are, and amplify our discomfort in recognizing this reality, as this one, particularly when we know that College was going to her bachelorette party and was mother of a boy who has lived only half of a decade. That is precisely why most people, and the media, quickly tried so hard to create an alternative reality. In this era of "alternative facts," the "fake news" that so quickly became so viral about this case were chiefly due to that huge discomfort we feel when facing the absurdity of death: the need to create a posteriori imaginary narratives about "why" people die, what is the "*purpose*." Humans love to talk about "purposes," to seek for **causality**, a ***causal* chain of events** in which any one event causes the next, and hate to recognize that most of the events are actually not causal but *casual*. In this specific case, such human tendencies lead the media and broader public to quickly *believe*—by following the premises of such a "causal chain of events"—that Collette's death was causally connected with the last previous moment of Collette's life they knew about: the moment she and her friend took the selfie. Of course, there are cases where the act of taking a selfie does *lead* directly to the death of the person or persons taking it, further reinforcing the absurdity of life. However, as it will be shown below, such cases are in *reality* extremely rare: in the vast majority of other cases, including this one, there is no causal chain at all, no *pattern* connecting the dots, and that is what makes humans feel so uneasily and create "why" teleological narratives that assign a *purpose* to a completely unpurposeful natural event, death. In this case, the "purpose" story that so quickly became so viral—without most people and the media even caring to search for the true facts—is that Collette's story was "teaching us a lesson": karma, or "*narcissism*" was surely the "*cosmic reason*" for this death. As explained in the *Cosmopolitan* article:

> Collette Moreno died five weeks before her wedding, leaving her 5-year-old son motherless…but that, according to the internet, wasn't the worst thing that happened that day: eight minutes before the fumes and the double yellow lines, Moreno took a selfie – grinning

from the passenger seat, with Theobald in the background driving in shiny heart-shaped sunglasses. '*Dying in a car crash…but first, LEMME TAKE A SELFIE!*' an anonymous commenter wrote…. '*That's natural selection – idiots die*' wrote another…. '*With great selfies must also come great stupidity*' commented a third….

'*We were just beginning to learn about everything ourselves*' Moreno's sister Samantha says over the phone. '*It was just completely overwhelming and heartbreaking that people that didn't even know the situation were saying things*'. Within a year of Moreno's death, the internet's selfie-death obsession peaked…. *The Guardian* called 2015 the year of the '*dangerous selfie*'. The world had started seeing selfies not as a novelty, but rather caught squarely in the crosshairs of the cruel repercussions of a narcissistic culture. The names of people that accumulated on the Wikipedia page for '*List of selfie-related injuries and deaths*' became punching bags. Moreno's photo, for example, had absolutely nothing to do with her death. But that didn't matter to the internet. Moreno's relationship with Brayden's father fell apart, and while she was happy as a single mom, she hoped one day to fall in love again. A few years later, she met Jesse Arcobasso at a party, and they started dating. He was 25, she was 23, and the young couple was goofy and carefree. After three years together, Arcobasso and Moreno stopped by a mall caricature artist, who drew a cartoonish Arcobasso holding a diamond ring and asking, "Will you marry me?" They set the date – July 26, 2014 – and decided to marry in Jamaica. Moreno never made it down the aisle.

After the crash, Theobald…told Fox News that Moreno didn't appear terribly injured. "I was talking to her. She couldn't talk back but she was nodding at me", Theobald says through tears…. An ambulance took Moreno to the hospital, where she would die a few hours later from injuries sustained in the crash. Most of the news coverage about Moreno stated at least in the body of the article that she had snapped the photo a full eight minutes before the crash, but many readers missed this from the headlines like '*Collette Moreno Killed En Route To Her Bachelorette Party Moments After Taking Selfie*' and '*Bride-to-be, 26, killed in head-on car crash as she and best friend drove to her bachelorette party moments after pair snapped this selfie*'. Unfortunately, 55 percent of readers spend fewer than 15 seconds actually reading an article, according to founding CEO of Chartbeat Tony Haile. Moreno isn't the only one who has been wrongly lumped into the selfie-death craze. In September 2015, the family of Kristi Kafcaloudis, a student who fell to her death from a cliff in Norway, came forward to clear their daughter's name after a similar internet mob. '*It was an accident. She was nowhere near the end of the rock, and not taking a selfie*' her mother Milli Kafcaloudis said…. Data journalism site Priceonomics estimated in January that, of the 49 people who have reportedly died while taking a selfie since 2014, '*not a single death was caused by the selfie itself*'.

Of the 49 reported "**death selfies**," "not a single death was caused by the selfie itself": wow dangerous is the combination between our biological tendencies to look for causal connections and for transcendental **karma** or the **punishment of sins** and for a *purpose of life and death*, and the current **sensationalism of the media** and the related fast public consumption and network dissemination of **fake news**, even when it involves wrongly blaming others for their own tragic death in order to give meaningful "cosmic purposes" to our lives.

## 1.2 Notes on Interdisciplinarity

*History makes little sense without prehistory, and prehistory makes little sense without biology…knowledge of prehistory and biology is increasing rapidly, bringing into focus how humanity originated and why a species like our own exists on the planet. (Edward Wilson)*

When I discuss the issues covered in this book with friends and colleagues, they often say: "you seem to be moving from the natural sciences to philosophy." However, while some of the issues are indeed frequently discussed by philosophers, I answer them—and I want to make this very clear here—that this book is not at all a philosophical essay. This point leads us to a note about *interdisciplinarity*: this book includes data and discussions about topics that refer to areas as diverse as biological anthropology, cultural anthropology, history and philosophy of sciences, neurobiology, philosophy, genetics, behavioral sciences, theology, psychology, sociology, social psychology, and evolutionary biology, among many others. And this is precisely because I want to discuss broader issues that have fascinated humans from times immemorial *within the realm of empirical scientific data*, so at the maximum the type of discussions I am including in this book could be classified as "**experimental philosophy**" or "**scientific philosophy.**" Namely, this is an interdisciplinary work that focuses on human evolution, biology and diversity by using current ideas and paradigms of biological evolution to understand human history and specifically how we think and behave, including the fascinating fact that what we "want" or "desire" is often very different from what we "do" in society. Somewhat strangely, traditionally there has been a huge disconnect between the study of biological evolution and of human history, as if humans, and particularly our mental capacities, were somehow not part—or, accordingly to longstanding and still prevailing teleological narratives, "above those"—of the natural world. Remarkably, this tendency is also seen among scientists, and even among many evolutionary biologists. As noted in Peterson's 2001 book *Being Human*, the evolutionist **Alfred Russel Wallace**, a contemporary of Darwin, stated that "the body of man is indeed a biological structure, clearly descended from the apes, but his culture, which stems from his extraordinary and unique mind, is on a new, higher hierarchical level of its own; evolutionary biology has nothing to tell us about this higher level." As she further emphasized, "this idea still holds sway among many scholars in the social sciences and humanities." Some of the factors leading to this tendency were briefly summarized by Van Arsdale in a 2017 book chapter:

> Today, it is unusual to find a researcher whose specialization is the behavioral and morphological evolution of humanity in a biology department (human genetics as a focus in molecular biology being a notable exception). Instead, researchers who focus on human evolution are more often found in departments of anthropology, anatomy divisions of medical schools, or more recent incarnations such as departments of human evolutionary biology. **Stephen Jay Gould**'s voluminous *The Structure of Evolutionary Theory* (2002), as one example of this trend, only makes passing reference to hominid evolution in its more than 1300 pages. The drift of human evolutionary studies away from mainstream evolutionary research, or vice versa, in the period after World War II is understandable. The revelations of the atrocities of science engineered under the National Socialist regime of Germany, especially those focused on human subjects, made public by the **Nuremberg Trials** were a watershed moment in twentieth-century human biology. Given the historical focus of anthropology on race, and the prominence of race-based perspectives on human evolution within **anthropology** prior to WWII, it is easy to understand the movement away from studies focused on humans in mainstream biology. The resistance to E. O. Wilson's *Sociobiology: The New Synthesis* (1975) from areas of the social sciences critical of any hint of biological determinism only furthered this trend. Humans are too complex to distinguish between genetic

> and environmental ("cultural") effects. We live too long to look at trans-generational changes in allele frequencies. The data needed to study evolution for humans is too messy. Humans, quite simply, are not a good model organism for the study of evolution. Or so the logic went. Despite the sidelining of humans within evolutionary studies, humans remain a major focus of the public facing side of evolutionary studies. Major fossils relevant for human evolution are disproportionately represented on the covers of *Science* and *Nature*. Documentaries on evolution rarely bypass, and more often than not highlight as a central topic, human evolution. While often devoting entire spacious halls to narratives of human evolution, organisms like *Drosophila* [flies]…or even *Mus musculus* (mice)…rarely get the public coverage warranted by their importance within the scientific process itself.
>
> On the more controversial side of things, it is the evolution of humans, rather than evolutionary theory more broadly, which often raises legal and political challenges to the teaching of evolution or public acceptance of evolution. Likewise, the acceptance of scientific knowledge itself, regardless of its evolutionary content, often is strongly correlated with one's understanding of the application of evolution to humans. In the time period that human evolution has drifted away from the center of evolutionary studies, traditional biological sciences have also been involved in critical self-examination of its foundational framework. These debates encompass a broad range of topics and developments within the fields of evolutionary studies but can be summarized as discontentment (or a lack of discontentment) with the traditional gene-centric view of the **Modern Synthesis**. For some researchers, the major developments within evolutionary theory over the past 80 years – neutral theory, renewed engagement with evolutionary perspectives on development, epigenetics and complex genomic structure, and hierarchically structured plasticity – have shifted the main focus of evolutionary causation away from natural selection and raised questions as to whether the traditional neo-Darwinian framework remains the best approach to understanding and presenting the action of evolution. These are not, it should be pointed out, arguments that "evolution is wrong" but instead are arguments about where the focus is placed on the processes of evolutionary change through time.

This issue was also discussed by one of the most prominent biologists in the last decades, **Edward Wilson**—who was cited in the above excerpt and wrote, in his 2014 book *The Meaning of Human Existence*:

> Studying the relation between science and the humanities should be at the heart of liberal education everywhere, for students of science and the humanities alike. That's not going to be easy to achieve, of course. Among the fiefdoms of academia and punditry there exists a great variation in acceptable ideology and procedure. Western intellectual life is ruled by hard-core specialists. At Harvard University, for example, where I taught for four decades, the dominant criterion in the selection of new faculty was preeminence or the promise of preeminence in a *specialty*. Starting with the deliberations of department-level search committees, then recommendations to the dean of the faculty of arts and sciences, and at last the final decision by the president of Harvard, who was assisted by an ad hoc committee drawn from both within and outside the university, the pivotal question asked was, 'Is the candidate the best in the world in his research specialty'? The guiding philosophy overall was that the assembly of a sufficient number of such world-class *specialists* would somehow coalesce into an intellectual superorganism attractive to both students and financial backers. [However] the early stages of a creative thought, the ones that count, do not arise from jigsaw puzzles of specialization. The most successful scientist thinks like a poet – wide-ranging… – and works like a bookkeeper. It is the latter role that the world sees…. Science and technology reveal with increasing precision the place of humanity, here on Earth and beyond in the cosmos as a whole…[but the specialists and/or those within humanities] don't even pose the question in a manner that can be answered. Confined to a small box of awareness, they celebrate the tiny segments of the continua they know, in minute detail and over and over again in endless permutations. These segments alone do not address the ori-

> gins of the traits we fundamentally possess – our overbearing instincts, our moderate intelligence, our dangerously limited wisdom, even, critics will insist, the hubris of our science.

There is indeed a major problem created by the disengagement between what we now know about biological evolution and the way human evolution and history is portrayed not only by many social scientists but also by numerous authors from areas such as biological anthropology, evolutionary psychology, and evolutionary medicine. The use of outdated evolutionary ideas to discuss the evolution of our lineage is particularly prominent within evolutionary psychology and evolutionary medicine, which include a substantial portion of scholars that are among the most extreme **adaptationists** and/or gene-centered **Neo-Darwinists** (see Chap. 6). It is therefore very important, and imperative, to use sound empirical evolutionary data—instead of **just-so-scientific-stories** or **philosophical theoretical speculations**—to undertake a re-examination of the evolution of our lineage, and of our beliefs, sexuality, racism, misogyny, and other prejudices, and our tendency to create and believe in fictional and often highly irrational narratives and to seek for a "cosmic purpose of life." As explained in Smith's 2016 paper on Freud and his "**just-so-stories**," this term refers to the fairytale-like creations of **Kipling's *Just so stories for little children***: they are mostly unfalsifiable ad hoc stories based on little or no empirical evidence.

I have nothing against non-empirical and non-evolutionary philosophical works; they were actually often the ones I most liked to read at school because they often engage us in fascinating profound reflections, with their theoretical case studies and thought experiments. Accordingly, since then I have read numerous philosophy books, particularly when I was writing the present monograph. However, I do have to admit that a few of them, particularly those including *exclusively* non-empirical-based discussions, can feel a bit vague, and even empty. Sometimes, their authors act as if historians and scientists have not gathered any new empirical data since the epoch of Socrates and Plato or, in a better scenario, since the epoch of Kant and Nietzsche: yes, we can and often should refer to those authors and their ideas—as I do in this book—or use ***thought experiments***, but why should one completely disregard the results of several real scientific experiments that directly address the issues being discussed as, let's say, near-death experiences, or the loss or gain of consciousness in studies involving mice or humans? One can understand that the ideas of **Socrates** were not rooted on an extensive, interdisciplinary review of empirical data because in his epoch the knowledge about the origin of the planets and stars, or about human evolution and our closest living relatives—the apes—or about human development from embryos to adulthood, or about consciousness, was extremely scarce. However, when philosophers nowadays discuss such topics it does seem rather odd if they don't include in their discussions the empirical data accumulated since Socrates was alive, such as information about the Big Ban, the age of our sun and our planet earth, and so on. Of course, this is *not* a criticism to philosophy per se, nor to all current philosophers, well on the contrary: some current philosophers provide admirable examples of interdisciplinary, in which empirical data from various fields are used in their reflections, as is the case with those I met, for example, in a meeting organized by the Philosophy Department of the

University of Lisbon about Human Enhancement some years ago. The meeting included researchers from natural sciences, such as biologists—that is why I was invited to be there and give a talk—and philosophers and bioethicists, which included detailed information, in their talks, about genome editing tools, the evolution of the human genome and behavior, and so on.

I will therefore provide here just an example to be contrasted with the type of cases I encountered in that meeting, that is, an example of "non-empirical-based philosophical discussions": Sehon's 2005 book *Teleological Realism – Mind, Agency and Explanation*. It is important to note that my aim is *not* to use here a "straw man" or criticize a specific book, because Sehon is otherwise an excellent scholar, in my opinion. In that book he discusses the "mystery" of how, seemingly paradoxically, **materialism** tries to explain natural organisms using a **reductionist approach** by merely using physical language, but then when one refers to organisms such as humans, notions like *purpose* and *morality* "appear to have no role in purely physical descriptions of the world." As he notes, "we would never say that an asteroid was morally responsible for its motion, even if it crashed into earth." I completely agree with this point, and this is precisely an example of how there is *no* cosmic purpose or meaning *of* life: the asteroid just crashed into earth, without any designed goal or cosmic purpose, there is no "masterplan." In the *reality* of the natural world "purpose" can only be factually applied within the term "**purpose *in* life**," and this obviously only applies to organisms that have the intellectual capacities to elaborate ***conscious purposeful behaviors***, such as humans, primates, and many other animals (see Box 1.1). Sehon notes that many authors explain this seemingly paradoxical dichotomy—how can some organisms have a purpose *in* life within an unpurposeful world—by recurring to **dualism**. In other words, they argue that there is both a material world—including our bodies—and nonphysical *souls*. Sehon does not accept dualism—rightly so, as this view has been shown to be factually inaccurate (see Box 1.4)—nor materialism, defending instead what he defines as a "third option": **teleological realism**. Namely, although he agrees "that human beings are composed of physical particles," he claims that "the facts about the mind are not ultimately a species of physical fact" and that "they are not going to be subsumed within physical science." He defines teleological realism as a version of "**weak naturalism**," as occupying a middle ground between supernaturalism and strong naturalism, because the latter defends that natural sciences are able to completely explain the existence of a purpose *in* life.

The problem illustrated with the case study provided by Sehon's book is that throughout the whole book there are almost no references to any type of empirical scientific data: it mainly includes theoretical philosophical discussions and speculations. However, when an author such as Sehon discusses topics such as consciousness, or the existence of "souls," he should at least refer to at least some available empirical data obtained in the last decades in areas such as neurobiology and **systems biology** that *do* show that natural sciences are actually fully able to explain the existence of purposeful organisms and of consciousness, through a natural evolutionary phenomenon known as **emergence** (see Box 1.1).

**Box 1.1: Behavior, Behavioral Choices, Intentionality, and Emergence**
This box is mainly extracted from my 2017 book *Evolution Driven by Organismal Behavior*: when I use the term **behavior** I am referring to a very simple, and broad, definition often seen in the literature – a response of an organism to stimuli or inputs, whether they are conscious or unconscious. Accordingly, **behavioral choices** refer to cases in which at least more than one potential choice is possible. These are considered behavioral choices no matter if in organisms such as bacteria they are likely often unconscious while in organisms such as humans and chimpanzees they are usually conscious. If we think about a bird in the air, it feels the effect of the same force of gravity than an object does, but there are many possible outcomes, which are thus behavioral choices: the bird can let itself passively go down, towards the center of the earth, but it can instead fly to counterbalance the force of gravity, staying at about the same altitude, or decide to even fly to a higher altitude, and so on. In this sense, behavioral choices are always undertaken by the organism as a whole, i.e., they are **organismal behaviors**. A crucial concept is thus **emergence**, in which the organism can display a behavioral choice as a single unit, no matter whether it has a central nervous system or any type of consciousness. The dichotomy between organismal behavioral choices versus other types of behaviors can thus match the dichotomy about having or not "intentionality," but only if "intentionality" refers to the drive that the whole organism has to undertake certain behavioral choices, and not necessarily to consciousness nor to any teleological concept related to "evolutionary purpose" or "evolutionary goal" or "cosmic purpose of life." That is, in the present monograph such "intentionality" refers exclusively to the purposeful actions of organisms that are in the realm of a *purpose in life*, not of a *cosmic purpose of life*.

Therefore, as put by Lindholm in a 2015 paper, behavioral choices cannot be reduced to genetics – or, I would add, to mere automatic, physiological, and/or localized epigenetic reactions to external stimuli or other factors – because they require a *subject* to take *choices* and have the drive to undertake them, which is the whole organism. This capacity and drive to undertake behavioral choices obviously depends on intrinsic genetic/genomic and epigenetic (for instance, hormonal/physiological) features linked with external factors, but is ultimately indeed mainly related to a phenomenon that is now becoming more and more prominent in biology, particularly due to the rise of **systems biology**: **emergence**. That is, a strikingly high number of complex factors, intrinsic and extrinsic, including the complex network connections made by the parts (for instance, neuronal networks) are combined in a way in which the overall outcome is *more* than just the sum of the part: the capacity to take a behavioral choice, and having the drive to undertake it. Contrary to mechanistic, reductionist, and atomistic views that have prevailed for a long time in the history of biology, this capacity does not apply to any of the

organismal subunits or regional parts/organs – for example, individual atoms, or electrons, or neurons do not walk bipedally as we do, nor can they choose to do so. This capacity only applies to the *whole organism*, thence the term "**organismal behavior**." Within the context of the present monograph, purposeful actions of living organisms refer exclusively to those instances of emergent organismal behavior in which those organisms display **intentionality**, that is, to cases of a purpose *in* life. Accordingly, such purposeful actions and such intentionality can never apply to non-living objects, or to supernatural agents, or to any other entity that is not a living organism with the capacity to undertake – through emergence – purposeful thoughts and/or actions.

I also want to stress that the present book is *not*—and surely it was never my intention for it to be—a nihilist manifesto. I am saying this because you could have this idea, as some of the points that I already made about the inexistence of a cosmic purpose or meaning of life do match some key aspects of **nihilism**, which is a philosophical doctrine that, when presented in the form of **existential nihilism**, defends that life has no objective cosmic meaning or purpose. Or, that, when presented in the form of **moral nihilism**, argues that there is no **intrinsic human morality**, as explained in Stevens' 2016 book *Nihilism – A Philosophy Based on Nothingness and Eternity*. I do empirically show that the features that we tend to accept as **moral values** are abstractly contrived and are in no way **universal moral truths**: they are just dynamic social constructions that often differ depending on the time and geographical region or culture to which they refer to. However, nihilism often takes also other forms—metaphysical, epistemological, ontological, and so on—that stand for the idea that in some way reality does not exist at all, or that no form of knowledge is truly achievable, what is exactly the opposite of what I defend in all my books and other publications, which strictly follow the root of **scientific empiricism**. The earth moving around the sun is a physical reality, at least it seems to be in the sense that it is supported by a huge amount of empirical data and was never contradicted so far by any scientific empirical study.

Moreover, nihilists often—but of course not always—express an unease or despair related to the awareness that there is no higher, transcendental meaning or purpose of life, and some authors therefore consider that **postmodernity** is in a way a reflection of nihilism. Stevens' 2016 book is, in fact, an illustrative example of this attitude: in some ways it does have that "feeling" of despair and negativity that is exactly the opposite of what I show in the present book about the *reality of the natural world*. This planet and the millions of species that live and have lived in it are fascinating, despite the fact—or better say, chiefly because—there is no cosmic purpose of life nor cosmic progress: all of them, including our own species, are just the result of an aimless, mesmerizing combination of mainly chaotic, random, and contingent phenomena. *Things just happen, life is just as it is*, and that is what makes it particularly fascinating.

It is interesting that, within all the books and papers I read in order to write the present volume, there was not even a single one that specifically, directly related the darkest events of human history with the human tendency to formulate ***teleological why-questions*** and build imaginary narratives to answer them. An illustrative example is the superb book *Behave – The Biology of Humans at Our Best and Worst*, written by **Robert Sapolsky**. This is one of the most outstanding and integrative books I have ever read, full of case studies from a wide range of scientific disciplines to exemplify how complex and often incongruent human behaviors are, particularly concerning subjects such as aggression, hate, discrimination, and war. Still, the word teleology is almost never used in that 790-pages book, including its whole index, despite the fact that teleological narratives are profoundly connected to the subjects discussed in it, such as the "**nature *versus* nurture**" debate and the related question on whether humans are "naturally good or bad." To put those questions in context, I should explain that they are linked to the ideas of **Hobbes**—in a very simplistic way, he defended that "in a state of nature, life is solitary, poor, nasty brutish and short" and that a strong government is thus crucial to impose law and order—and of **Rousseau**, who, also in a very crude way, defended that humans are "born free" and are mostly "good"—the so-called **Noble Savage**—and that "everywhere they are in chains" because of things such as strong governments. The reality of what these two authors truly defended is obviously much more complex, as we will see.

Within this introductory chapter, it suffices to say that there is often a gap between what we define as "nature"—for instance, there is no "cosmic purpose" in the natural cosmos—versus "nurture"—for example, most organized religions desperately try to find, describe, or use the notion of a "cosmic meaning of life" in their own way. But the division clearly cannot be absolute, because humans are highly social animals, and moreover they tend to construct such imaginary narratives because their evolution leads to a natural propensity for them to do so, as explained in the 2018 book *Why We Disagree About Human Nature*, edited by Elizabeth Hannon and Tim Lewens. So, the typical "ideal" study of what humans "truly are naturally" that many talk about – that is, having a child completely alone in an island to then check if he would be "naturally" violent or not, or monogamous or not, or religious or not – would not only be unethical but also completely flawed scientifically. This is because such a study would force humans to lose any type of social interaction, for instance we could not check if that person would be "naturally monogamous or not" because there would be nobody to copulate with anyway—see also Boxes 1.2 and 1.3 about studies of deaf-mute children and of "feral" children. Similarly, the typical divisions between "**heart**" **versus** "**brain**" or "**body**" **versus** "**mind**," or "**emotion**" **versus** "**reason**," which are often discussed together with the "nature *versus* nurture" debate, are also clearly *Neverland* constructions that don't correspond at all to the reality of the natural world. Both the heart and the brain are simply internal body organs, and of course without a human body there is no human mind or "soul." And, as noted by **Damasio** in his elegant 1994 book *Descartes' Error – Emotion, Reason and the Human Brain*, many scientific case studies, including about people with major brain injuries, have shown that so-called emotions often play a crucial role in decision-making and in what we often call "rationality," contrary to **Descartes**' dualistic separation of mind and body, and emotion and rationality. In

fact, erroneous dualistic ideas have been around much before Descartes, since thousands of years ago, being for instance defended by **Plato**, as pointed out in Malik's 2014 book *The Quest for a Moral Compass*:

> In Plato's eyes…the appetitive part of the soul is linked to bodily desires, such as the yearning for food or pleasure. The spirited is concerned with honour, and with anger and indignation. The rational is driven by a desire for knowledge and truth. This division, especially between the appetites, or bodily desires, and reason, or the mind, was to exert enormous pressure upon subsequent ethical thinking. For Plato, and for many of those who followed in his footsteps, reason and desire, the body and the mind, the ego and the id, were locked in mortal combat. Humans, according to Plato, fall into one of three categories depending on which part of their soul is dominant, three categories that correspond, of course, to the three social roles necessary for the healthy functioning of the state. The common people are driven by base desires, soldiers by a yearning for honour, while rulers look to reason. Upbringing may help an individual regulate his soul and thereby change the group to which he should belong. Mostly, though, it is a matter of birth – we are born to be blacksmiths or soldiers or philosopher kings.

**Box 1.2: Deaf-Mute Children, Animism, and "Nature Versus Nature"**

Bering, in his 2011 book *The Belief Instinct*, argues that his own empirical studies contradict the idea, defended by many authors, that kids born isolated in an secluded island would probably have some kind of belief. However, the kind of evidence provided in his studies does not encompass at all the very different aspects of belief: they focus more on aspects such as the **theory of mind**, which is seemingly related to some kind of beliefs, for instance about **supernatural beings**, but not necessarily with others, such as the typical **animistic ideas** that are over and over reported in **deaf-mute children**, as well as in most kids from a very young age. Anyway, some parts of Bering's book are very interesting and relate directly with issues discussed in the present book:

> Scientists would be hard-pressed to find and interview feral children who've been reared in a cultural vacuum to probe for aspects of quasi-religious thinking. In reality, the closest we may ever get to conducting this type of thought experiment is to study the few accounts of deaf-mutes who, allegedly at least, spontaneously invented their own cosmologies during their **prelinguistic childhoods**. In his book *The child's religion* (1928), the Swiss educator Pierre Bovet recounted that even Helen Keller, who went deaf and blind at nineteen months of age from an undiagnosed illness, was said to have instinctively asked herself, 'who made the sky, the sea, everything?' Such rare accounts of deaf-mute children pontificating about Creation through some sort of internal monologue of **nonverbal thought** – thought far removed from any known cultural iterations or socially communicated tales of Genesis – are useful to us because they represent the unadulterated mind at work on the problem of origins. If we take these accounts at face value, the basic existential problem of reasoning about our purpose and origins would appear not to be the mental poison of religion, society, or education, but rather an insuppressible eruption of our innate human minds. We're preoccupied with why things are. Unlike most people, these deaf-mute children – most of whom grew up before the invention of a standardized symbolic communication system of gestures, such as **American Sign Language (ASL)** – had no access to the typical explanatory balms of science and religion in calming these bothersome riddles. Without language, one can't easily share the idea of a purposeful, monotheistic God with a naive child. And the theory of natural selection is dif-