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Spirit calls Nature

*Bridging Science and Spirituality, Consciousness and
Evolution in a Synthesis of Knowledge*

Marco Masi Ph.D.

First Full Edition 2021

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ISBN-10: 3948295069

ISBN-13: 978-3948295066

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Introduction

We live in a time when the lack of more comprehensive and integral approaches, visions, and paradigms that could make sense of the world is felt with an increasing necessity. Physicists are searching for a theory of quantum gravity, popularly (but inappropriately) also known as the ‘theory of everything.’ Psychologists are looking for an ‘integral theory’ that can capture the human’s mental, emotional, and inner dimensions in their entirety. Others speak of integral ecology, integral life practices, holistic approaches to medicine, sciences, or philosophy. We speak of global vs. local issues that need a broader perspective and new ‘global solutions.’ The ethnic, cultural, and geographical local diversities inside a globalized world enter into conflict with an emergent unified vision of the human race and Nature. Current social and economic models based on individualistic competition and strife are felt to be increasingly inadequate and are contrasted with more integral visions of unity based on principles of collaboration and cooperation aiming at general wellbeing.

These are just some examples that emphasize the tension between fragmenting and polarizing conceptions which place, at the center, the individual or the part and, at best, see the whole as a mere sum of these parts, and an enlarged futuristic vision attempting a grand synthesis expressing the whole without negating the function and role of its parts.

‘Integral theorists’ are looking for the big picture containing the totality as an expression of an emergent process. However, a new approach that was able to make a real synthesis of knowledge between science and consciousness, reason, intuition, and spirituality, East and West, is still lacking. We contend that this couldn’t be otherwise because these attempts were founded on false premises or an insufficient awareness. The reason standing behind this failure has three main causes.

First of all, because we take (more or less implicitly) for granted that this unification must be achieved only through reason, the intellect, what we refer to as the ‘analytic mind,’ and without realizing that, by doing so, we posit a priori a world that can be described only by the mental, which, in its origin and nature, is already a separating and polarizing form of cognition, thereby preventing an authentic unification from the outset.

Secondly, we have an innate tendency to believe that our ideas, inspirations, insights, or ‘illuminations’ are our own. Most of the great ideas, intuitions, and visions that we believe are original and recent discoveries of modernity frequently turn out to be botched attempts to reframe centuries-old (if not even millennia-old) inspirations and realizations. Isaac Newton was aware of this when he said: *“If I have seen further, it is by standing on the shoulders of Giants.”* We won’t be able to see further if we don’t rediscover some ancient wisdom and don’t realize how we are permanently reinventing the wheel.

Thirdly, we will have to adopt (and rediscover) a new (or, more precisely, a forgotten) way of seeing the world, the cosmos, Nature, and especially ourselves. An integral theory or synthesis can't be limited to an intellectual exercise that naively tries to make sense of the surface waves of an ocean and, at the same time, refuses the existence of the ocean itself. The transition from a purely analytic to an intuitive knowledge is a requirement for an integral vision that doesn't want to remain yet another abstract mental construct but also becomes a living and lived practice. Without a change of consciousness, there can't be any 'synthesis,' 'integrality,' 'holism,' or whatever kind of grand vision of things, life, and ourselves.

Therefore, the overall aim of this treatise is to bring us a step closer to this new state of consciousness by establishing a 'self-inquiry guide' to science, spirituality, consciousness, evolution, mind, philosophy, metaphysics, yoga, and reality. This treatise is a series of essays that overview the limits of science and reason, the mystery of consciousness, the nature of reality, man's search for meaning and purpose, and the future spiritual evolution of mankind. An invitation to look beyond the straitjacket of reason, science, and materialism. A series of reflections on the limitation of our '*sense-mind*'—that is, the mind that sees only objects, external actions, draws its ideas from the data given by external things, infers from them only and knows no other truth, until it is enlightened from above.

The acknowledgment that our evolution can't be only technological but will also and especially be spiritual. A project for a better humanity whose destiny will be neither that of a hyper-technological materialistic society nor a naïve spiritual grand-commune but an adventure of consciousness that will be guided by an inner spiritual evolutionary force that unites Spirit, Nature, and matter.

You will be guided through a critical analysis of '*physicalism*,' the current dominant materialistic paradigm in which everything is reduced to physical entities, processes, and laws of physics in a supposedly purely mechanical universe that is posited from the start as being devoid of meaning and purpose, with consciousness nothing more than a 'side effect', a bunch of particles ruled by a set of differential equations.

This collection is also a synthesis of knowledge between East and West in the frame of a cosmic evolutionary philosophy where life, consciousness, and matter no longer represent irreconcilable mysteries but, rather, are self-evident spontaneous outcomes of an evolutionary Nature that subconsciously perceives the call of the Spirit. An overview in which science, materialism, spirituality, or idealism reveal themselves to be a limited view of reality that can and must be transcended in order to merge into a more complete paradigm – one that will be neither scientific, materialistic, rational, or philosophical, nor spiritual or mystic, but will become another form of knowledge containing all of them and yet surpassing them to become something which will be none of them.

Only then will what appeared to be so mysterious in consciousness, life, matter, and mind, or so weird in quantum physics, in the material universe or the workings of Nature and evolution, appear in a new 'trans-rational' light in which all the paradoxes or seemingly irreconcilable contraries will acquire a new and almost obvious and self-evident meaning, purpose, and aim in a universe that otherwise appears meaningless, purposeless, and aimless.

We will pave the way, first to a deeper understanding of what science, reason, and materialism can and especially cannot do. Secondly, open the doors to integration between matter, mind, and spirit. A 'spiritual materialism' that recognizes the significance of humankind's social and psychological evolution by reconnecting a more human science with Nature, the soul, and the cosmos.

Because, despite all of the attention paid to this topic, and contrary to popular belief, there is no such thing as a 'spiritual science' or a widely accepted idea that unites science and spirituality. We are still at the very beginning and nobody can claim to know what it will look like. The future of science and spirituality won't be realized by simply adding the latter to the former. Neither will it be realized by explaining one in terms of the other. It will have to be something that transcends both and that creates a third form of inquiry and knowledge, an 'integral science', that will be neither scientific nor spiritual in the ordinary sense. The next step of the evolution of consciousness will be that of the end of the curve of reason and materialism, which will be followed by the coming of a spiritual age that coalesces science and spirituality into something which will surpass both, towards the third state of awareness and cognition.

It will be distinguished by the realization that evolution is not a blind, mechanical, and meaningless process with no aim and purpose, as our anthropomorphic, limited, superficial, materialistic, and analytic mind is compelled to believe, but rather a beautiful goal-driven material as well as a spiritual process that conceals a powerful secret we intimately and intuitively already know and have always known.

Analytic materialism has reached an evolutionary apex beyond which it will have to make room for more advanced and deeper understandings of reality or succumb to its inflexibility and refusal to open itself to higher visions and insights. This is not about abolishing science and reason, but rather about placing them in their proper context, within a larger paradigm where they will retain their value and potential for change, but will also be recognized for what they are: a piece of limited knowledge and a useful tool for transformation that, however, should not be extended beyond certain domains they can neither understand nor control. It is about becoming aware that the mind alone is incapable of comprehending itself and about deconstructing an all-pervasive and dominant scientism. It is time to transcend the illusion that matter and

rationality are the ultimate arbiters of truth because physical reality is also trans-physical and trans-rational.

But to rise beyond and above our present simplistic paradigm, we will have to recognize how we are limiting our thoughts and models to a mono-dimensional or, at best, two-dimensional, theoretical framework of the world which, however, is inherently multi-dimensional. What the current rational materialistic and reductionistic science, as well as most parts of the philosophy of mind and, not least, most forms of spirituality, are attempting to achieve is the reduction of all of reality to a monistic 'flatland' conceptual or experiential framework that, however, is neither flat nor monistic.

To understand the deeper motivations that should lead us to a new understanding that rises above the dominating paradigms, we must first become fully aware, not only of its limitations but even more of its unaware premises and underlying fallacies with which they work. It is necessary to become aware of why and in what sense the nature of the universe goes beyond something that human reason can grasp. There is a gap between what we think, conceptualize, and articulate and what is.

This will be the purpose and the overall conceptual framework underlying this treatise. Now let us see what the single parts of this journey will focus on.

This first part is organized as follows:

Chapter I sets the stage by introducing the reader to an evolutionary perspective on reason and science. Both are powerful tools of knowledge but not the last word of Nature. We will take a closer look at materialism and reason as transitional aspects of the evolution of consciousness. A special emphasis on '*Occam's razor*,' a methodological principle of parsimony that scientists and philosophers favor, will be addressed, critically highlighting how it prevents further progress and blocks us into a lower-dimensional worldview that leads to inconsistencies and contradictions.

A significant distinction between mind, consciousness, and emotions follows. The philosophy of mind, in particular, conflates the first two, which, when combined with a thoughtless application of the previously mentioned razor, results in a complex of thought patterns that inevitably leads to fallacies and superficial models, and ultimately leads in the wrong direction. Once this prolegomenon has been internalized, it becomes easier to realize what the real trouble is with consciousness and why science didn't make any tangible progress when it comes to questions related to it.

Chapter II will discuss how there are things whose existence no one denies but which remain elusive to scientific explanation, such as our subjective phenomenal experience, the so-called '*hard problem of consciousness*,' and the '*binding problem*' – that is, our minds' ability to bind qualitative properties and construct integrated meanings in a semantic hierarchy. The question of whether the mind is computational and if and how computers may become conscious, or at least be able to mimic human intelligence, is discussed.

Modern approaches to the '*mind-body problem*' fall short of providing a satisfactory account of how our minds work, let alone answering the question of what consciousness is.

Chapter III will try to make sense of the different levels of consciousness. Clarifying and distinguishing is essential if we do not want to confuse ourselves. This implies a clarification of the so-called '*subconscious*,' which is far too frequently misunderstood as also encompassing the 'subliminal' and 'unconscious.' This will allow us to tackle the longstanding question of free will by reviewing modern findings in the spirit of Benjamin Libet's pioneering experiments. Do we have free will, or is it an illusion?

With this understanding, Chapter IV will deliver us a different basis for dealing with the findings of modern neuroscience. The mind-body problem will be analyzed from a perspective that does not take for granted the purely reductionist and materialistic approach but will maintain an analytic and scientific standpoint. Once we become aware of our '*correlation-causation fallacies*,' we will not need to resort to metaphysical theories to show how the 'neurocentric' third-person descriptions of our first-person inner subjective experiences are incomplete, if not flawed. Special attention will be paid to recent scientific findings that correlate our conscious, subliminal, subconscious, or unconscious experience with brain activity. The search for the center generating our conscious awareness in the brain will be illustrated by several findings in neuroscience that ultimately didn't furnish the expected answer and why the seat of consciousness remains elusive. A special section is devoted to the empirical data that suggests the existence of a '*plant intelligence*' and how also unicellular organisms must have a primitive form of cognition, a '*basal cognition*', questioning the dogma that presupposes neural activity as the source of any form of cognition and sentience.

In the second part, we will introduce the reader to '*philosophical idealism*,' first through some explanatory examples, and then by determining the true nature and distinction between '*primary and secondary qualities*,' revealing the unaware assumptions with which we understand reality. Then we will deal specifically with '*quantum physics*,' which, we will argue, is the most solid empirical evidence for a worldview based on the recognition that everything we see, perceive, and think about the world is an illusion - a figment that does not represent an objective reality in and of itself but is nonetheless 'real.' Questions such as "What are matter, space, and time?" and more generally "What is reality?" will be addressed.

We will then quickly review some aspects of Western philosophy that showed clear signs of attempts to transcend the intellect, trying to see the world from a higher perspective than the limited rational and materialistic paradigm, and which, however, have been forgotten or, at best, deemed obfuscating mysticism by intellectual mindsets that couldn't free themselves from their own limited and narrow analytic horizon. From Plato to Spinoza to the

philosophers of modernity such as Husserl and Deleuze, an emphasis will be placed on metaphysics and phenomenology from an evolutionary perspective of Western thinkers. Particular emphasis will be placed on the most recent metaphysical, non-physicalist understanding of consciousness, life, and the universe. Our picks are the universalistic outgrowths of '*panpsychism*,' namely, '*cosmopsychism*,' '*cosmoidealism*,' and '*panspiritism*,' which embrace a fundamental and irreducible universal consciousness to close the explanatory gap between consciousness and matter. This will be an overview of Western metaphysics that also has the purpose of showing how all the apparent divergencies, contradictions, or inconsistencies resolve once a broader perspective is embraced.

However, before moving towards the spiritual perspective, we take up an old but potentially very actual approach to the investigations of Nature; this was the first attempt to create a non-reductionist science, namely, Goethe's way of seeing. We argue that the famous German poet and writer developed a sort of higher-mind natural philosophy that considers the multiplicity in the unity of Nature and that could become a starting base, or at least a source of inspiration, for a discipline connecting science and intuition.

This will conclude the second part, which was devoted mainly to Western culture's science, philosophy, and metaphysics.

The third part will guide us towards a more spiritual approach. It will point out that reality can be seized only by something that transcends our capacity to rationalize by moving towards new states of consciousness. It focuses first on the question of the meaning and purpose of our lives, the universe, and existence as a whole, which is reviewed from a spiritual and evolutionary angle. The notion of 'progress' itself will be seen from a quite different perspective, going beyond that of a mere scientific or technological viewpoint. Humans are only transitional beings in the history of evolution, bridging the infra-rational with the supra-rational. This is the visible, almost imminent evolutionary transition that is already taking place and in which several previously inexplicable facts become practically self-explanatory.

At this point, we will step out of the mono- or, at best, two-dimensional understanding of reality and begin to explore the '*planes and parts of being*' in light of the cosmology of the '*integral yoga*' of the Indian mystic and poet Sri Aurobindo. A description of higher states of consciousness, from mind to what he called '*Supermind*,' where all existence reveals itself as a Oneness, a multiplicity in unity, and only apparently manifesting itself in polarities. This paves the way for an understanding where neither the monistic physicalist idea that 'all is matter' nor the equally monistic idealist ontology that 'all is mental' is satisfactory. Rather, it is a comprehensive view of reality in which matter and mind are only two terms of a much vaster and richer reality. That will close many explanatory gaps with which modern science and philosophy are struggling. Some speculations will follow on the coming of a spiritual age and

what the next step in evolution upon Earth might look like by the emergence of a new species, the '*gnostic being*'.

We then will set forth the discussion on the same line, delineating an '*integral cosmology*' which connects matter and spirit with the layers that exist between them. What are matter, space, time, and forces when apprehended from a higher state of consciousness that most humans still do not even imagine might exist? Is there a direction in evolution, or is it just a play of random mutations, natural selection, and genetic processes? Why is the universe built by an infinite variety of things while it retains in itself a secret unity in diversity? What is life? These and several other questions will be answered in the context of a supramental vision.

The disconnect with the preceding volumes is only apparent. Philosophical idealism indeed helps us to step out of the illusion of the purely material objectification process that the conventional scientific mind attaches to sense-data. However, idealism is only a step in between that will help us go beyond a rationalistic and materialistic naturalism; it is itself a transitional conception of reality that must be expanded. It does not even consider the eventuality that the Nature we observe with our limited sense-mind awareness is only a surface appearance of a much vaster Nature and, thereby, something that a broader notion of naturalism and idealism must embrace. This aspect will be identified in a '*central principle of evolution*,' which, by a widened conception of an '*integral teleology*,' will allow us to describe the emergence of life in a more extended but also more coherent manner than what idealism, let alone physicalism, can do.

Some remarks follow on the current world situation, its science, and how a materialist mindset conditions not only our thinking but also our doing. We will argue that the philosophical, metaphysical, and spiritual account we have illustrated is not an abstract rumination but, on the contrary, should help us towards a necessary change of mind and soul. We will reevaluate modern science trends from this viewpoint, highlighting how, despite all the appearances of technological and scientific progress, deep down, modern science is stagnating. It will become clear how the seemingly promising research approaches, such as AI, new medicine, and transhumanism, or other futuristic hyper-technological materialistic and rationalistic approaches, will fail to deliver on what they are supposed to do. And yet we will guard the reader: The mind is not dead.

A final section will be devoted to the visible coming of a '*spiritual age*' that will surpass that of the Enlightenment Age or, as Sri Aurobindo called it by borrowing a term coined by Karl Lamprecht, a '*subjective age*.' The future of reason is augmented by an inner call in the collective of the human race, leading to a new and broader, more harmonious life in the frame of an '*ideal of human unity*.' This will end the third part and complete the present treatise.

However, the overall integral metaphysical and spiritual cosmology emerging from it, which bridges consciousness, science, evolution, and spirituality by a synthesis of knowledge, has no pretension to be exhaustive, let alone the final word. Nonetheless, we believe that it is, to date, the most comprehensive framework which includes all the directions of human knowledge that have been outlined so far. It is more than a critical assessment of materialism or a summary of human scientific, philosophical, and spiritual knowledge. It is an outline that aims to make these so-diverse wisdom meet – not as an effort to make them simply interact with each other but, instead, as a first step to losing their identity in order to coalesce in a new unity in diversity.

Part I
The End of the Curve of Reason

I. Prolegomenon to Reason's Self-deception

1. Mind and Materialism: Powerful but Transitional

“Man is far too clever to be able to survive without wisdom.”

E. F. Schumacher

Probably nothing has changed human society as much as Galilean-Newtonian science did. Modern materialistic science, which is based on empirical data, experiments, and logical, rational, and mathematical analysis to objectify and quantify through testable predictions, has not only radically changed our material existence but, perhaps more importantly, our culture and the way we think about the world and ourselves.

The beginning of modern science can be, loosely speaking, identified by Galileo Galilei's experiments with inclined planes or his observations with his primitive telescope, which disclosed to him an entirely unknown new universe. Isaac Newton and many others followed with revolutionary discoveries. However, more than anything else, it was the disruptive power of the human mind—its rational thinking and ability for intellectual analysis applied to matter—that changed everything. There is nothing within reach of our instruments, from the tiniest bits of matter to the cosmic domains, that has not been measured, quantified, dissected, reduced, and geometrized according to a bottom-up approach. Most notably, the sciences of life, such as biology and medicine, did—and continue to do—their utmost to reduce everything into inanimate material elementary components.

By doing so, reason could unleash its full power. After over four centuries, the human material condition has been radically transformed by scientific discoveries and technological breakthroughs. Knowledge about the material realm, from the subatomic particle to the cosmic infinity of the universe, expanded our awareness and understanding of our place in Nature.

Modern materialistic science surfaced as an instinctive response to the philosophy and doctrines adopted and followed by the Christian Church during the Middle Ages. The Renaissance Period sparked the restoration of the spirit of free philosophical inquiry unconditioned by theological dogma. This contributed to a greater tolerance for the development of secular ideology. It was a reaction against the monopoly of the Church over knowledge of the world. By the end of the 17th-century, elementary education had become more widespread, imposing itself in the 20th-century as the norm.

Humankind realized that religions, dogmas, or (worse) superstitions were certainly not the ways to a better life. The medieval atrocities of the Inquisition resonate more or less subconsciously in our minds to the present day. The failure of religion to furnish us with an intellectual understanding of life, the

universe, and our existence as a whole became increasingly more than evident. We are not at the center of the universe, and, yes, evolution is true. Religion may have prevented the collapse of human civilization by imposing some collective moral and ethical rules of conduct. However, blind faith, obedience to religious scriptures and authority, and theological discourse did not project humankind to a higher material wellbeing or more comprehensive understanding of reality. Worse, it did not even boost its spiritual status—something which it promised and was supposed to do.

Science surpassed religious faith and elevated the discriminating skills of the mind to new heights as the supreme means of knowledge. Understanding the nature of reality and man's capacity to uncover it with reason has made it clear that science and reason are better tools in terms of capturing the workings of the material world than any scripture or authoritative clerical dogma.

The mind is an intellectual mechanism that coordinates, organizes, observes, distinguishes, separates, and categorizes in accordance with a rational order. It naturally looks for order in the world around it. And because the physical universe displays an order in forces and forms, naturally, the mind didn't fail to find it. The analytic description of this order became synonymously known as 'knowledge.' The old Pythagorean dream of describing the reality of experience perceived through the senses and organized by the mind in the form of a mathematical language became an established and universally accepted form of communication and mutual understanding. The Renaissance period elevated mathematics to one of the most cherished and highest forms of knowledge. Accordingly, the restoration of interest in mathematics and empiric approaches led to a widespread emphasis on the study of the quantitative aspects of existence. Measurements and numbers became the ultimate tools and expressions for 'objectivity.'

The new widespread scientific approach led to revolutionary inventions such as the telescope and the microscope—pieces of equipment that had never been seen or heard of before. This demonstrated the extent of the support that this new conception of knowledge received. Ground-breaking observations made with these very instruments questioned and eventually discredited the ancient beliefs and initiated a new spirit of skepticism. This prompted people to avoid accepting ideas based on faith but encouraging the idea that, instead, everything should be systematically observed, measured, or examined anew, regardless of existing dogma or philosophy.

Intellectual analysis of natural occurrences in the outside world, where the human senses were replaced by the 'senses' of mechanical measurement devices, became the new paradigm for searching for knowledge. An inherent aspect of this quest was the theory assuming that knowledge consists of the conclusions obtained from observation and examination via the instrumentation of the physical senses onto physical things. Anything that cannot be reduced to physical entities, material objects, or particles or, at least,

some abstract mathematical concept, is 'non-real,' 'immaterial,' or 'unphysical and, as such, must be branded as an illusion or an emotional figment without value. Innovative scientific apparatuses enabled the senses to reach out as far as space and down to minuscule proportions. Celestial mechanics, which allowed for the precise prediction of planetary orbits and even the prediction of the existence of a then-unknown planet, Neptune, seemed only to confirm the idea and principle of a mathematically flawless, mechanical, and deterministic universe.

The systematic examination of matter by physical senses and its mental organization into a mathematical theory led to the overwhelming success of what is nowadays called '*Newtonian or Galilean physics*,' thus widening the schism induced by the division of science and theology. Secular humanism was born. The world was recognized as the exclusive territory for study by science, and knowledge was defined as that which could be proven only by procedures that were abstracted as far as possible from human experience. An analytic and mathematical conception of reality was elevated to a central position and inspired a mechanistic philosophy of the universe entirely justifiable in terms of logical and numerical principles. The universe became a gigantic soulless clockwork with no meaning or aim.

Indeed, the Darwinian revolution represented yet another backlash to any non-materialistic and teleological hypothesis¹ – that is, ideas involving a purpose or aim behind the evolutionary processes. The first humans did not appear on Earth because someone was playing around with dust; instead, they were the result of evolution, as were other species. Later, we learned that we had a common ancestor with the chimpanzees and gorillas. What a shock! Not only are we not at the center of the universe, but we are only one animal among many others.

What seemed to be the final nail in the coffin came with the progress of the 20th-century biological sciences, which apparently became able to describe all life in terms of purely biochemical reactions. The discovery of the DNA code, the structure of cells and their metabolic functions, the significant advances of biology and medicine, and the recent breakthroughs of neurosciences all pointed in one direction: Living organisms are biological machines. There is no need to invoke a ghostly 'life principle' other than those dictated by matter

¹Teleology (from the Greek word τέλος, 'télos' meaning 'end', 'aim', or 'goal,' and λόγος, 'logos' meaning 'explanation' or 'reason'), not to be confused with theology, is a theory or an understanding of processes implying the existence of an aim, purpose, goal, or finality in it. It seeks to explain phenomena in terms of design and purpose and sees the causes by which they arise as the mean and function for that purpose rather than originating, more or less accidentally, from a purely aimless and mechanical mechanism. In particular 'natural teleology' considers the possibility that natural processes are the extrinsic manifestation guided by final causes. The typical example of a naturalistic teleology is the belief that evolution is a goal-driven process, something which the present neo-Darwinian evolutionary theories deny.

and the laws of physics. The reduction of everything to matter seemed to be unstoppable.

René Descartes, the well-known French philosopher and mathematician of the 17th-century and founding father of modern science, conceived of a universe in terms of purely mechanical and physical laws. With the exception of the human soul and God, which are separate and have nothing to do with Nature, everything that exists, including our bodies and brains, must be described using mechanical processes. All the world is a machine, and Nature is only about material particles interacting with each other according to the laws of physics. Nevertheless, Descartes still conceived of the existence of some non-physical stuff: Inside the human body is a soul (in contrast to animals which, he believed, have no souls and are mere automatons), and outside the universe, there is a God. His mind-body dualism envisaged a '*res extensa*' and a '*res cogitans*,' an extended and a thinking substance, the latter being distinguished from our bodies and brains, an immaterial mind.

Francis Bacon, the English philosopher and contemporary of Descartes, also conceived of what we call in modern parlance 'experimentation' or 'empiricism,' as the "*torture of Nature*." Nature must be put on the rack to reveal its secrets.² Descartes' and Bacon's almost purely mechanistic and material conception of the world became the historical source and origin of modern 'physicalism,'³ which goes even further by getting rid of the last non-physical remnants, reducing all mental process to material ones and rejecting any metaphysical conceptions like a soul or God as an 'unnecessary hypothesis.'

And yet, almost no modern scientist, including those who consider themselves dualists, admits to being inspired by the nearly soulless Cartesian worldview or Bacon's executionary thoughts. In reality, this self-distancing relies only on a minor technical detail: Descartes envisaged the pineal gland as the 'portal' of the soul or mind to the material world. This hypothesis no longer withstands the scrutiny of modern findings. However, apart from this or other minor aspects, modern scientists, especially physicalists, fully embrace Descartes' and Bacon's worldview. That their mindset, and understanding of the human's place in Nature, is alive and well is also testified to by the fact that never in all of Earth's natural history has the destruction and 'torture' of the

² This creepy analogy was no coincidence: Bacon was also a statesman who actively advocated for the use of torture on humans in legal proceedings as a means "*for discovery, and not for evidence*". [261] [262]

³Physicalism is a form of '*ontological monism*'—that is, a view of reality that reduces everything to matter, the laws of physics, space, and time. It is a more precise term than 'materialism', which seems to suggest only matter as the ultimate foundation of everything. In the literature, however, the two are frequently used synonymously, as we will also sometimes do here.

natural environment and its species perpetrated by another species taken on such dimensions.

The success of the materialistic scientific inquiry into the mathematical order of a mechanical universe led to the belief that the mind and consciousness are just an epiphenomenon of the brain. There seemed to be no reason whatsoever to conjecture otherwise. Science has been so tremendously successful in explaining the workings of Nature that there was no reason to invoke non-material substances to explain the mind and consciousness.

Strangely enough, not only is this still a stumbling block for materialism, but science did not make an inch of progress in four centuries after Descartes' speculations. Consciousness, the mind, and our subjective experiences appear to have something irreducible.

However, it is only a matter of time, so goes the belief that science will explain that as well. We shouldn't unnecessarily multiply entities to explain the observed universe every time there is a mystery that science still can't solve. There is no reason to conjecture that the mind and consciousness are nothing but mechanical processes dominated by mathematical laws. This way of thinking eliminates the dualism between mind and matter and wants to reduce consciousness and all of life to biochemical reactions. Our experiences of pain and pleasure, hate and love, joy and grief are only an emergent epiphenomenal manifestation of the biochemistry of that gray matter in our skull. We would like to believe otherwise but, let's face it, we are just 'biorobots.' Physicalism became the new paradigm.

This world and life conception were further strengthened in the collective consciousness by the practical application of science. From the industrial revolution (with its steam engines and telegraphs) to the modern digital revolution (with its computers, the internet, and smartphones), the power and efficacy of materialistic science stand in its full glory and splendor in front of us all. Technology—the utilitarian outcome of the theoretical aspect of science—dominates our lives not only materially but also financially. There is almost no enterprise or job that does not depend on the ups and downs of the market of technologically based products. Science and technology have become, first and foremost, a financial power that dominates the world. Moreover, since the times when Galileo had to struggle against the obscurantism of a Catholic Church and its Inquisition, Galilean science has become the central paradigm of every academic institution. The dramatic modernization of science to achieve a distinguished position of authority has finally sealed, once and forever, the clear demarcation line between science and religion. Science became truth, per definition.

The Flynn effect attests to the fact that education contributed to an increase in population intelligence. This is the long-term increase in IQ test scores that have been measured in the general population worldwide over the 20th-century, indicating that, on average, humanity has become smarter. It is known that

throughout the last century, every generation of newborn children has performed, by some significant number of IQ points, better than its parents.

However, it is also known that around the turn of the millennium, this trend slowed down and that it might even invert its direction. Children are performing only moderately better than their parents; humanity's IQ is stabilizing. What is the cause of this evolutionary stagnation? Environmental or economic factors? Our lifestyle? The new technologies that have detrimental effects on children's development? Maybe. Nobody knows for sure.

On top of that, we are experiencing a post-truth era. Scientific facts have become an opinion, not an accepted truth. Critical thought seems to have become unnecessary. An increasing number of people consider it a waste of time to conduct a sober and objective assessment of facts before forming an opinion. Climate change denialism is rampant, flat-earthers have become trendy, and the quantum woo has even infected academic levels.

What is happening? Are we 'involving' back to the dark ages? Or is it a reaction to something? If so, to what?

It is clear that if this regression establishes itself, the result will be a global disaster. If we do not recognize its genuine character as an expression of a thirst for more, and not less, it will lead us to an involution. It is necessary and urgent to recognize this apparent crisis of reason and analytic thinking as something that demands, neither the abolition nor the amplification of the mind, but something new that asks to manifest itself but is not allowed to do so.

Describing the undeniable success of materialism and reason furnishes us with a still-too-superficial understanding of what was and still is going on. We must expand our vision and encompass the history of science and the application of thought and reason as a dynamic whole, recognizing its less obvious but equally important function. We should look retrospectively and see what the role and function of science and reason were in the evolutionary history of humankind.

Had we not disengaged from the obscure and primitive forms of beliefs and religious dogma, separating the objects of study from the ideas and beliefs of the subject, reason wouldn't have had the opportunity to develop as it did. The intellectual faculties of the species were greatly favored by the concentration of its cognitive skills into a rational enterprise that science demands. Without the '*Age of Enlightenment*' (also called the '*Age of Reason*'), almost all of humanity would have remained stuck in a state of development that didn't go much further than blind religious beliefs and Medieval superstition or, at best, would have been forever satisfied with some glimmerings of the ancient Greek philosophers.

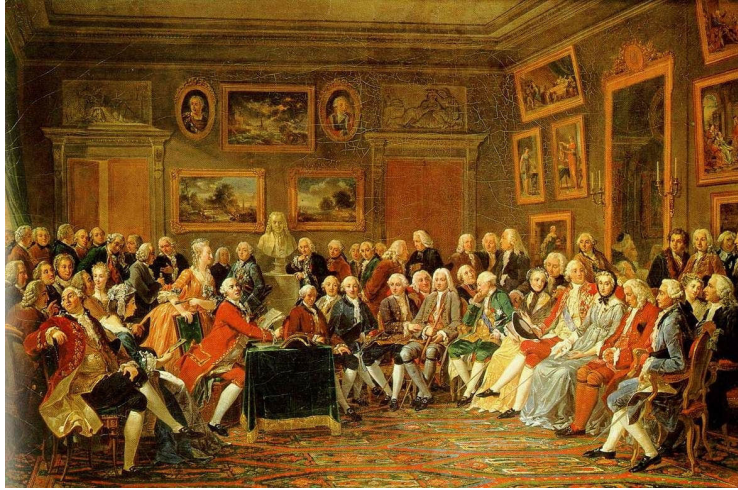


Fig. 1 Painting of the salon of Madame Geoffrin which represented an imaginary meeting in 1755 of the most prominent figures of the Enlightenment such as Rousseau, Voltaire, Montesquieu and several others.

This is the greatest service that science has provided to humanity. It has allowed us to exercise and further enhance our mental cognitive function. Science, with its theories and discoveries, not only delivered to us an incredible amount of knowledge about the world and ourselves and not only allowed for an enormous increase in material wealth but also, first and foremost, established the mind in the collective. Rational, analytic, and logical thinking might not be something that is equally distributed throughout the population. Still, as compared to the Middle Ages, on average, it has become a more widespread common good. The mind has rooted itself in the human race much more deeply than what it was when Copernicus dared to conjecture that we are not at the center of the universe.

Therefore, firstly, we contend that science and reason are a means by which Nature advances an evolutionary purpose. Secondly, we should not forget how every stage of the progression is never the final one but is always the preparation for the next evolutionary leap. Mind, reason, the physicalist's temptation to reduce everything to matter, and physical laws were all preparatory exercises to foster the skills of an infant humanity. However, once they hit their limits or are even exhausted, they must be recognized for what they are. The human intellect must inevitably be only a transitional cognitive function, not the last rung of the ladder. Physicalism has its truth and value and was a necessary starting point that provided a firm basis upon which a still-not-fully-developed mind had to start. Although, it is only a transitional philosophy and methodology that served a purpose. It is not the final frontier of knowledge.

can clearly see this boundary, the mind can be the decisive tool with which it can transcend itself by exponentially accelerating an evolutionary process that otherwise would take ages. That is precisely the path we will follow here.

2. The Obsession with Occam's Razor

There is an unwritten rule that dominates the research methodology of almost all scientists and philosophers of science. It is an undeclared law that is followed almost automatically, though more in words and intent than by a consequent behavior. Almost all scientists and philosophers declare their loyalty to this principle and never forget to point out how faithfully they adhere to it. Almost everyone — be they materialists, idealists, dualists, or from whatever intellectual, technical, scientific, philosophical, or ideological background they come — have one thing in common: They all claim that it is their theory, not the rival one, that conforms best, and is in line, with a principle of parsimony, the so-called '*Occam's razor*.'

As we will see, it is one of these principles or working approaches with which people can justify everything and the contrary of everything. Still, it has become something so deeply ingrained in modern science that if you do not declare yourself an ardent follower of Occam's prescriptions, you might not be taken seriously. You will quickly see people switch from a rational argument to an outright emotional dismissal of whatever you have to say, without any further thought and reflection.

So, guess what everyone does to avoid being placed in the culprit's corner of those who 'lack parsimony'? Professionals who want to emphasize their professionalism never forget first to proclaim, almost religiously, their adherence and allegiance to Occam in their introductions and openings of their papers, talks, or books. Oddly enough, once they have assured their audience, they feel free to make a 180° turn and, eventually, do all the opposite.

However, let us first see what Occam's razor is about before looking further into this strange sociological aspect of modern science.

'*Occam's razor*' (or '*Ockham's razor*') is a principle also known as the '*law of parsimony*' according to which "*pluralities [entities] should not be posited [multiplied] without necessity*" ("*pluralitas non est ponenda sine necessitate*"). This principle was first introduced by the English Franciscan friar William of Ockham (1287–1347), an academic philosopher and theologian. The principle states that when confronted with two or more competing theories that are supposed to explain the phenomena, one should favor the simplest one. Equivalently, it states that the simplest solution to a problem should be considered the most likely one.

This is frequently applied in science. If different hypotheses make the same predictions or describe the same reality and facts, one should take that which is endowed with the fewest assumptions. In the scientific method, Occam's

II. The Trouble with Consciousness

*"Science says the first word on everything, and
the last word on nothing."*
Victor Hugo

1. The No-progress Quests

Despite the overwhelming success of the application of reason through the adoption of a purely materialistic approach of the sciences to explain, control, and increase our dominion over matter, there remains a strong sense of dissatisfaction with the human condition. Particle physics, chemistry, biology, medicine, the neurosciences, and many other reductionist intellectual approaches of science to Nature allowed us to gain invaluable insights into the world and, to a certain extent, also a bit into ourselves. These sciences and the human mind will continue to do so in the future.

Nevertheless, when it comes to the fundamental issues of our existence, the search for meaning, the search for an answer, if it is meaningful to ask for a meaning in the first place, or the question about the intrinsic nature of things, then reason keeps silent. There are easy problems and hard problems that science and reason must still tackle. Let us begin with the former.

There are questions for which science and reason have been shown to deliver, if not a final answer, at least a progressive clarification. These questions may still not have found a final systematization inside an intellectual framework, but progress has been made, and it is reasonable to assume that they will find a resolution inside a strictly materialistic and mental paradigm. We have already made progress in some areas of knowledge about the world, and we will continue to better understand these things in the future through the cumulative advancement of science and technology. Science is a cumulative process as Thomas Kuhn, the renowned 20th-century American philosopher of science, characterized in his magnum opus, *'The Structure of Scientific Revolutions.'* New observations are made, methods are improved, new and more sophisticated theories are developed, and new technologies enable us to discover and understand an increasing number of facts progressively. Inside this paradigm, we expect to find the answers to some difficult questions. It is only a matter of time and further progress before we will get there. Let us call these the *'progressive-quests'* — that is, those problems we will find stepwise and progressively clarifying answers.

For example, we don't know whether extraterrestrial life exists. However, it is plausible that with much more powerful optical telescopes, radio-telescopes, or technologically more advanced astronomical observatories on satellites, or with space probes visiting other planets or moons in the solar system, we will find — in one form or another — traces of life beyond Earth.

complexity. Science is intrinsically lacking something that allows it to proceed further than that, and the mind is intrinsically limited to sensory abstractions that are inherently unable to capture the essence of things. There has been no progress in the last 20 centuries on this, and there can't be even in the next 20 centuries if our cognition remains limited inside the boundaries of a superficial sense-mind awareness of the present low-level rational materialism.

Nevertheless, to justify this lack of progress, people frequently resort to what we shall call the '*complexity argument*.' This argument goes as follows: Many questions have not yet found answers because things have become much more complicated than expected. Give us time, allow science to progress and technology to advance, and we will finally be able to grasp the entire intricacy of all the phenomena. We will also be able to manage to handle increasing degrees of complexity. Modern supercomputers, gigantic data storage devices, complex AI software, and other kinds of futuristic tools will finally allow us to compute and determine the structure and function of everything and reveal to us their most intimate nature.

This thinking has its roots in the conception of a purely deterministic and, at least in principle, completely predictable universe. One can backtrack this belief system to '*Laplace's demon*' thought experiment, proposed in 1814 by French mathematician and philosopher Pierre-Simon Laplace. It became and still is the (undeclared and implicit) assumption of modern materialism and all the sciences as an articulation of strict determinism and reductionism in conceptual form. Laplace wrote:

"We may regard the present state of the universe as the effect of its past and the cause of its future. An intellect which at a certain moment would know all forces that set Nature in motion, and all positions of all items of which Nature is composed, if this intellect were also vast enough to submit these data to analysis, it would embrace in a single formula the movements of the greatest bodies of the universe and those of the tiniest atom; for such an intellect nothing would be uncertain and the future just like the past would be present before its eyes." [11]



Fig. 5 Pierre Simon Laplace (1749-1827).

In the 20th century, quantum mechanics would shatter this conception into pieces; however, it remains the (more or less unaware) assumption that drives all the reductionist scientific thinking and is at the base of the complexity argument.

A striking example of this was the Human Genome Project, the international research project that successfully sequenced the entire human DNA — that is, it determined all of the genes of the human genome. Once the goal was achieved in 2003, it was initially believed that this would open the way to the development of new therapies and a 'personalized medicine' to heal

We will take up these points in greater detail later. Here, we point out that in this sense, there has been no progress. There has been no progress in making machines aware of meaning. We don't even exactly know what meaning is and how meaning emerges in our own minds. We contend that there has been zero progress in realizing a real semantic and conceptual awareness in AI. The awareness of meaning in AI is a no-progress quest.

Progressive quests	No-progress quests
Search for ET life	The existence of God and the afterlife
Quantum gravity	The meaning and purpose of the universe
Controlled nuclear fusion	The essence of matter
The molecular origin of life	AI 'awareness of meaning'
The fine-tuning problem	The hard problem of consciousness
:	:
:	:

However, having said that, what we are implying with this is not that, in general, research projects in the fields of genetics, AI, or cancer treatment are necessarily no-progress quests. They are, at least in part, progressive-quests, as a great deal of progress has been made in these fields, and they have furnished us with an invaluable amount of information about life or allowed for technological breakthroughs. These approaches, however, hinder the progress of science itself when they are almost obsessively fixated on a purely reductionist paradigm that reduces everything to genes, cells, neurons, and molecules and that disallows other approaches and research methodologies based on less-reductionist conceptions. It is with this molecular worldview in mind that, much too often, people resort to the complexity argument to hide the failure of a method of research or—and this is the point we want to make here—to make us believe that a no-progress quest is a progressive-quest. If, for centuries, science and reason made no progress at all in some specific topics, it makes no sense to believe that they will do so in the next decades, invoking complexity arguments.

2. The Hard Problem of Consciousness

The most paradigmatic no-progress quest that science has been bumping into since its beginnings is the question of the origin and nature of consciousness. Some aspects of our conscious experience seem to be irreducible and do not allow for a description and explanation inside a materialist paradigm. There are questions regarding consciousness on which science has not made an inch of progress since Descartes' thoughts on the mind-body problem.

This might sound like an outrageous and even silly claim, as one might argue that, especially in the last decades, there has been enormous progress in the neurosciences, especially due to groundbreaking technological

pathways, we nevertheless experience these features united together into a single meaningful whole. The brain does not compute them in sequential order but distributes information in parallel to different specialized areas where the characteristics of a single object are elaborated. When we see a colored object, with a specific form, moving through space, its color, form, texture, and direction of movement are ‘disassembled,’ in the sense that different brain cells are activated for these different properties, independently from the other properties and the neighboring cells or brain areas. Not only that, but the result of this separate analysis of the object's properties seems not to be transmitted to some central receiving station that might unify them again in a single unique representation but, instead, circulates throughout the brain. And yet, it is a quite common experience among everyone that a unified vision lastly occurs somehow. We don't see the redness of a tomato as a property separate from its form.

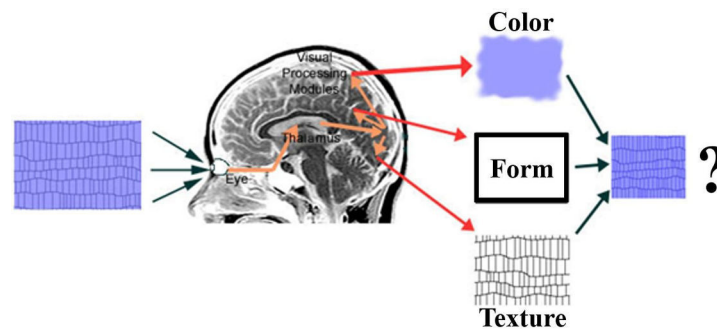


Fig. 9 An illustration of the binding problem. Credit: [16]

A visual binding problem emerges: If visual properties of things, such as shape, texture, and color, are distributed and analyzed separately throughout the brain regions, where, how, and when does the perception of a shape, with the perception of its color and texture become unified into a single experience of a colored object, come in? The binding problem emerges because of an unexplained feature integration where ‘it all comes together’. While neurophysiological and neuropsychological findings show the existence of multiple brain areas that respond to primary features of objects and their spatial locations, scattering colors, movements, forms, and textures throughout the cortex, our phenomenal experience nevertheless coalesces into a perceptual unity of bounded feature representation.

These findings of modern neuroscience make it clear how the Cartesian brain model, which René Descartes advanced to explain a supposed mind-body dualism, no longer holds. In this model, he advanced the hypotheses that all the stimuli from the outer world are somehow converted into impulses and codified in the brain conveying them all, as a unique stream of information, towards the pineal gland, which he believed to be the center of perception and

Is the meaning of this sentence clear and unique? It isn't. Because, depending on where we place the emphasis, we can get three different meanings:

- 1) *Why did **Tom** betray Mary so suddenly?*
- 2) *Why did Tom betray **Mary** so suddenly?*
- 3) *Why did Tom betray Mary **so suddenly**?*

Here, we see that the meaning of a sentence isn't simply in the words. We realize how the emphasis places the sentence in a specific context that can vary from time to time. We have exactly the same words and the same sentences; however, completely different semantic contents emerge. It should, therefore, come as no surprise that developing a theory of semantics that allows an AI software to understand meaning has been shown to be an extraordinarily difficult task. Such a theory could not take single words and combine them; it must also consider the whole context, which means the whole world in the experiential dimension of a subject.

The sense of the whole sentence is also determined by the position and choice of a single word or a couple of words and may lead to completely different, even opposite, meanings. This semantic effect is called the '*Winograd schema*,' in which a pair of almost identical sentences, differing in only one or two words, have the opposite meaning. One can infer the precise meaning only by knowing how the world is built and the overall context in which the objects and concepts to which the sentences refer are known. An example of a Winograd schema was developed by the American economist Gary Smith [18]. Consider these three sentences.

*"I can't cut that tree down with that axe. It is too **small**."*

*"I can't cut that tree down with that axe. It is too **thick**."*

*"I can't cut that tree down with that axe. It is too **late**."*

In the first sentence, the pronoun "it" refers to the axe, while in the second sentence, it refers to the tree. In the last sentence, it refers to neither but instead indicates a temporal delay. But how do we humans immediately know that? Because we know the meaning of the single words, the meaning of the objects of the world they indicate, their relation to each other, and, most importantly, all these objects and the world arise in us as a subjective experience. It is only when this happens that we can bind the words into an overall context with semantic content – that is, become aware of the meaning of the whole sentence. Machines fail miserably in this task, even with these simple and short sentences. There is nothing that understands, binds, apprehends, or experiences and, thus, can construct any model of the world, let alone a significant semantic content.

Many have been tempted to believe that sooner or later, we would have discovered a logical relation between words that would have revealed to us

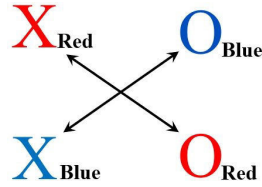


Fig. 19 Balint's syndrome: a red X and a blue O are perceived as a blue X and a red O.

Moreover, the perceptions of visual agnosics are highly conditioned by local continuity. For example, in Fig. 20, agnosics see only the number 7415 but are unable to read the word 'THIS'. [30]



Fig. 20 'THIS' or 7415? [30]

This is reminiscent of the Gestalt figures but with the subject stuck into only one of the possible interpretations.¹⁰

We see again how the meaning of an object is something that comes into being in our consciousness in us and is not an intrinsic property of the object we perceive itself. This shows that a local analysis is not sufficient to build a global construct. The common assumption that global knowledge is the outcome of a local examination misses a step in between. Binding is more than the combination of local features. It requires the ability to produce meaning.

The world we see is a construct that arises from a complex binding process causing a subjective perception of meaning. What we see is not what we get. The idea of a world existent as it is with definite properties and with some semantic content external to our conscious representation and independent from an observer's subjective experience is a naive form of realism that needs a more careful and closer examination by all those who take scientific realism as the ultimate source of the discovery of truth.

That we don't 'see' the meaning *of* (or *in*) the world, let alone the world as it is, but that the perception of meaning is an acquired skill that we learn from birth is well known from the fact that it takes several weeks until newborns start to recognize their parents' faces. They don't move their eyes between two images, and they see only objects that are 20-30 cm away, holding their gaze for only a few seconds. For babies, the world is only a kaleidoscope of fuzzy images without meaning.

Interestingly, we can gain a glimpse into what it is like to be in such a state of 'meaningless awareness' from those grownups affected by congenital

¹⁰ For several other cases of this sort, see also Oliver Sacks' bestseller "The Man Who Mistook His Wife for a Hat". [258]

program that knows everything about the syntactic rules of the Chinese language by manipulating symbols, Searle sends out the answer in the form of another string of Chinese characters through an output slot.

He simply obeys the instructions of the computer without understanding neither the questions nor the answer. If the computer can pass the so-called '*Turing test*' – that is, a test which posits that a machine is intelligent like a human if its answers are indistinguishable from those of a human – an external observer, say, a native Chinese speaker, would mistakenly believe that in the room is a Chinese speaker, while in reality, it is the computer that is answering in Chinese.

Searle points out, however, that in principle, he could himself follow the rules of the algorithm step-by-step (say, by consulting the printout of the program library or database which tells him exactly all the possible rules with which he has to manage the Chinese ideograms) and that would allow him to pass the Turing test even without the computer. Due to the fact that from this point of view, there is no difference between the syntactic information processing of the computer or Searle mimicking it without understanding anything of the meaning the string of symbols represents, one must conclude that the computer can't understand meaning either. It only appears that a symbol-crunching machine understands meaning, but it does not, and the Turing test is not an appropriate tool for determining whether a machine understands meaning and semantics as humans do.

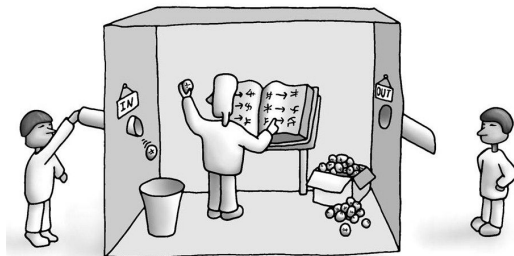
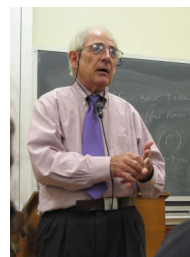


Fig. 21 Searle's Chinese room argument.



John Searle

Another implication of Searle's argument is that this also clarifies how a code, say, a binary code such ASCII or the old Morse code has no meaning or function in itself and is not something physical and existent in itself. A code always needs a 'semantic agent' – that is, a mind that understands the connection between this humanly pre-defined code with letters and symbols and its concatenation into words and sentences and is capable of working with it according to grammatical rules, a dictionary of words, and an association with semantic content. For example, a binary code sets into relation a string of ones and zeros to other symbols. Say the binary string 1010 corresponds to the number 10 in the decimal numeral system. However, it could also signify the

III. States of Consciousness and Free Will

1. About Blind People who See

The bottom line of the preceding chapter is that there is mounting evidence which suggests that our perception of the world must be largely subliminal or subconscious¹³. It seems very likely that we must accept the fact that the world we perceive is an interpretation and that the things we do and think are based on the ‘stories’ that our brains or minds make up.

The fact that many, if not the majority (or all?), of our thoughts, actions, and desires are driven by processes that seem to escape our conscious awareness is no news. The notion of the ‘subconscious’ or the ‘unconscious’ was introduced in the 19th century by the German philosopher Friedrich Schelling. However, it made its way to the popular audience thanks to the well-known Austrian psychoanalyst Sigmund Freud. Since then, it has become accepted wisdom, including in modern science, that we are largely conditioned by internal underlying mental, perceptual, and emotional mechanisms which we are not consciously aware of.

However, we do not always react instinctually or without reasoning but can make very rational choices without being aware of it. A striking example of this state of affairs comes from a neurological impairment called ‘*blindsight*,’ which is the ability to see things without being aware of them at a conscious level. There have been several reported instances of people with damaged primary visual cortex (area V1), which impairs part of the visual input from the eyes to the brain. These people can see only one side or region of the visual field. It could be shown that some patients are nevertheless able to detect visual information within this blind region, though they are not directly aware of it.

For example, if the image of a straight line is presented inside the lost visual region, the patient reports seeing nothing. However, if asked to guess the orientation of the line, say, if it is presented with a horizontal or vertical orientation, some patients can guess correctly in 90% of cases. Others can ‘guess’ colors, move their eyes to follow the movement of an object inside the blind region, grab for something they cannot consciously see, mimic the emotions of a face they report not seeing, and even safely find their way along a path with hurdles they had to bypass. Because this can’t be just a coincidence, one must conclude that some form of visual information must still be present and that it is perceived and processed subliminally. The impairment of the brain’s visual cortex area V1 causes a lack of awareness but must still, at least

¹³ We will later distinguish more rigorously between the concept of the subliminal and the subconscious.

These were only some examples of the different states of consciousness one can experience. The following list summarizes them in three groups;

Waking state

Lucid dreaming
Hypnotic state
Deep meditation and trance
Psychoactive induced altered state
Psychotic hallucination
Dissociated personality disorder
Dementia state of consciousness

Half-sleep
Sleep with dreams
Deep sleep
Sleepwalking
Blindsight subliminal consciousness
Anesthesia induced (loss of) consciousness
Vegetative state
Coma

Notice that there is a tendency, also among professionals, to consider only the waking states as 'conscious,' label the second group as 'altered states of consciousness,' and brand the third group of cognitive states as 'unconscious.' It is especially this third distinction that is problematic. It would be much more accurate to call them *'no-report'* or *'non-metacognitive'* states of consciousness.

The reason why we dwelled a bit on these subtleties is to exercise our thinking by an inward turn with an introspective investigation that reveals our exteriorized thinking fallacies. The coarse-grained physicalist thinking that subdivides all our conscious existence into black and white blocks, such as being 'conscious' or 'unconscious,' without further distinction and critical assessment, is an unreflective instinct we must get rid of. Moreover, this furnishes us with a firmer basis upon which we can look with a more critical eye at the experiments on free will.

3. Free will? What's That?

Before proceeding to the science of free will, let us first put this into a historical and sociological perspective.

awareness, can only mislead us. First, let us take a look at what modern neuroscience tells us about the subject of free will.

4. Libet's Pioneering Experiments on Free Will

The question of whether we have free will is as old as humanity. From Plato and Aristotle through Kant and Descartes until the speculations of Bertrand Russel into modernity, this has always been a topic fervently debated among philosophers. Interestingly, however, scarce were the attempts to investigate this question with modern neuroscientific means (the reason for that, we can only speculate, though we will try to furnish an answer).

The pioneer in this field was the American neuropsychologist Benjamin Libet, who performed a famous experiment conducted between 1979 and 1985. The first experiment showed how a simple touch on a finger becomes a conscious sensorial experience only after a relatively long time duration of about a couple tenths of a second. [52] While the most notorious experiment of Libet was set up as follows [53], [54]:



Fig. 24 Benjamin Libet
(1916 – 2007)

Subjects were asked to freely decide when to flex a finger (or press a button or flex their wrist) and report the moment at which they were consciously aware of the decision. The brain activity was recorded by an EEG that measured the signal and the time at which the mounting motor cortex activity occurred, the so-called '*readiness potential*' (from the German '*Bereitschaftspotential*'). At the same time, an '*electromyograph*' (EMG) measured the electric potential generated by muscle cells. The subjects could use, as a timing device, an oscilloscope with a dot quickly circulating like the hands on a clock. The dot traveled 360° in 2.56 seconds by 6° steps, which implies that it stepped forward every 43 milliseconds (and we know that this leads to a continuous visual experience). At the moment where they were aware of the wish or urge to act, the participants reported the position of the circulating dot.

The time steps describing Libet's experiment in Fig. 26 can be illustrated as follows:

Illustration (0): Before the readiness potential.

Illustration (1): Onset of the readiness potential – that is, the time at which the subject's brain signaled the intention to act – as recorded by the EEG (at $T = -550\text{msec}$ in Fig. 25).

Illustration (2): Time of awareness the proband reports as the moment at which one feels the 'urge to move' by identifying the position of the circulating dot on the oscilloscope (at $T = -200\text{msec}$ in Fig. 25).

Illustration (3): Movement onset: The moment at which the EMG registers the electric potential of the muscles flexing the finger (at $T = 0\text{msec}$ in Fig. 25).

The time lag between the moment of the first brain activity observed at the EEG and the time of the decision to act indicated by the subjects observing the dot's position on the oscilloscope amounts to a considerable 350msec. If we also take into account the postdictive interpretation of the phi phenomenon or flash-lag effect induced by the moving dots on the oscilloscope, one should even add another 200 msec on the top of that

(recall how our visual system always delays its 'judgment' by 0.2s). The dots flashing up on the oscilloscope's clock in Libet's experiment (the dots on the oscilloscopes in Fig. 26) display essentially the same optical stimulus of the two flashing light sources in Wertheimer's experiment (the two light sources in Fig. 15c) or the flash-lag illusion of Fig. 18. It should therefore come as no surprise that

in Libet's experiment, the subject's time readout may be delayed backward by 0.2s. But then, the overall real delay would be even about half a second!

This seems to indicate that, contrary to what we tend to believe from everyday experience, the awareness of our volition does not coincide with the brain's activity — that is, by the readiness potential's initial motor cortex buildup. On average, it takes longer than half a second between the initiation of the readiness potential and the finger flexing.

The interpretation of Libet's experiment was and remains very controversial. In it, many see the proof that it is an unconscious brain activity that determines our volitional acts first and that becomes conscious only later. According to this interpretation, we first make a decision without being aware

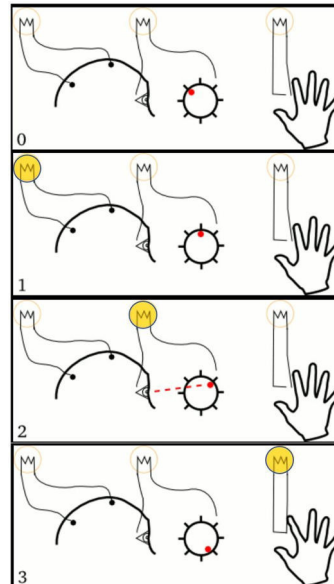


Fig. 26 Libet's experiment.

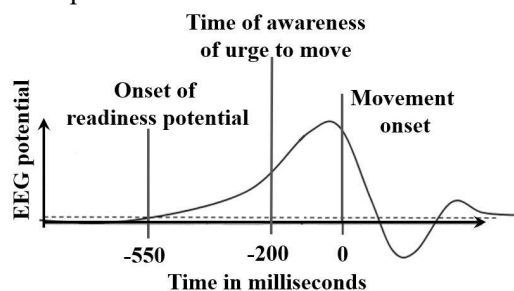


Fig. 25 EEG readiness potential in Libet's

several methodological issues and measurement uncertainties (such as relying on the subject reporting the precise position of a quickly circulating luminous dot), and the ambiguous interpretations of what the measured signals really represent or indicate (such as identifying the readiness potential as the cause of the will to act), one cannot infer from Libet's experiments anything final and conclusive.

Nevertheless, Libet's experiment in its original form and interpretation was immediately adopted by almost all physicalists as the ultimate proof of the illusion of conscious will. All the later tests, which highlighted its methodological and interpretational weaknesses and made it clear that this experimental approach was not strong enough to show what it wanted to prove, have simply been ignored by the deniers of free will for decades. Libet's findings have routinely been misrepresented as final proof of the absence of free will, despite the opinion of Libet himself, who endorsed the opposite view. Although the question remains one of the most debated philosophical issues, the physicalist establishment considered the case closed without further appeal. The few 'Libet-styled' incomplete and defective experiments were accepted uncritically for decades, without much further thought, because, in its misinterpreted version, and by ignoring the part of the free won't choice, it seems to support the materialist ideology. This might also explain why, after almost four decades, these sorts of experiments received only scarce attention. Is it because once an experiment *seems* to confirm your ideological background, you tend to dismiss any new contrary evidence and refrain from checking things further?

But the sociologically interesting question is also: Why do so many enthusiastically embrace such a flawed experiment, animated by an almost religious desire to stick to a strictly materialistic worldview in the first place? Why are so many scientists and philosophers so eager to prove to themselves that they have no free will? To put it in the words of the British mathematician and philosopher Alfred North Whitehead: "*Scientists animated by the purpose of proving that they are purposeless constitute an interesting subject for study.*" [61]

IV. The Mind-Body Problem and Neurocentrism

1. Correlation, Causation, and Confirmation Bias

The mind-body problem was, and remains, one of the central debates in the philosophy of mind. While it was already discussed among the natural philosophers of ancient Greece and was implicitly addressed in most Asian traditions, in Western philosophy, it dates back to the thoughts of René Descartes in the 17th century. Descartes posited what is nowadays called the '*Cartesian dualism*' between mind and matter – that is, between mind and the brain. In its somewhat more modern formulation, one includes, along with mind, also consciousness, with both being supposedly non-material entities independent from the laws of physics and both distinct from that gray material object which is our physical brain.

Dualism is opposed by '*material monism*,' which, instead, considers mind and consciousness as nothing other than emergent epiphenomena arising from the collective interaction of the neuronal activity in the brain. According to this mind-body monism, which is the bedrock of physicalism, there is only matter and no immaterial mind or consciousness. The narrative is that, sooner or later, these too will be explained away as the result of complex material and physical processes in our brains, and that there is no reason to resort to immaterial explanations. The belief is that dualism, in whatever form, will fade away, as was the case with many biological functions of life that could be explained in terms of purely biochemical processes without resorting to theories that pose immaterial and non-physical entities.

For example, '*vitalism*' or the theory of an immaterial '*Élan vital*,' a '*vital impetus*' or '*life force*,' which was thought to be responsible for the emergence of complex life forms and their organic functions, is nowadays considered, at best, a curious historic anecdote. In fact, modern biology can explain a whole variety of facts by a purely materialistic reductionist approach, from genetics to cell biology, without resorting to any notion of immaterial life force supposedly pervading living organisms. We will show, however, how also the disbelief in vitalism is based much more on an ideological than a real scientific basis.

Moreover, assuming dualism to be true, the '*mind-body interaction problem*' of mental causation must then be addressed. If dualism holds, one must explain how mind and consciousness, which are presumed to be immaterial, can have material effects, namely, determine a brain state. If something is immaterial – that is, supposedly unphysical – there is no known physical mechanism by which the former can affect the latter, and vice versa.

anti-physicalist, and spiritualist (or whatever we would like to call them) as well.

Let us then discuss the several findings in neuroscience, including its weaknesses, which indicate how the physical brain is not the source, origin, or cause of anything but is foremost a tool of perception and reception and a channel of expression. We will also argue that this is not only a viable hypothesis but even the most logical conclusion.

2. Am I my Brain? Where in my Brain?

According to the traditional materialist viewpoint, the physical processes that lead to a mental state and subjective experiential awareness must be localized in one or a few areas of the brain responsible for its ‘generation.’ These views soon had to be proven wrong and had to give way to much more complicated conjectures. There is no evidence, not even indirect or circumstantial, of a single little brain region, area, organ, anatomical feature, or Cartesian pineal gland that seems to take charge of this mysterious job of ‘producing’ or ‘generating’ consciousness. Most of the brain is busy processing sensory inputs, motor tasks, and automatic and sub- or unconscious physiological regulation.

However, according to current wisdom, since the ‘*prefrontal cortex*’ (the front part of the front lobe — in short, the brain region behind your eyebrows) — is responsible for cognitively complex functions, such as thought, language, decision-making, and social behavior, it was considered the ideal candidate for the ‘seat of consciousness.’ In fact, one of the points which may not have received enough attention is the quite obvious fact that neural activity alone cannot be a sufficient condition to lead to a subjective phenomenal experience. Most of the brain’s workings do not lead to qualitative experiences. Since the vast majority of things a brain does are unconscious (such as the heartbeat, breathing, the control of blood pressure and temperature, motor control, etc.), this raises the question: What distinguishes a neural process that leads to a conscious experience from that which does not?

For example, the ‘*cerebellum*,’ the posterior area at the lower back of your brain, is almost exclusively dedicated to motor control functions, and its impairment leads to equilibrium and movement disorders. However, it does not affect one’s state of consciousness. Its role in ‘generating’ experience seems to be marginal, if any. There are, of course, lots of anatomical and microbiological differences that distinguish the rest of the brain from the cerebellum, such as the size of the neurons, their biochemical properties, and electrical



Fig. 28 Living (and walking) without the cerebellum. Credit: [66]

Some might be surprised to learn that this is not a thought experiment taken from a Frankenstein novel, but a very real surgical procedure performed since the 1940s: the ‘*corpus callosotomy*’ (although only rarely used nowadays). It is an extrema ratio surgical procedure performed only to treat the worst cases of epilepsy (patients having up to 30 seizures a day) that did not respond to any medical treatment. In this procedure, the

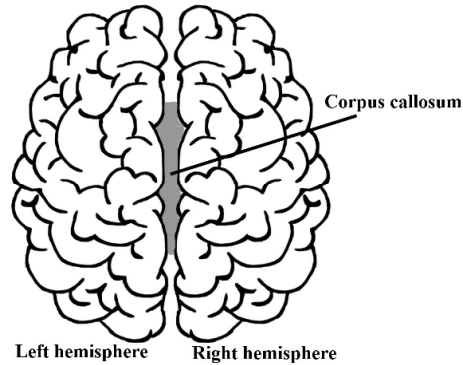


Fig. 30 Does brain-splitting cause ‘self-splitting’?

‘*corpus callosum*,’ the nerve tract connecting the left and right brain hemispheres, is severed (in part or, in some cases, entirely cut through), thereby avoiding the spread of epileptic activity between the two halves of the brain. Its natural function is to ensure communication between the two cerebral cortexes of the two hemispheres to integrate and coordinate motor, sensory, and cognitive functions, such as moving left and right limbs, the visual integration of the left and right sight, etc. Because most of the brain’s activity is distributed on both hemispheres, with no indication of one or the other part being responsible for generating our sense of ‘self’ — the feeling of being a subject and individual, a sentient ‘I’ having experiences — one must wonder how the patients who have gone through such an acute surgical intervention feel. Do their split brains ‘generate’ a split personality? Does the patient claim to be two patients? Do they feel like another person entirely, or are there two “I’s” in the same body?

Facts have shown that these patients do not have any symptoms of multiple personalities or display any signs of internal dissociation after surgery. When asked if they eventually feel the sensation of a ‘divided self,’ the answer is negative. Their self, mind, and conscious experience remain a unified whole of one subject and individuality. They deny being a different person from what they were before their brain splitting. Close relatives who knew the split-brain patients before and after surgery, didn’t notice any change in personality. This surgical intervention eliminates or effectively diminishes the intensity of epileptic seizures and, quite surprisingly, preserves almost all of their cognitive and motor-sensory abilities.

Of course, there can be more or less severe drawbacks. Visual, auditory, and tactile information that was previously processed throughout the two brain hemispheres can now be processed separately in only one or the other part of the brain. This can (but must not) result temporarily or even permanently in difficulties in speech articulation and coherent motoric coordination between the left and right parts of the body or spatial orientation. In rare cases, strange

teach mainstream science something about the neurophysiology of consciousness.

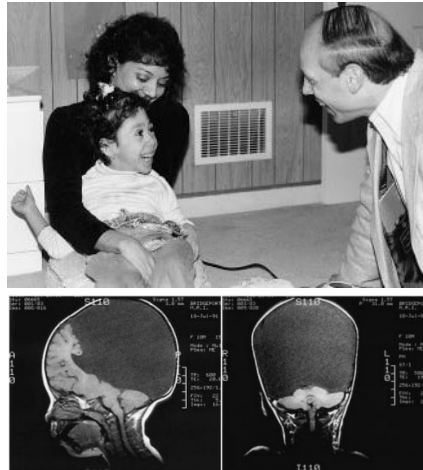


Fig. 34 Top: Congenitally decorticate children socially interacting with Dr. D.A. Shevmoon.
Bottom: MRI brain scan (midline sagittal and posterior coronal plane). Credit: [93]

Of course, in the case of decorticated children, we are speaking of cognitively and motorically severely disabled cases that cannot compare to the neurologically normal ‘split-brainers’ or hydrocephalic patients. The cerebral cortex seems to be essential to gaining awareness of the physical external world and at least part of the higher cognitive functions. But the point in question for us here is: What is the source of the subjective experience? It can’t be localized in a specific area, not as a whole-brain integrative physical process, and not even in the cerebral cortex alone.

Though many still struggle to accept this state of affairs, the fact that consciousness does not require the cerebral cortex was later confirmed by other findings. [94] Now the physicalists have been forced to retire to the last cerebral bastion for the seat of consciousness: the brainstem. [95] Indeed, its stimulation can also trigger intense emotions and feelings. But one wonders what mysterious property a neural circuitry dedicated to the most physical and basal control of cardiac, respiratory, and temperature regulations containing mainly neurons for motor and sensory functions is also able to give rise to such an apparently immaterial and completely different and unrelated ‘function’ or ‘property’ as a conscious experience. Also, these aspects add to the line of evidence that the brain does not generate experience but, rather, mediates it. We guess that it is only a matter of time before this stronghold will crumble like all the others. Mounting evidence indicates how conscious behavior exists in life forms that have no cerebral tissue in the first place. But, before stepping towards the world of plants and cells, let us first overview some aspects that emerged for the higher cognitive functions we have seen so far.

hemisphere before surgery. However, we should be aware that these are conjectures, hypotheses, and speculations, not scientifically established truths. Memory storage and retrieval in biological brains remains a largely unexplained mechanism, and no conclusive evidence exists that proves it to be of physical nature.

Other research that might suggest how and where memories are stored in brains comes from experiments performed on freshwater flatworms called '*planaria*.' These creatures can be trained to associate an electric shock with a flash of light — that is, they can learn by association that whenever they perceive a shock, a light flash will appear shortly thereafter. That they remember and associate the electric impulse with the light flash can be shown by the fact that once trained, they will curl their bodies whenever the light is flashed, even without the discharge. Therefore, it is reasonable to assume that they must have encoded the experience in their brains.



Fig. 37A *planarian flatworm*.

However, things are not as easy as that. Planarians have an incredible self-regeneration ability. If this worm is cut in half, each amputated body part regenerates as two new fully formed flatworms. Not only does the part with the head form a new tail, but the remaining tail also forms a new head with a brain and eyes. In 1959, James McConnel, a professor at The University of Michigan, showed that the newly-formed planaria with a new brain also maintained its conditioned behavior. The new-formed living being never received the electric shock and light flash of the training phase, and yet it reacted as if it still had a memory of the training it had never received. How could an initially headless worm acquire a memory that is supposed to be stored only in the brain of the other worm?

McConnel cut the worms many times more and observed that all the worms retained their memory and learned response. This suggests that memories, if physical, may not be stored only in the brain but throughout the body, in non-neuronal tissue. He went further by training worms, killing them, and then feeding them to other worms. Surprisingly, the cannibal worms that ate their siblings and that were not trained, when presented with the task of reacting to the flash of light, curled their bodies and did so even faster than the original worms did.

McConnel's findings suggested a memory transfer phenomenon. His idea was that RNA molecules (the cell's messengers that carry the protein-making information from the DNA) could transfer memory from one planarian to another as a "memory molecule." Motivated by this idea, he then injected worms with RNA taken from those trained and reported that the training had

from an exclusively naturalistic and mechanistic point of view. Now, should all this be given up? Reconsidering this would imply asking for too much change that would run against most of the established institutional interests and, perhaps even more importantly, against our deep-rooted convictions of what the world should be compared to what it otherwise could be. This is an ideological and even politically motivated behavior reminiscent of the famous refusal of the inquisition's cardinals to look into Galileo's telescope. Serious consideration of what the telescope revealed—moons orbiting the planet Jupiter—would have undermined their Aristotelian worldview, which stated that everything must circle the Earth.

At any rate, we will not conduct a historical review of the rise and demise of one or the other theory or philosophical approach but, rather, will point out further interesting aspects which, while not being conclusive, are at least indicative and should be considered seriously for any sound statement for or against a theory and worldview. Some aspects aren't usually discussed in academics but are nonetheless well-established scientific facts relevant for a serious examination of the connections between matter, consciousness, and Nature.

3. The Cognizant Plant

It was once believed, and it is still the prevailing opinion, that plants are just multicellular organisms which we call 'alive' only because they are systems that are composed of 'living' cells, and that undergo metabolism, grow, and can reproduce, but we don't think of them as having any form of cognition or ability to learn or make decisions, let alone have a subjective conscious experience. Sooner or later, everyone has discovered that plants move, adapt to the environment, and grow and lean towards the Sun, but considering them 'intelligent,' or having a 'mind' and being 'conscious,' whatever that might mean, is something that most of us, especially those more scientifically minded, would consider a too farfetched idea. We can't allow ourselves to contemplate the eventuality that something which does not have a brain may nevertheless possess such attributes, even if only in a more or less primitive or involved state. It is, however, not at all a new idea and has always fascinated the collective imagination.

Already in 1867, the Italian botanist Federico Delfino concluded from his studies that denying intelligence to plants is "*a serious mistake, born of a superficial appreciation of the facts.*" [113] In 1889, no less than Charles Darwin and his son studied the movements of plants [114] and compared the plant's roots to some sort of primitive brain, an idea that has become known as the '*root-brain hypothesis.*' However, Darwin's authority wasn't enough to pave the way for further investigations and, because the strictly mechanistic

the orthodox belief system that would like to reduce organisms without a central nervous system to biochemical machines dominated solely by purely mechanistic reflexive reactions. Meanwhile, it is no longer implausible to conjecture that plants might have some sort of primitive sentience and rudimentary cognitive processes.

It is interesting to note how popular intuition preceded science. The wide popular acceptance of the idea of plants having a more or less developed 'inner life' was an intuition which people could not rationalize but relied upon a feeling and ancient wisdom that turned out to be, at least to some degree, a correct 'precognition.' Later, we will argue that this is not just a historical and sociological freak in which archaic superstitions and science coincidentally correspond; to the contrary, it is the manifestation of an inner connectedness of the collective with subliminal dimensions that transcend mind and matter and which, on the surface, though at times confusingly and irrationally, manifest concretely in trends, thoughts, and eventually fashions that nevertheless, deep down, reflect an inner perception of natural truth.

4. The Mind of the Cells -Part I

But how far can we go in search of the origin of cognitive behaviors in living organisms? If we can't identify the whereabouts of mind in the brain or the 'seat of consciousness' in some particular neural correlate and instead find elementary forms of cognition in plants that have no brain at all, can we go even further and look for some form of cognizant behavior in single cells?

Though this is also not a new question, it was not in the minds of most biologists and cognitive neuroscientists until recently. It was at about the turn of the millennium when a renewed interest in this field gained momentum, especially due to an increasing amount of evidence that is slowly but steadily transforming our understanding of how mentality emerges in living organisms and even questions the very notion of 'mind' itself.

The question for which some scientists have pursued an answer is: Can the Pavlovian conditioned behavior that is observed in plants (and obviously in animals and humans as well) also be observed in single cells? After all, one might think that plant intelligence could emerge as the result of a complex interaction of the plant cells, as the neural network in a brain does (which is why people speak of 'plant neurobiology' even though plants don't possess neurons). From this perspective, though purely speculative, one might still save the monist brain-mind identity: Instead of claiming that mind and consciousness are nothing other than an epiphenomenon of the brain, one might refine this hypothesis by considering that mind, consciousness, complex mental tasks, and cognition are emergent phenomena from a complex web of interactions of an aggregate of cells, though these cells must not necessarily be neurons. However, if a conditioned behavior can be demonstrated in a single

signaling process which remains largely unknown. The scientific reason is a too-low-level form of cognition to comprehend the complexity of things and which it must instinctively downgrade to simplistic toy models. The microscopic and molecular analysis of the structure and dynamics of a tiny thing like a living cell has revealed a lot of insights to us but, at the same time, made it clear how naïve our belief was that soon the mystery of life and its workings would be disclosed. We are nowhere near having even a superficial understanding of what is really going on inside a cell.

This is not to say that the molecular and reductionist approach is in itself incorrect, but it becomes problematic when there is no willingness to counterbalance it with other ways to approach Nature. This was the main reason why only now have some fundamental discoveries about the cell's intelligence reemerged from history books and gained recognition in the 21st century. It was not so much due to limited technological means that some insights into cell biology are nowadays (re-)discovered but mainly because, in the last century, biology (as many other sciences) fell so in love with its exclusively reductionistic, molecular, and genetic point of view that it did not realize how it was slowing down further progress in other fundamental domains. The idea of a single cell being capable of performing complex behaviors such as learning associatively or solving problems was considered at best a curiosity that sooner or later had to be recast into that very same reductionist paradigm. The background ideology that mind and brain are one and the same thing, whereby no mental ability can arise in the absence of neurons, blocked any further thinking, and hampered healthy progress in some areas of human sciences for at least about half a century.

5. Neurocentrism, Hypes and the Illusion of Knowledge

These were only a few of the many examples of empiric evidence that questions our brain-centered view of cognitive functions. We are now assisting in a sort of renaissance of experiments that suggest how many intelligent actions can be performed without neuronal activity. Of course, one can interpret all these behaviors according to one's own preferences and belief systems. Humans can condition and blind themselves to go so far as to deny, even other humans, the right to be free or to live because they have 'no souls' or are considered an 'Untermensch' (a 'subhuman'). Therefore, it is unsurprising that we are not willing to grant any consciousness, sentience, and dignity to any other life form if we struggle to allow it even to ourselves. The materialist's typical objection is that, as scientists, we should maintain an emotionless and unemphatic objective attitude refraining from anthropomorphizing plants or cells. However, with this overly cautious attitude, one ends up replacing anthropomorphism with anthropocentrism. This almost complete and pervasive attitude of pretending that cognition,

Part II
The Higher-Mind Seeing
and a First Step towards a Spiritual
Science

I. Philosophical Idealism

The enigma of consciousness remains an unsolved issue. Nobody can claim to have a definite answer that can be applied as a final resolution to all the aspects and questions that this elusive ‘thing’ we call ‘consciousness’ posits. However, after having clarified what the mind-body problem is about in the light of the modern findings and its experimental and observational evidence, we can fairly say that the simplistic physicalist point of view is less and less tenable.

So far, the aim and function of what has been discussed were to soften our deeply ingrained but unaware and naïve form of realism. The neuroscientific insights and the first-person perspective on how our perceptions, mind, and consciousness work help us become aware that, contrary to our instinctive idea, what we see, perceive, and think of the world is not a one-to-one correspondence with reality.

We have learned that our senses can deceive us, that our minds build up fictions, that the very notions of mind and consciousness are not at all interchangeable, that consciousness has something intrinsically mysterious with no seat and origin and that mind, or at least some elementary cognitive functions we could label as ‘mental’, seem to be intrinsic in Nature without requiring a brain. This laid the groundwork that will now allow us to deconstruct naïve scientific realism, seeing the functions and powers of reason as well as its flaws, and let us take a step beyond in search of a new paradigm, a new working hypothesis, and point of view.

In the following, we will show how this alternative has its roots in an ancient and well-known philosophical current that humanity nurtures and revives throughout the centuries: ‘*philosophical idealism*’. It had only partial and, at times, alternate fortunes, but the very significant aspect is that it never died despite many attempts to falsify and dismiss it. When this happens, we must seriously consider whether this might not be a sign, an invitation to think further and look beyond the present premises, because the apparent philosophical immortality of idealism may be due to the fact that it captures some essential core truth which, despite all the repeated attempts to ignore it, we will sooner or later have to take more seriously and confront.

The takeaway message of the idealistic philosophy is that we should never forget how we are beings subjected to the illusion of the senses and the mind. While the Enlightenment, which intellectuals also like to call the Age of Reason, especially with its outgrowth in modern science, recognized that we must take care of the illusion of the senses, it failed to recognize the illusion of the mind and reason itself.

What we mean precisely by that is the topic of the following chapters. However, we will do so by taking a different and more pedagogical approach than what one finds in conventional expositions. We will defer the description

of the philosophical thoughts of the classic philosophers such as Plato or Plotinus and the alternative theories that opposed the materialistic realism of the Enlightenment, like in Berkeley or Schopenhauer, to a later discussion. At times, these are difficult to understand, and sometimes their thoughts are encapsulated into a cryptic language. Instead, we would like to take a somewhat easier route first, a sort of self-made conceptual tour, a more modern version, even at the cost of a less rigorous philosophical language and conceptual framework. This, in turn, can help and guide us in understanding the writings of idealism later and, hopefully, be a more comfortable and accessible entry to the deep questions it raises.

Before tackling philosophical idealism as a worldview with some of its historical and conceptual foundations, we would like to approach it by pondering our notion of ‘reality’ based on psychological and scientific facts we rarely ponder on. The author believes this to be the most suggestive introduction to idealism reformulated in modern language. We will then review idealism in its main concepts. This will only be a brief and admittedly superficial self-made introduction, still without referring to the great minds from antiquity to modernity whom we will mention later on in Pt.II-II. Finally, we will review and discuss the findings of the last century in the field of quantum physics in the context of idealism. Its strange paradoxes and counterintuitive reality may afterward appear less weird and unnatural than they seem to be when we give up a reductionist, deterministic, and local form of realism and replace it with the idealistic standpoint. Of course, this won’t solve the paradoxes of quantum physics and lead us to a new theory of everything, but it can help us to later bridge the enormous gap that separates mind from matter in a more natural form.

1. A First Step into Idealism

From the previous discussions in Pt. I, we may slowly become aware of where the root of the problem lies with consciousness and what the logical error is of conceiving consciousness as an emergent property of matter. There must be something wrong with the materialistic idea of consciousness in the sense that we are unconsciously trying to explain something (consciousness) with something else (matter), where the latter, as we conceive it, is already somehow itself indirectly the product *in us* of that which it wants to explain.

Yes, it sounds contrived, and it is. But precisely for this reason, we have such a hard time capturing the problem and seeing the fallacy of physicalism. The question that physicalists must answer is: How is the emergence of consciousness from matter possible if the notion of matter is already an ‘object of meaning’ in the first place? We know matter only as an experiential phenomenon but then posit it to be devoid of any subjective and experiential content. The unaware assumption on which science works, and the idea that

structured appearances in our consciousness and not the basic elements, the stuff that the world is made of and from which, commonly, consciousness is supposed to emerge. The properties of matter are not intrinsic elements inherent in the observed object but, rather, are subjective emergencies in the consciousness of the observer.

Notice also how our innate resistance to accepting reality as an illusion derives from the unaware and subliminal necessity of taking consciousness itself into our logical account of things. We might also be open to the idea that our entire experience of the world is an illusionary misrepresentation of it, but we have a hard time eliminating with it also the conscious experience itself and that we are willing to believe the duck, rabbit, giraffe, or person have. I might also be willing to admit that my perception of a person's body, voice, and smell is just an illusionary reconstruction in and of my mind, but it feels a bit too far-fetched to eliminate the person as a conscious and sentient being, denying even its emotional, mental, and spiritual reality. This is why many feel uneasy about abandoning their naïve physicalist realism. Because, if one declares matter an illusion, one might feel compelled to abandon also consciousness as being inexistent. Deep down, we subliminally know this to be untrue. Once we give up the physical monism, only then do things appear in their natural context.

2. The Unwarranted Distinction Between Primary and Secondary Qualities

If we take physics as the most fundamental science that is supposed to describe all of reality, we can reduce everything to three elementary 'objects': space, time, and matter (or force as matter can be reduced to the manifestation of a force field). These three ingredients are considered to be the three objective fundamental primitives in the sense that they are not further reducible to something else and from which all of our physical existence is supposed to emerge. Concepts like space, time, and matter were posited as givens, as objectively 'true' and self-explanatory entities.²⁴

This is why one distinguishes between so-called '*primary qualities*', such as the notion of form, extension, measure, etc., which are supposed to be inherent features of the objects of the world out

Primary qualities	Secondary qualities
<i>Solidity</i>	<i>Colors</i>
<i>Extension (size)</i>	<i>Sounds</i>
<i>Position in space</i>	<i>Tastes</i>
<i>Figure (form, shape)</i>	<i>Smells</i>
<i>Motion or rest</i>	<i>Heat-cold perception</i>
<i>Number</i>	

²⁴ It might be useful to point out that this changed recently among physicists because there are good reasons to believe that the failure to find a theory of quantum gravity is related to a too-naïve conception of space, time, and matter.

of us, and ‘*secondary qualities*’, namely, colors, tastes, smells, etc., which we tend to consider as unreal or not inherent features of physical objects.

The distinction between primary and secondary qualities can be traced back to Galileo Galilei and John Locke in an attempt to demarcate between perceptual illusions and the supposed objective real properties inherent in material objects. Galileo already expressed this view in 1683 in his work ‘*The Assayer*’ (Il Saggiatore), also called the ‘*Galilean gap*’, according to which matter or any ‘corporeal substance’ has figure, size, a location in space, motion, contact, and number, while color, taste, sound, and smell are not ‘conditions’ residing in the material objects and are only pure names existing solely in our ‘sensorial bodies’. If we remove ourselves from the latter—that is, our senses from these objects of cognition—these corporeal substances would nevertheless retain the former properties.

A few years later, in 1689, Locke argued as follows. [7]

Primary qualities of bodies.

“[...] Take a grain of wheat, divide it into two parts; each part still has solidity, extension, figure, and mobility: divide it again, and it still retains the same qualities; and so divide it on, till the parts become insensible; they still retain all those qualities. For division (which is all that a mill, or pestle, or any other body, does upon another, in reducing it to insensible parts) can never take away either solidity, extension, figure, or mobility from anybody, but only makes two or more distinct separate masses of matter, of that which was but one before; all which distinct masses, reckoned as so many distinct bodies, after division, make a certain number. These I call original or primary qualities of body, which I think we may observe to produce simple ideas in us, viz. solidity, extension, figure, motion or rest, and number.



Fig. 50 John Locke
(1632-1704)

Secondary qualities of bodies.

“Secondly, such qualities which in truth are nothing in the objects themselves but the power to produce various sensations in us by their primary qualities, i.e., by the bulk, figure, texture, and motion of their insensible parts, as colors, sounds, tastes, etc. These I call secondary qualities.”

On this distinction of primary and secondary qualities, the whole scientific human intellectual adventure has been based. Though you might not find the distinction in modern textbooks, it is amply clear that all modern science rests on this deeply ingrained assumption: Primary qualities should be considered the real and objective properties of the world, while the secondary qualities are merely subjective illusions, nothing more than experiences in our brain, with no inherent reality.

interpreted by their brains. In other words, here, Nature replaced electromagnetic waves with sound waves. There is no question that bats can fly through a complex 3D environment and that they possess a fine spatial orientation and localization that allows them to quickly find their way. The question is whether bats see properties of objects and have a subjective perception of space in terms of depth, length, and height, as we have. It is reasonable to assume that their 3D representation may not differ much from ours. But some interesting clues might come from the fact that bats identify not only the shape and size of objects but also their density (ultrasound waves are absorbed and reflected differently from objects having the same shape and size, but with different material densities). How does a bat ‘see’ the density of an object? Like we perceive colors? Unless you can literally ‘incarnate’ your mind in that of a bat, you will never know, but for sure, there is ‘something like to be in’ experiencing the density of objects, perhaps like we experience its color or taste.

A much more striking example from the animal kingdom that highlights the dichotomy between experienced qualities misinterpreted as objective properties of things and the features of the world comes from several studies pioneered by H. W. Lissmann in the 1950s-60s ([158], [159], see also more recent ones [160], [161]), of a Nile fish, the *Gymnarchus Niloticus*. The philosophical implications of these studies were first pointed out in 1991 by William Seager. [162] The *Gymnarchus* is an electric fish and is almost blind; it distinguishes only day from night. Its main sense is a pulsed 300 Hz electric field, running from tail to head, which it produces with an electric organ in its tail.



*Fig. 54 The *Gymnarchus Niloticus* and its electrolocation of objects by electric field lines.*

It perceives the intensity and variations of its own electric field distorted by objects in the surroundings with an electrolocation system based on epidermal electroreceptors. Any object having a different electric capacity and conductivity than that of water distorts the structure—that is, the gradient and contours of the electric potential distribution around the fish—which, therefore, perceives the surroundings by analyzing the ‘electric images’ of the field projected on its electroreceptive skin surface. It explores the environment in the dark and literally maps it onto its own electrosensitive skin surface all over its body as a replacement for an eye retina. When its electric organ discharges,

what is this belief grounded? The attempt to explain an experience of color, the perception of taste or smell, etc. beginning from size, bulk, and figure amounts substantially to the same epistemological operation of doing the contrary: Why not explain the perception of depth and three-dimensional objects from secondary qualities such as taste and smell?

This sounds ridiculous, and it is, but the physicalist approach that tries to explain consciousness in terms of primary qualities does precisely this. The hard problem of consciousness has one of its roots in such uncritical acceptance: the idea that we can explain secondary qualities from primary ones. It is an intellectual exercise that has the same prospects of success as that of trying to prove a mathematical theorem in terms of perfume, aromas, and milkshake tastes.

But, after all, the refusal to discuss again such issues is comprehensible: If we reject Locke's distinction of primary versus secondary qualities, on which the whole scientific endeavor has based itself, over 300 years of supposed scientific realism would collapse into a human inter-subjective construct and would force us to the painful conclusion that all that has been known so far is a toy model with no inherent reality that will forever remain incapable of telling us what the physical universe really is.

Perhaps the time has come to take this step and have the intellectual courage to revise some of our assumptions, to go beyond our naive forms of realism with which daily science unconsciously works.

A new science is needed—one that is capable of extending its vision beyond these misleading and unaware assumptions. Many of the strange paradoxes and problems that are apparently without explanation in the frame of the classical scientific reason can find a new and unexpected resolution if we place primary qualities at the same level as secondary ones. The day we will not give for granted such a dogma, we might take a step further towards a new science of consciousness and a more conscious science.

3. What is Reality?

“Imagine a painter who, having painted a self-portrait, points at it and declares himself to be the portrait. This, in essence, is what physicalism does”. Bernardo Kastrup [163]

In this chapter, we would like to make it more clear, through a little ‘experiential-philosophical’ experiment and other conceptual thought experiments, how the perception of what we call ‘the world’ does not provide us with information about what we think the ‘world out there’ is made of. There is an intrinsic relation between a subjective experience and what we think the ‘objective world’ is supposed to be, and that cannot be avoided, including in science. We would also like to show how the education and cultural environment we are accustomed to is heavily based on a very naive form of

identity with things. Our knowledge of the world begins with a sensorial experience which translates itself into representations, pictures, figures, figments, and reflections leading to a state of mind.

Kant was by no means the first one to point the distinction between the phenomenal and noumenal world. Plato used his '*cave allegory*' already a couple of millennia earlier coming to similar conclusions. We are like those who have lived their entire lives chained inside a cave, forced to stare at a blank wall without having access to the outer world other than by seeing, on the wall, the projected shadows of people passing in front of a fire at the cave's entrance. We misinterpret the shadows for real persons because we know nothing else. Unless we become aware that we know only projected shadows of reality, we will forever live in a world of delusion without even being aware of it. Even if we become aware that we are living in a virtual reality, we cannot avoid reifying inside of us those phenomenal appearances in our minds. There is, indeed, some sort of underlying reality. The universe is not just fiction in our mind, but that reality has nothing in common with the constructs and appearances it triggers inside our mind, no more than a shadow of a human body telling us something about the nature and complexity of a living body.

Indeed, a typical claim of the mystic is that the world we perceive and that we mistake for real is, instead, nothing other than a 'shadow of the Spirit.' We see only the mental shadows of the outer world projected into us and mistake the shadows for the real things. Shadows are something intrinsically inexistent that can nevertheless cause perceptual events. Matter as we perceive it is a shadow. We exchange for objective reality the image of a shadow for the object that projects it. As for us, a shadow has no intrinsic reality in itself (but would this still be true for an animal consciousness?); similarly, we assert the lack of inherent existence of the 'shadow' that we call 'the material world', which science instead exchanges for a self-evident fact and bases as a foundation of everything.

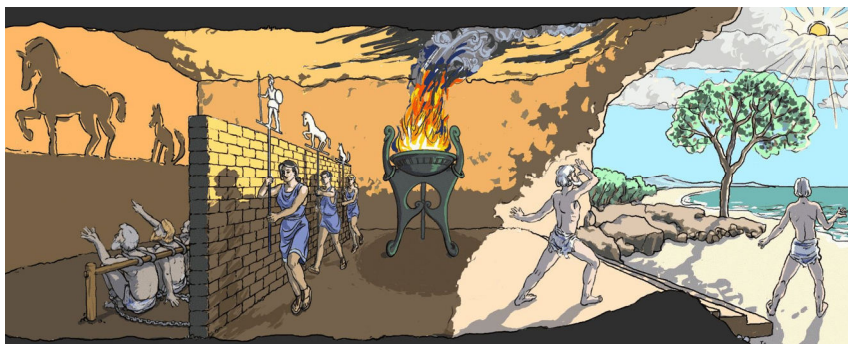


Fig. 58 The Plato's cave allegory.

essential reality. Ultimately, everything is the manifestation of essential non-dual Oneness; however, our sense-mind, which is by nature a dividing tool of cognition that distinguishes, separates, and has the tendency to reduce everything to sub-components, can only know the world by contrasting and comparing perceptions and sensations, making it appear to be a reality of irreconcilable polarities. This lures us into the false belief that we live a separate individual existence, identifying ourselves in a mental ‘ego’, caught in the play of dualities, the source of all suffering and worldly despair, where the knower and the known object seem separate. The illusion arising from our perceptual and mental representations of reality is summarized in the Vedic parable of the rope and the snake. The ‘unawakened’ live in fear because they mistake their mental world for real, similar to someone who mistakes a rope for a poisonous snake. The existence of the rope is not denied, but the image of it that we project onto our internal ‘mental screen’ is a fantasy that has nothing to do with reality.

Meanwhile, those who are ‘liberated’ (‘moksha’) recognize the falsehood of Maya through an inner realization (usually effectuated by a long psycho-physiological preparation through practices such as meditation and yoga), and ‘awaken’ to a state of consciousness in which one lives in the transcendent, blissful, time-less, featureless, non-dual, and undivided Brahman.

The difference between Western idealism and Eastern non-dualism is that the latter not only is a philosophical school of thought but also, in a sense, distinguishes itself by going exactly in the opposite direction. The Eastern experiential approach dethrones the mind and transcends the philosophical thought, rooting its knowledge in a mystical experience which, however, once framed into words, must inevitably take on a philosophical mask. However, the conclusion they arrive at, if not the same, has at least strong similarities. Something along the lines of an absolute monism can also be found in other Indian or Buddhist teachings (for a modern Buddhist view of physics and the mind, see [166]), as well as in some Christian mystical traditions—above all, in the 14th-century mystic and philosopher Meister Eckhart.

5. Quantum Physics: Facts About a Weird Reality

The interested reader who is looking for a more detailed and technical introduction to QP can resort to the author’s two volumes. [167] [168] Herewith, we will take a quick glance at those facts, experiments, and aspects of QP that will be relevant for further thoughts supportive of an idealistic conception of reality.

Now, why should we regard QP as a source of idealistic considerations? After all, this is a philosophical school of thought that existed long before the inception of QP. Since the times of ancient Greece, philosophers have questioned what reality is and the fundamental essence of things. Philosophical

positing space as a self-explanatory fundamental datum. However, Nature reminds us that it isn't. If two particles interact with each other, they will *not* form an object made of two parts, like gluing together two bricks. The two particles become intrinsically indistinguishable because they become the same quantum field and will form a unique and undifferentiated whole. This undifferentiated whole is expressed again by a wavefunction that spreads out into space and collapses back into the two particles only when measured with a macroscopic measuring device. Until then, they can be separated light-years away and still form an undifferentiated whole. At the instant of measurement of one particle, the other particle, eventually light-years away, will collapse to its identity with, for example, anti-correlated properties such as showing up with the opposite spins. If, on one side, someone measures the particle in the spin-up state, someone else, on the other side of the universe, will measure the spin-down state on the remaining particle. This seemingly 'spooky action at a distance', as Einstein called it, is, again, contrary to all our inborn perceptions and mental representations of what space, the extension of bodies, and the local character of reality are supposed to be.

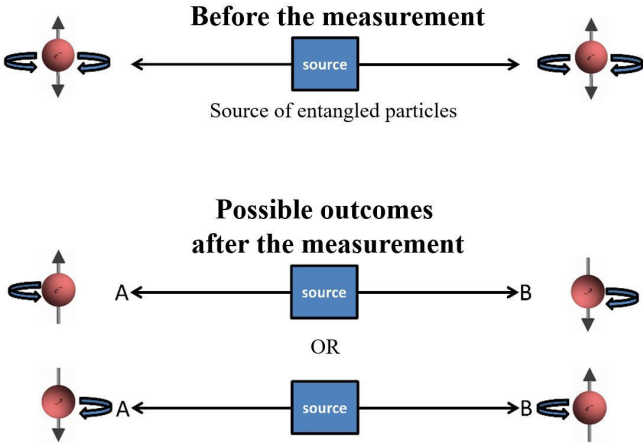


Fig. 63 The quantum entanglement of two particles.

QM tells us that reality is non-local. That is, a measurement performed on a particle in one place will immediately influence the state of its entangled particle, even if they are separated by a distance that cannot be bridged by the speed of light in the time interval during which the two measurements take place. This apparently also defies the theory of relativity of Einstein, but doesn't really. Quantum entanglement tells us that our notion of space and time is a misunderstanding. There is an inherent holistic aspect in reality—and that, obviously, is impalpable to the materialist reductionist mind.

Quantum entanglement appears somewhat less mysterious from the standpoint of the philosophical idealist. Our difficulty in accepting a state-of-

in principle, no logical reason to believe that the superposition of states is only a microscopic property; it should also be observed at our scales. The theory posits no boundary between the micro and macrocosm, contrary to our everyday experience.

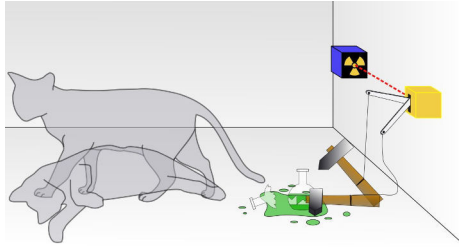


Fig. 64 Schrödinger's cat experiment.

The Schrödinger's cat paradox can be partially resolved by a phenomenon called '*quantum decoherence*' which, to put it bluntly, explains the loss of coherence—that is, the state of superposition or entanglement—due to the thermal interactions of the environment with the gazillions of molecules of the cat's body and that induces the collapse. Closer inspection showed, however, that this can't be the whole story because it leads to formal contradictions in the mathematical foundations of QM³⁴. Therefore, at the bottom, the measurement problem is still an open question.

Some resort to the idealist perspective and claim that, after all, it is consciousness that collapses the wavefunction. The collapse can occur anywhere in the chain between the interactions with the measured microscopic object and the macroscopic measurement device, as well as the physical phenomena taking place, which make a macroscopic device indicate a result (the so-called '*Von Neumann chain*'). Because, in physics, no reason or law prescribes where we have to place this boundary, one might conjecture that the consciousness (or the mind) of the observing experimenter looking at the device is the cause for the quantum collapse. This interpretation has sparked many controversies and passionate discussions, especially among non-materialists who think mental causation to be the source of the quantum collapse and as an argument for the existence of consciousness as an immaterial entity.

However, while it certainly did not escape the reader's attention that who is writing is very open to idealistic and non-material explanations of reality, this interpretation leads, even in me, to some eyebrow-raising. This, indeed, would imply that the cat is effectively dead and alive at the same time until we open the box and consciously perceive it as being in one or the other state. Poor

³⁴ For the technically inclined reader: the violation of unitarity and the linearity of Schrödinger's equation.

philosophical idealism appear to be the old-fashioned, almost mystical, nonsensical gibberish of a few nostalgic and backward philosophers.

It was in this spirit that the 20th-century British philosopher Bertrand Russell revolted against idealism, trying to deconstruct it. However, this didn't lead him where he expected. It seems almost ironical that Russell, who tried to dismiss and avoid any form of idealism, finally had to admit: *"We know nothing about the intrinsic quality of physical events except when these are mental events that we directly experience."* And: *"Physics is mathematical not because we know so much about the physical world but because we know so little: it is only its mathematical properties we can discover."* [171]

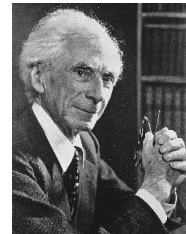


Fig. 69 Bertrand Russell.
(1872-1970)

Individually, he went through an intellectual and psychological process that science has gone through in the last century and is now slowly becoming aware of. First, you try hard to dismiss something. Then, at the end, you find yourself left with precisely that which you initially wanted to avoid.

Indeed, about a century later, we have harvested an incredible amount of knowledge and progress in the sciences and technology. However, deep down, the sensation that, along the way, we may have missed something that could answer our innate thirst for deeper knowledge and a more comprehensive theory of meaning about the world and existence is resurfacing. Despite all the attempts to negate it by resorting to a purely rational and still-too-Newtonian and Laplacian worldview in scientific thinking characterized by an "inborn and childish realism", as Schopenhauer used to call it, there remains a feeling of dissatisfaction. The desire is mounting for more.

This was already manifested in the thoughts of some of the founding fathers of QM. Max Planck once stated:

"I regard consciousness as fundamental. I regard matter as derivative from consciousness. We cannot get behind consciousness." [172]

"As a physicist who has devoted his whole life to down-to-earth science, to the study of matter, I think I can safely claim to be above any suspicion of irrational thinking. And so, after my research into the atom, I say this: There is no matter in itself. All matter is created and exists only by a force that makes the atomic particles vibrate and holds them together to form the tiniest solar system in the universe. However, as there is neither an intelligent force nor an eternal force in the whole universe, mankind has not succeeded in inventing the much longed-for perpetual motion machine—so we must assume a conscious, intelligent spirit behind this force. This spirit is the source of all matter." [173]

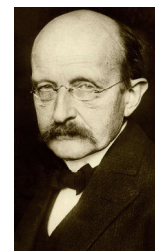


Fig. 70 Max Planck
(1858-1947)

Erwin Schrödinger made no mystery of his adherence to the non-dual Advaita Vedanta philosophy:

"[...] The plurality that we perceive is only an appearance; it is not real. Vedantic philosophy, in which this is a fundamental dogma, has sought to clarify it by a number of analogies, one of the most attractive being the many-faceted crystal which, while showing hundreds of little pictures of what is, in reality, a single existent object, does not really multiply that object. We intellectuals of today are not accustomed to admit a pictorial analogy as a philosophical insight; we insist on logical deduction." [174]



Fig. 71 Erwin Schrödinger (1887-1962)

Werner Heisenberg, who was acquainted with Kant's idealism wrote:

"Natural science does not simply describe and explain nature; it is part of the interplay between nature and ourselves; it describes nature as exposed to our nature of questioning." [175]



Fig. 72 Werner Heisenberg (1901-1976)

"I think that modern physics has definitely decided in favor of Plato. In fact, the smallest units of matter are not physical objects in the ordinary sense; they are forms, ideas which can be expressed unambiguously only in mathematical language." [176]

John von Neumann, the mathematician whose name will be forever associated with the mathematical foundations of QM, acknowledged:

"The sciences do not try to explain, they hardly even try to interpret, they mainly make models. By a model, a mathematical construct is meant which describes observed phenomena with the addition of certain verbal interpretations. The justification of such a mathematical construct is solely and precisely that it is expected to work—that is, correctly to describe phenomena from a reasonably wide area. Furthermore, it must satisfy certain esthetic criteria - that is, in relation to how much it describes, it must be rather simple."



Fig. 73 John von Neumann (1903-1957)

David Bohm, in his well known "Wholeness and the Implicate Order", states: *"In principle, this reality is one unbroken whole, including the entire universe with all its 'fields' and 'particles'" and "To begin with undivided wholeness means, however, that we must drop the mechanistic order."* [177] Bohm formulated a holistic

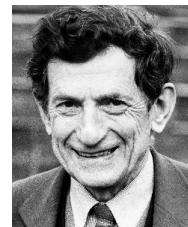


Fig. 74 David Bohm (1917-1992)

II. Higher-mind Philosophy Reloaded

1. Motivation

The previous chapters were meant as a preparation for this coming brief summary of the idealistic and spiritual insights of Western philosophers. It is a sort of recap using the original words, concepts, and theories of Western philosophy, from ancient Greece to modernity. This anticipation had a pedagogical motivation aimed at preparing the grounds for identifying ourselves better in some aspects that nowadays are part of a continental philosophy which, however, is perceived at times as being obscure and unintelligible if one resorts directly to the original writings without preliminary preparation and reflection.

Modern philosophy is rediscovering its historical roots. It is the failure of modern neuroscience, or the weird aspects of quantum physics and all the related emergent philosophical issues, that led some academics to reconsider these past doctrines. If idealism and its more or less marked mystic ramifications were considered relics of the past, or, at best, musings for a few nostalgic romantics of the early 20th century, the questions about the reality of matter, the unification of fundamental forces, or the nature of space-time in physics, but especially the questions about the nature of consciousness in light of the new neuroscientific discoveries, are leading several philosophers and even scientists to reconsider some old teachings that might not have been so off-track in their understanding of reality.

The purely materialistic and intellectual conception of reality that emerged from the Enlightenment was a necessary purge for humankind as a collective; it had to go through this evolutionary process to refine its mental and intellectual skills. Mind has still not completely conquered humankind, as eloquently indicated by the spread of pseudo-scientific woo, anti-scientific denialism, and the pervasive post-truth conceptions. Reason has still not settled itself completely in the human race, and an almost exclusive concentration on analytic skills was necessary to initiate a mental crystallization in the collective. The ‘trick of Nature’ to counteract the irrational and obscurant tendencies was—and more than ever remains to the present—to resort to extremes. The trick consists of luring us into an extreme exteriorization of our consciousness towards physicality, material values, science, and technology, fostered by an industrial revolution that is still ongoing and that is backed by a financial system based on consumerism. It is a process and cycle that has not come to its end because we are still, to a large degree, instinctive and emotional animals.

However, as is usually the case when things are taken to their extremes, while the collective consciousness is focused on the development of one of its

2. Rediscovering the Western Metaphysics

The ancient Greek philosophers were not only on the verge of discovering the scientific method, which Galileo and Newton introduced about 15 centuries later. They were already sensing themselves through a path that could have led them towards a more mature form of spirituality, higher-mind seeing, and unification with the scientific method. This is consistent with the logic of a natural evolutionary process trying to elevate a strictly rational analytic tradition to something which began to rise beyond. However, history—that is, Nature—took a longer and more painful path. The pragmatic and militaristic Roman empire conquered ancient Greece, and slowly but steadily, the Hellenistic tradition faded away. After its decline, not much was left behind, and Europe plunged into the Dark/Middle Ages, followed by the materialistic Enlightenment of which we are culturally still an expression. Today we look at the history of Western philosophy through a rational, analytical, and scientific-minded lens, also failing to appreciate its trans-rational component. It is predictable that sooner or later, a ‘higher-mind philosophy’ will have to establish a lost and forgotten balance as a natural process of the evolution of consciousness. By focusing exclusively on the rationalistic and naturalistic side, modern philosophy and science forced themselves into a cave of shadows and even prided themselves on doing so.

A heavy price was paid for this shortsightedness. A very one-sided naturalism forgetful of its own roots and past achievements has become prone to reinventing the wheel over and over again without being aware of it. It forgot Newton’s advice that, if we want to see far away, we can do so only by standing on the shoulders of the giants of the past. Therefore, before looking toward the future, let us engage in a quick (rather fragmented and patchy) recap from Heraclitus to our modern times.

a. Heraclitus of Ephesus

Heraclitus was a native of the city of Ephesus, nowadays a province of southwest Turkey. He was a self-taught thinker also known as “the obscure”. Heraclitus declared the unity between being and becoming—that is, the One is the multiplicity and its change itself. It is the One Divine that is and contains all the changing appearances of Nature. Famous is his statement “Panta rhei”, meaning “everything flows”—an understanding of life and reality reminiscent of the



Fig. 75 Heraclitus of Ephesus
(535-475 BC)

Buddhist doctrine of impermanence. Nature is seen as a never-ending cycling process at the origin of which stands the ‘Logos’, the ultimate mind, the rational force permeating the universe, that is the originating and organizing

e. Plotinus

Another interesting figure was Plotinus, a Hellenistic philosopher and one of the major figures of neoplatonism. Plotinus was neither an intuitive-minded man like Plato nor a rational empiricist like Aristotle. Rather, he was a mystic who translated his experiences in philosophical language.

According to Plotinus, focusing our senses and mind too much on external physical things leads to the false notion (the false *arché*). Detaching from our superficial sensory perceptions, we can get into contact with supra-sensible realms and realize the three '*Hypostasis*'—that is, the three fundamental substances which underly the whole of Reality: the One (the Good, God, that which is beyond being itself), the rational intellect (the '*nous*', the mind, the intellect, the being and the realm of Platonic forms), and the irrational soul (endowed with desire, entangled in matter, having sensations, etc.). The human's mission is to climb this ladder of existence in order to know the One in an ascesis he coined as "returning home". In fact, for Plotinus, the lower levels are only images of the levels above. Matter is considered the ultimate separation from the One, while every material form, as any Platonic form, is still an abstraction of the very same One. Everything flows down from the One, meaning that matter, sensations, and concepts that our perceptible world is made of, are successive 'emanations' or fragmentations of it. But the One is uncaused or self-caused, containing only itself. At the level of the One, there is no separation; everything is in the One and is the One itself. Plotinus also states that, in order to obtain this insight, it is not sufficient to train the intellect or exercise virtues which master the irrational soul, but that alone does not lead us to the realization of the One. It is by an interior life, detached from material desires and emotions and through the contemplation of the One, that we can soar to the identification with it.

Again, it is difficult to avoid noticing the similarity, if not the full identity, with the Eastern non-dual teachings, the Buddhist tradition, and the Hindu yoga practices. Some scholars contend that Hellenic philosophers might have had some contact with the Indian peninsula. Indeed, it should be noted that Alexander the Great, whose imperial expansion reached northwestern India, was a scholar of Aristotle. It might well be that he established a scholarly transmission between Eastern and Western traditions, though no historical document or event confirms this. At any rate, even though such a cross-fertilization might have taken place, these striking similarities between the two mystic traditions have to be found much more in human nature than in the exterior historical context. Sooner or later, the human being finds its way inward. And, in essence, what it finds there is always the same undifferentiated and eternal oneness, the monistic idea that all of reality can be derived from a single principle, the One.

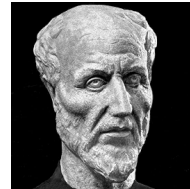
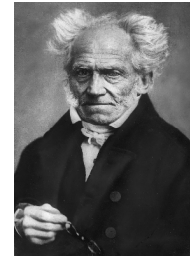


Fig. 79 Plotinus
(205-270 AD)

which was already contained in it a priori. Everything is ultimately a process of a Soul-Spirit and its World-Will. Schelling is the Western philosopher that, to the best of my knowledge, came closest to the integral cosmology we are going to describe in Pt.III.

o. Arthur Schopenhauer

On not-too-dissimilar tracks followed Arthur Schopenhauer. Everything comes through the filter of the mind, and what we know is in the filter, its representation, and which is not what is ‘out there’. The subject imposes categories such as space, time, cause, and effect onto the world-framing with the mind a representation of it. All is purely mental, and that’s all there is to it. In his “*On the fourfold root of sufficient reason*”, Schopenhauer



describes how the mind makes sense of the world. We construct the world as representation imposing on it a causal necessity—that is, everything must have a cause and effect—by logical laws, by mathematical knowledge, and by the motives that drive us.

Fig. 89 Arthur Schopenhauer (1788-1860)

He built upon Kant's and Schelling's idealism, stating further that the thing-in-itself is a form of ‘Will’ independent of knowledge. This Will, which is one and the same as the thing-in-itself, is the fundamental stuff of which the world is made. His main metaphysical contribution to the Western tradition is his intuition of an ‘*immanent metaphysics*’ which he presented in “*The World as Will and Representation*” in 1818. His advice was that to take the first-person perspective: “*We must learn to understand Nature from ourselves, not ourselves from Nature.*” In this vision, everything gets subsumed under the forces known to physics (electromagnetism, gravity, the mechanical forces acting between bodies and particles, etc.) as an expression of a primal Will. The fundamental and ontological basis of the world is Will. We are subjects through which Will expresses itself while all the objects of the world which cause the representations in our minds are ‘objectification of the Will’. Every object is the manifestation of that one fundamental and basal stuff that is Will. The whole world stands to this Will as the wave stands to the ocean.

Animals are driven by Will, as we are. Also, a plant or a tree has Will to flourish and grow. Ultimately, the entire Universe has Will. More precisely, the entire Universe *is* Will. But in the animal, the plant, or in the blind physical forces, will is pure instinct not guided by knowledge. This Will is not self-conscious. It is just an impulse, an experience that doesn’t have an intellect that can think about its own experiences.

This unifies apparently insentient physical forces with our subjective experiences because everything, at the bottom, is Will—that is, experience, sentience, instinct, urge, motivation—and there is no physical stuff to begin with. In Schopenhauer’s words: “*The most universal forces of Nature exhibit*

Merleau-Ponty's and Fichte's intuition of a 'body consciousness' might not be just a metaphor but, as we shall see, veils a much deeper truth,

x. Jean Gebser

Again, a very different sort of continental philosopher, but quite relevant to our synthesis of knowledge, was the Swiss philosopher Jean Gebser. His approach took a more intuitive, almost mystic, perspective on the history of humankind. Gebser had a deeper insight than Lamprecht and, as Schelling or P. T. de Chardin, held a teleological conception of history, namely, that of an external manifestation of the evolution of consciousness. Humans underwent different stages of development that he called '*mutations*'—that is, creative evolutionary leaps of non-linear progression—corresponding to different forms of consciousness manifested in the different epochs. History is a creative movement of consciousness struggling to come to the surface by manifesting this attempt through arts and language.



Fig. 98 Jean Gebser
(1905-1973)

Gebser identified the changes in history with the change of the collective '*structure of consciousness*'.

The zero-dimensional 'archaic structure' was humanity's first and primeval structure of consciousness in which we identified ourselves with the whole of the natural world. This prehistoric stage lived in an imaginal world where we still didn't have a realistic space and time conception—our consciousness was concentrated entirely on the natural environment. It was a tribal life without an idea of a society built by cities, let alone nation-states. There was a 'deficiency' in this state of consciousness that, for Gebser, was exemplified by the primeval painters always depicting the world only as two-dimensional. However, there was an immaterial psychic component in this natural assimilation between Man and Nature, which was felt as spiritual energy.

The one-dimensional '*magic structure*' was the second shift in consciousness where everything is perceived as 'magical', space- and timeless, and where we became aware of Nature as a separate entity. We 'stepped out of the cave', so to speak, and the '*pre-perspectival*' phase began, which is space- and timeless, dominated by an emotional and instinctual consciousness and entirely dependent on the demands of the natural environment.

The two-dimensional '*mythical structure*' came with the beginning of reflection and the awareness of an inner life. Life itself was conceived as a story told in mythologies. Speech and the discovery and experience of the soul become interwoven. It is an '*unperspectival*' phase in the sense that it has latent but still undeveloped tendencies to perspective.

The three-dimensional '*mental structure*' followed when the reasoning logic mind took the lead. Contraries are synthesized by reflective thought and discrimination. The rationalistic age of Western science is born. It is

3. The Unexpected Comeback of the Conscious Universe

“The stream of knowledge is heading towards a non-mechanical reality; the Universe begins to look more like a great thought than like a great machine. Mind no longer appears as an accidental intruder into the realm of matter; we are beginning to suspect that we ought rather to hail it as the creator and governor of the realm of matter—not, of course, our individual minds, but the mind in which the atoms out of which our individual minds have grown exist as thought.” – Sir James Jeans [179]

A clear symptom that shows how Western metaphysics is rediscovering its own roots is the revival of old metaphysical worldviews like philosophical idealism, pantheism, panentheism, panpsychism, and further developments or modifications of them. This is, among other things, determined first and foremost by the failure of neuroscience and the philosophy of mind to furnish a credible account of the nature of consciousness.

From the 1980s to the turn of the Millennium, the rapid advances of neurosciences made almost all scientists confident that the mind-body problem and the hard problem of consciousness would have soon found a resolution inside a physicalist paradigm. According to this belief, it is only a matter of time, and the progress of the diagnostic and imaging tools, coupled with brain mappings and the exponential capacities of computer simulations, would have led us to the insight into the nature of phenomenal consciousness. The vast majority believed that this was going to happen inside a philosophy adherent to material monism, which would finally have dispelled any dualistic temptation.

As we have elucidated at lengths in Pt. I, the opposite turned out to be true. The lack of any tangible progress and the failure of the modern neuronal approach to the problem of consciousness is now slowly but steadily becoming ever more visible. There is now mounting evidence pointing against a strict naturalistic interpretation of mind and consciousness. Though this new information is still largely ignored because of ideological reasons, this lack of progress is convincing some scientists and philosophers of mind that the purely naturalistic viewpoint can't be exhaustive and needs to be revised. To a lesser degree but, perhaps, as a non-negligible factor, some were also influenced by skepticism towards neo-Darwinism as the ultimate paradigm for a materialistic non-teleological account of evolution.

At any rate, a growing dissatisfaction towards physicalism as the ultimate word in the studies of consciousness and evolution is growing among intellectuals as well as in the academic ranks. While it is still the dominant view, the idea that a strict mechanistic and intellectual understanding of the world and Nature is the only pathway to truth is becoming increasingly unconvincing. What was once an almost insignificant intellectual minority has

now grown into a visible splinter group, though still not a majority, let alone a homogeneous representation. Nevertheless, it is to be expected that as time passes, the alternatives to physicalism will become more vocal and will receive more attention and recognition, reaching a critical mass that, at some point, will make ignoring it an impossibility.

a. Panpsychism Strikes Back, but Stumbles

This led to a revival of interest in panpsychism. We have already seen how philosophers like Leibniz, Spinoza, and Whitehead expressed a panpsychist view in one form or another—that everything is fundamentally a form of consciousness or mind. In this view, raw inert matter—a stone, a molecule, an atom, or an elementary particle—has some primitive form of primordial conscious experience. For example, a particular version of panpsychism, called *'micropsychism'*, conjectures that even an elementary particle, such as an electron, has—or rather is—an elementary form of consciousness which presumably, whenever it interacts with other particles, has an inner experience or some form of primitive awareness. Its aggregation with other particles, like nuclei made of protons and neutrons, into atoms and molecules first, then by a combination of cells into living organisms, formed, by successive and cumulative stages of evolution, increasingly complex and conscious lifeforms. Panpsychism conceives, therefore, of the emergence of consciousness as a cumulative aggregation of elementary conscious mental units, sort of 'psychic atoms', leading to an increasingly self-aware entity by a bottom-up process.

This, however, does not mean that the panpsychist believes that an object composed of different parts, like an engine, a car, or an airplane, has a mind of its own or is an entity having a subjective experience. Throwing together a number of stones won't lead to something with a more complex and evolved form of mental and experiential content. Also, connecting and interrelating different objects with specific functional tasks like memory chips and a CPU with other electronic devices does not make a computer more conscious than any of its parts. However, the fact is that we know to be conscious mental beings made of organs, which are made of cells, organelles, macromolecules, molecules, atoms, and, finally, elementary particles which have been assembled in a specific type of hierarchical complexity by means of an evolutionary process of aggregation. Thus, the panpsychist contends that there is some complexity law that, by complicated mutual dynamical interactions and interrelations among the single units, allows for a growth of consciousness that is somehow proportional to the number of units and the complexity of the organism they constitute. This latter viewpoint is called *'constitutive panpsychism'*.

Though panpsychism is still a reductionist understanding of consciousness, it is nonetheless the first step away from the purely materialistic perspective insofar that it reverts the paradigm: Not matter, but mind or consciousness

must be posited as fundamental. The hard problem of consciousness is so avoided from the outset.

Over the last decades, this view has been revitalized as a possible alternative to orthodox physicalism. Most notably, panpsychism has been reconsidered in its different forms by modern leading philosophers in the field, like Thomas Nagel, Galen Strawson, David Chalmers, and Philip Goff.⁵¹

However, panpsychism, does not come without drawbacks. The most notorious issue is illustrated by the so-called '*combination problem*': How does a combination of a myriad of fundamental experiential entities yield the familiar human conscious experience? Why is this happening at all?

There is no apparent reason to believe that combining low-level forms or elementary microscopic experiences (think, for example, of Leibniz's monads) should result in a unified high-level form of experience and cognition. Even if we contend that only some specific types of combinations lead to high-level forms of consciousness (combining microchips does not make a PC conscious, but, somehow, combining billions of neurons does), this still does not explain why a particular functional combination, however complicated, special, and unique, results in a mind and a conscious subject that is, in all respects, very different from the sum of the elementary experiences from which it is supposed to arise. Or, to put it in terms of the so-called '*subject combination problem*': How do several micro-subjects combine to yield a single macro-subject?

A famous formulation of the combination problem was given by William James who made the following observations:

"Take a hundred of them ['elemental feelings'], shuffle them and pack them as close together as you can (whatever that may mean); still each remains the same feeling it always was, shut in its own skin, windowless, ignorant of what the other feelings are and mean. There would be a hundred-and-first feeling there if, when a group or series of such feelings were set up, a consciousness belonging to the group as such should emerge. And this 101st feeling would be a totally new fact; the 100 original feelings might, by a curious physical law, be a signal for its creation, when they came together; but they would have no substantial identity with it, nor it with them, and one could never deduce the one from the others, or (in any intelligible sense) say that they evolved it. Take a sentence of a dozen words, and take twelve men and tell to each one word. Then stand the men in a row or jam them in a bunch and let each think of his word as intently as he will; nowhere will there be a consciousness of the whole sentence. We talk of the 'spirit of the age' and the 'sentiment of the people,' and in various ways, we hypostatize 'public opinion.' But we know this to be symbolic speech and never dream that the spirit, opinion, sentiment, etc., constitute a consciousness other than, and additional to, that of the several

⁵¹ For a modern review, see [271].

III. Towards a New Way of Seeing

During our journey through the mystery of consciousness and our inquiry into the nature of reality, we encountered a common theme: the inadequacy of present science in tackling these questions. We found that science, especially that science that clings to a naturalist reductionist paradigm based on a naïve local realism, when it comes to questions of consciousness, existence, and meaning, fails to deliver a credible answer and is unavoidably affected by humans' limited cognition. A purely sense-mind approach is revealing its limits.

The natural question, then, is whether a new science or, at least, a somewhat different scientific approach can lead us a step further?

We have no definite answers, and you won't find anything about an ultimate new science supposedly replacing the conventional scientific method. However, we would like to try looking further, taking a step in a novel direction, which might help us go beyond the present paradigm. We contend that many problems and questions with which the present scientific conceptions struggle—be they from philosophical quests such as the origin and nature of consciousness to more pragmatic issues such as globalism, the clash of civilizations, or the environmental impact caused by economic and technological progress—can be tackled only if we begin to raise our state of consciousness and, first of all, question the background assumptions we are working with—that is, generally, how we think. Only by becoming aware of and learning to better know ourselves can we understand the enigma of consciousness and reality as a whole and develop a wider form of scientific inquiry that transcends a narrow-minded empiricism. A sense-mind-based perception supported by rationalism, reason, and analytic thinking are necessary but not sufficient. Our perception of the world and ourselves must include something else.

1. Perceptions, Assumptions and Fallacies in Science

A very common belief is that the exact sciences do not make assumptions and hypotheses and that cultural or psychological tendencies don't influence them; they simply ascertain facts. We still tend to give credence to the idea that the way science 'sees' the world comes only from strict inductive procedures of evaluation and observation of brute facts and data without any outer conditioning and influence. This apparently ideal epistemology is taken as the cornerstone of Galilean-Newtonian empiric science and is thought of as the fundamental guarantee in the search for objective truth.

However, after some practice and experience, every scientist who is honest with himself realizes that things are not as simple as that. The latest example of how this misconception conditions our thinking came from the recent covid-

2. Rediscovering Goethe's Phenomenology

*"Man discovers the law tablet of the universe by a
'flash of memory' falling into the dark."
Wolfgang von Goethe*

a. Seeing Differently

The question at this point is: How can humankind go further than where we are? If the ordinary materialist analytic and reductionist science can lead us only up to a certain point but not further than that, then what can? As a first step, two things must be kept in mind if we want to proceed from where we are.

First, we must recognize the limits of an exclusively physicalist and reductionist science and become aware that the reality we perceive with our senses and the reality that science describes are illusions. The material appearance of the physicality of life should not be ignored or neglected. Nurturing the material aspects of our lives and trying to explain it in terms of mechanical and physical processes isn't wrong. However, it becomes incorrect once it is embraced as the unique and only possible worldview. Otherwise, we fall into a one-sidedness that sees only an outward appearance, takes it as the whole of reality, and misinterprets a superficial momentary wave for the ocean as a whole. Even if we aren't, at this stage, able to directly see the whole and can only intuitively receive intimations of it or feel its vastness, the fact that we become intellectually aware of the limitations of the materialistic science, as it is actually conceived, leads us in the right direction. Being aware of not being aware is the first step towards a fuller awareness.

Secondly, and equally important, is to realize the evolutionary context in which science manifested in human history. Science is a cognitive activity of a specific species, the *Homo sapiens*, and because there is no reason to believe that humans are the last and ultimate lifeform appearing in the earthly evolutionary process, there is, therefore, also no reason to believe that science, as it is actually practiced, is the ultimate tool to unveil the truth of things. The human being, with its cognitive faculties, is a transitional being. Reason, rationality, and all the powerful cognitive skills that distinguish humans from animals are also only transitional, limited, and incomplete faculties for investigating the world and reality. Materialism isn't wrong as such but is only one possible way of seeing—a way that developed from an evolutionary process. It would be quite an anthropocentric attitude (and a negation of evolution itself) to believe that science is the only and final tool of knowledge leading us to the ultimate truth of things. Science is a 'species-specific' form of cognition.

Nowadays, many speak of the necessity of inventing a new science that should unite conventional science with spirituality and look for a change in

phenomenological approach of the German poet, writer, and natural philosopher of the 18th century, Johann Wolfgang von Goethe, who is well known for his literature but somewhat less for his attempts to found a new science that was supposed to, in his view, supplant the Newtonian conception of the world. Though he considered himself a staunch adversary of the already predominant Galilean, Newtonian, and Cartesian science, in hindsight, one can interpret Goethe's science not as something in opposition but, rather, as a complementary cognitive activity to the ordinary reductionist worldview.



Fig. 105 Johann Wolfgang von Goethe (1749-1832)

In fact, readers unfamiliar with Goethe's phenomenology will probably wonder why someone should reconsider and eventually try to resurrect an over two-centuries-old approach to natural phenomena that most modern scientists consider as no more than a historical curiosity, if not a fancy imagination of a talented writer and poet who, however, is regarded as a failed scientist. Goethe's science may appear as an appendix to the history of natural philosophy or as something we should set aside in scientific considerations, as one does with alchemy, astrology, and mysticism, or that is belittled, comparing it to a geocentric or flat Earth doctrine. But a less superficial and more informed knowledge reveals how these sorts of comparisons completely miss the point. For example, nowadays, we can prove, with observations, experiments, and crisp, clear reasoning, that the Earth isn't flat and isn't even the center of the universe. Geocentrism and flat-Earth theories are simply wrong. Meanwhile, Goethe's science is not a theory about the world; rather, it is a different way of seeing it, and his description of the plant kingdom or his color theory of light has never been proven to be wrong. It remains, until today, contradiction-free.

It is just another way to observe the same phenomenon of Nature, which could go hand in hand with Newtonian science. The present way of doing science is based on dissecting, atomizing, and reducing Nature to elementary components through which, with a bottom-up approach, it explains reality as a whole. Goethe's phenomenological approach, instead, first 'senses' the whole and regards the elementary components becoming visible by a top-down approach, not as summing up into the observed reality but, rather, still as the manifestation of that very same whole at a different level. While Newton's science looks for the fundamental laws of Nature that govern the manifestation from a microscopic to the macroscopic level of existence, Goethe looked for the 'primal phenomenon' (the 'Urphänomen') from which all other phenomena can be derived. Newtonian science looks at the quantitative aspect of the world with the sense-mind, which by mental, intellectual, rational, and analytic cognitive acts, reduces everything to elements and laws that can be

apprehend and become aware of something that the reasoning and differentiating mind alone cannot. It is a higher form of cognition that does not abolish reasoning but, on the contrary, empowers it further. Goethe openly spoke of this form of knowing as something that “belongs to a highly evolved age”.

c. Light and Darkness as Primal Phenomena

Goethe also applied his way of seeing Nature to light and the color phenomenon, giving birth to what is known as ‘Goethe’s color theory.’ He considered his theory and his overall approach to optics in stark contrast to Newton’s theory of light.

As most of us have learned in school, Newton was the first to show that, by means of an optical glass prism, one can obtain from a white light source the typical rainbow color spectrum, ranging from dark blue, light blue, green, yellow, red, and dark red.⁵⁷ Famous is his dark room experiment, also remembered as Newton’s ‘*experimentum crucis*’ (crucial experiment), in which he let sunlight shine through a pinhole in a wall, through an optical prism positioned behind the little aperture, displaying a vividly colored light spectrum—that is, the images of the pinhole itself displaced according to their colors. Therefore, Newton concluded from this experiment that white light must be composed of several different colors. White must be considered a color mixture—that is, a derivative phenomenon emerging due to the combination of the more fundamental phenomena that colors are—but it is not a color in itself. According to this point of view, the prism separates, distinguishes, and differentiates the colors, which, however, should already be considered contained in the white light. The color dependency of the refracting index of the prism causes the colors to be dispersed differently, thereby making them visible to the eye. This idea that white is composed of all the colors of the visible spectrum has been, until today, the commonly accepted wisdom. We get to know that white light can be reduced to the sum of the spectrum colors because the whole (white light) is conceived as the sum of its parts (the colors). How could these empiric facts be interpreted otherwise?



Fig. 110 Isaac Newton shining the sunlight through a prism.

⁵⁷ He did this not really with white light because it is quite complicated to produce a perfectly white source but, rather, with sunlight. These technical details, however, aren’t essential here.

scattering') and the atomic absorption and emission lines of the substances contained in the atmosphere.

d. Phenomenology: A Relic or a Legacy for the Future?

"If a science seems to falter and, despite the efforts of many active people, does not seem to move from the spot; then it can be noted that the fault often lies in a certain type of imagination as to how objects are conventionally seen, in the once adopted terminology, to which the great crowd unconditionally submits and follows and to that which even thinking people escape only in individual cases."

J.W.v.Goethe [188]

However, Goethe's color theory isn't that simple. These were only a few examples, a brief sketch of a more elaborate phenomenology.

Summarizing Goethe's approach, we could say that it is about a vision in which we recover an intimate relation with Nature, between its phenomena and our sensory perceptions, and between things, plants, animals, and humans. But it would be a mistake to misinterpret the intuitive Goethean approach as non-empiric and non-rational. He was not alien to forms of precise and meticulous observation, description, ordering, and categorization. It would also be a misconception to see Goethe as averse to other forms of investigation. He accepted the other sciences like anatomy, physiology, chemistry, orthodox zoology and morphology, natural history, etc. What did come under his severe criticism was the fact that empiricism stopped there, at a purely quantitative, anatomical, and descriptive level, without an attempt to find the 'Ariadne thread' through the maze of natural shapes and figures ('Gestalten'). By doing so, we dissect life into particularities and miss the wholeness of the living beings.

He also cautioned about jumping to conclusions by performing a single experiment. One experiment, however crucial, can't be enough. Phenomena must be understood and explained only after a long series of experiments and observations that have to be seen in their entirety as an expression of a state of things that cannot be revealed by a single and limited fact. Every experiment must be connected and united with others. Only by seeing all the similarities and gentle divergences taken together can we frame a hypothesis describing the true nature of the so-observed phenomena. Nothing in the living Nature happens without the existence of a connection with the Whole, and we would incur an extremely limited if not entirely false conception by focusing on a single isolated fact without realizing the connection of all the phenomena. In his words: *"One cannot be too careful, therefore, not to conclude too quickly from experiments. For in the transition from experience to judgment, from knowledge to application, is the passing border where the inner enemies lie in wait for man: Self-suggestion, impatience, rashness, complacency, stiffness,*

Part III

A Synthesis of Knowledge

*“All now seems Nature’s massed machinery;
An endless servitude to material rule
And long determination’s rigid chain,
Her firm and changeless habits aping Law,
Her empire of unconscious deft device
Annul the claim of man’s free human will.
He too is a machine amid machines;
A piston brain pumps out the shapes of thought,
A beating heart cuts out emotion’s modes;
An insentient energy fabricates a soul.
Or the figure of the world reveals the signs
Of a tied Chance repeating her old steps
In circles around Matter’s binding-posts.
A random series of inept events
To which reason lends illusive sense, is here,
Or the empiric Life’s instinctive search,
Or a vast ignorant mind’s colossal work.*

*But wisdom comes, and vision grows within:
Then Nature’s instrument crowns himself her king;
He feels his witnessing self and conscious power;
His soul steps back and sees the Light supreme.
A Godhead stands behind the brute machine.
This truth broke in in a triumph of fire;
A victory was won for God in man,
The deity revealed its hidden face.
The great World-Mother now in her arose:
A living choice reversed fate’s cold dead turn,
Affirmed the spirit’s tread on Circumstance,
Pressed back the senseless dire revolving Wheel
And stopped the mute march of Necessity.
A flaming warrior from the eternal peaks
Empowered to force the door denied and closed
Smote from Death’s visage its dumb absolute
And burst the bounds of consciousness and Time.”*

Sri Aurobindo – Savitri, Book I, Canto II

I. Towards a New Consciousness

A short preamble to this third part might be necessary.

Readers acquainted with other ‘integral’, ‘holistic’, or ‘universal’ theoretical frameworks may recognize some similarities between the integral cosmology we are going to present here and the *‘integral theory’* of American philosopher Ken Wilber. There are, indeed, similarities and overlaps, due mainly to the common source of the integral yoga of Sri Aurobindo. But the approach, viewpoint, and purpose of the present work are quite different. Wilber’s integral theory is more concerned with developing a comprehensive representation and conceptual organization of all human knowledge in a *‘four-quadrant grid’* with its ‘levels’ and ‘lines’ of development, its different forms of intelligence and states of consciousness organized in a structural framework of developmental psychology (the *‘pre-personal’*, *‘personal’*, *‘trans-personal’*). Here, instead, we will not attempt to establish yet another model, conceptual organization, or ‘structure’ other than adopting Aurobindo’s cosmology as it is and interpret modern scientific knowledge, the past and present spiritual philosophy, and the philosophy of mind from its perspective.

Our task is to develop a synthesis of knowledge that already works with a given ‘grid’, namely, the integral metaphysics of Aurobindo, which allows us to ‘see’ the universal phenomena, evolution, consciousness, physics, cosmology, life and matter, the human’s social development, etc. from that metaphysical perspective. In our opinion, it is ‘integral’ and ‘trans-rational’ enough and doesn’t need further modeling, mental reorganization, or intellectual extension. We will emphasize much more the ‘way of seeing’ things, bringing into our awareness the forces standing behind the phenomena, rather than trying to build another conceptual organization that is supposed to contain and systematize them all. Though a theoretical framework with its conceptual background will also be necessary in the present context, our aim isn’t to build another ‘integral theory’ rather an ‘integral seeing’. It is in this spirit that the following must be read—not an elaborated intellectual systematization of knowledge leading to a grand scheme, but a synthesis of knowledge that resorts to a higher-mind way of seeing that reveals itself spontaneously as a grand vision.

1. The Question of Meaning and Purpose

Many are growing towards an inner awakening and beginning to perceive the world with awareness from a spiritual perspective that is slowly changing their lives. In most of these people, this inner awakening is a source not only of new discoveries but also of dissatisfaction, disillusionment, and even suffering. To live an externalized life, which our modern society has developed to its extremes, perceiving it from an inner standpoint, can cause tension

3. Is Man a Transitional Being?

The world in which we live is undergoing a tremendous transformation. Nothing is as it was before. On one side, incredible discoveries have been made, new rights conquered, new hopes appeared on the horizon. At least from the material point of view, this species— homo sapiens—did make some progress since the time of the stone age. On the other side, reforms, revolutions, new political and economic orders, new philosophies, technological and scientific progress itself, and whatever attempts to make things work better did not really improve humans' psychological condition, still plagued by anxiety, problems, complications, disappointments, and suffering. War, potential self-annihilation with weapons of mass destruction, economic systems that have created new forms of exploitation and slavery, hunger, violence, overpopulation, environmental destruction, crime, folly, social divisions with the rich getting richer and the poor getting poorer, and (self-inflicted?) pandemics remain a daily reality or dangerous possibility on this little blue planet. This world continuously goes through a long series of crises and contradictions, and the destiny of humankind remains uncertain. It is felt that the Age of Reason and the cherished values of the Enlightenment triumphed and yet failed us. Life seems to have lost its original balance and harmony.

If we look at the Universe, with all its billions of galaxies, each one containing billions of stars, one of which (our Sun) certainly has a planet with life on it, we see a reality in which everything has an order and a law. Looking further to animals' lives, we can see how, despite the Earth's natural catastrophes and a natural selection that, to our eyes, may appear to be a harsh and cruel method of Nature, it is nevertheless founded upon an existence ruled by natural laws that, at least before human's interference, were based upon a balance and harmony that we apparently have lost and forgotten. Now, instead, this world is in turmoil. Externally, everything has changed but, somehow, we feel that something continues to remain unchanged.

So, we wonder: Why? Why does this little homunculus that we are put the evolutionary process on Earth so upside down? No other species has been so self-harming and, in a certain sense, so stupid. Are we a mistake of Nature? A coincidental error in a meaningless and random creation? The 'wrong' random genetic mutation? After all, what are we doing in such a world? Who are we? From where do we come? For what reason are we here? To do what? And, above all, where are we going?

Science, philosophy, and religion did not furnish us with a satisfying answer. Science tells us how things work but remains silent on what and why things are. Philosophy has turned out to be a nice intellectual exercise, at best a luminous higher-mind stream of thoughts that can inspire and indicate a direction and furnish an intuitive intimation but that did not deliver a real

especially those of Eastern descent (such as the non-dual Vedantic or Buddhist tradition), one realizes that at the origin of all things is a supreme Self that manifests itself in its cosmic aspect—that is, in the form of a multitude of dynamic and infinite extensions. One of these cosmic extensions is manifest in the form of space and time, matter, forces, and energy, or the physical universe of science. But there is the individual aspect of the Divine, the ‘*central being*’ and the individual soul of every living being, the subject with its individualized consciousness, and that is the multiple downward ‘projection’ or ‘emanation’ from the Satchitananda into the scale of consciousness.⁶⁹

All these three aspects—the transcendent, the cosmic, and the individual—are the one and the same Self, manifesting itself in different forms on different planes of existence.

c. Planes and Parts of the Lower Hemisphere

The traditional Indian Samkhya yoga philosophy conceives of the being made of ‘vehicles’, ‘bodies’, or ‘sheets of consciousness’, called ‘*koshas*’ covering our soul like the rings of an onion. Matter is not the only substance that exists. The coarse-grained metaphysical dualistic model that reduces life to just a soul and a body is expanded. Once the consciousness of the mystic ascends beyond the material realm, subtler forms of matter, substances, and energies, which exist beyond the physical, become part of experiential reality. Our physical body appears as the outer layer of other, subtler physical and subtle energetic ‘bodies’. In descending order (with the correspondent ‘aurobindonian’ plane, see later for more details):

<i>Anandamaya kosha</i> ,	Satchitananda
<i>Vijñānamaya kosha</i> ,	supramental
<i>Manomaya kosha</i> ,	mental
<i>Pranamaya kosha</i> ,	vital
<i>Annamaya kosha</i> ,	physical

Later we will address the Vijñānamaya kosha in more detail—that is, what Sri Aurobindo called the ‘*supermind*’. For the time being, it should be noted that, according to the yoga philosophy, these sheets are made of ‘substances’ of different grossness. The annamaya kosha is our familiar physical body made of matter. Meanwhile, the pranamaya kosha, or the ‘*vital*’, which, as already mentioned, is the life-sheet and plane responsible for our emotional consciousness, is not made of matter. Rather, its substance is of the nature of

⁶⁹ The reader might find it useful to resort in advance to *Diagram 1* on page 386.

<i>Prakriti</i>		<i>Purusha</i>
Outer being	Inner (subliminal) being	Inmost Being
Outer mental (sense- and physical mind + emotional or vital mind)	Inner mental (reason, intellect)	Psychic being (Chaitya purusha)
Outer vital (lower vital)	Inner vital (higher vital)	
Outer physical (gross body)	Inner physical (subtle physical)	

Table 1 The concentric system of being.

While for the ordinary human consciousness in the waking state, the outer being is all that we believe to be and is indicated as ‘me’ and ‘I’, during the sleeping state, we retire from the outer into the inner or inmost being or into the subconscious or supraconscious planes (the higher hemisphere we will describe later).

As it also appears in the writings of Sri Aurobindo, dreams are (in most cases) a distorted symbolic transcription of the experiences of our consciousness moving throughout the different planes of being. In this respect, he aligns with traditional Indian psychology. While the number of possible states of consciousness is virtually infinite, each of these states can be related to four main categories.

- 1) The common waking state (*‘jagrat’*) where the sense-mind and our physical mentality are most active and almost completely identified with our bodily existence.
- 2) The dream state (*‘svapna’*) where the psychic being enters into a series of life-planes and mind-planes, detaching from its corporal identification that was predominant during the waking state, but still with a physical mind active and which translates all the experiences on these planes in the form of an incoherent jumble, wondering phantasies, disordered associations from brain memories, etc. We most easily recall these experiences on vital and mental planes as vague reflections in form of confused dreams because they are filtered by the same physical mind through which we interpret the physical plane.
- 3) The (deep and dreamless) sleep-state (*‘susupti’*) where the soul is liberated from the outward-going senses and enters the supramental plane, also more commonly called the *‘casual body’*. Here the self becomes what Aurobindo describes as the ‘Master of Wisdom and Knowledge’ (*‘Prajna’*).
- 4) Finally, the supreme or absolute self of being, the ‘fourth’ state of consciousness (*‘turiya’*). It is a state of pure and absolute self-existence

consciousness is an unlimited consciousness of unity with the sense of the universe in oneself, or as oneself, as an extension constituting a cosmic being, a universal individual.

The overmind is governed by the directions of the cosmic Self, where the body is a physical instrument recognized as *“something instrumental to the action of a Transcendent and Universal Being”*, a cosmic center of the action of the Infinite. It is experienced as a consciousness of Light and Truth with a sensation of beauty and delight. Here also, *“all essential experiences belonging to the mind, life, body are taken up and spiritualised, transmuted and felt as forms of the consciousness, delight, power of the infinite existence”*. The other forms of cognition and active powers below, those of Intuition, illumined sight, and thought, are themselves enlarged by the action of the overmind. The nature of the being with all its thoughts, feelings, and bodily activities becomes more universal, all-understanding, all-embracing, cosmic, and infinite. It is a principle of separate dynamism, a source of creative power that *“though luminous itself, keeps from us the full indivisible supramental Light, depends on it indeed, but in receiving it, divides, distributes, breaks it up into separated aspects, powers, multiplicities of all kinds.”* [198](Vol. I, pg. 138)

This overmental transformation completes the spiritual transformation.

g. The Supermind

But the overmind still contains the seeds of a separative and divisive character in the cosmic play. Despite its basis in a cosmic unity, its action is one of division and interaction in the play of multiplicity. It is only the Supermind, the *“supreme self-determining truth-action and the direct power of manifestation of that Transcendence”*, that can accomplish the final transmutation—that is, the supramental transformation. While the overmind allows the individual consciousness to be universalized and, to some degree, transforms the lower parts of the being, a basis of untransformed nescience in matter remains, which only the Supermind can transform completely. The Supermind is *“the supreme power of the principle of unity taking all diversities into itself and controlling them as parts of the unity, which must be the law of the new evolutionary consciousness”*. [194](Ch.XXVI) Otherwise, the pull of the inconscience would prevent a divine or ‘gnostic evolution’. The transformation of the inert depths of the subconscious and inconscient is possible only by the descent of the supramental light into matter, life, and mind, penetrating it down to the material basis. Even overmind would begin to be transformed because everything is a power of the Supermind in its origin. The spiritual significance of our whole existence would be revealed by the ascent of the individual consciousness to Supermind and the descent of the Supermind in life, mind, and matter with the ‘gnostic Light’ effectuating a complete transformation of our ignorant base.

part for the whole and know only a little part of that part. There are several parts of our being we don't know of and eventually deny could exist. Once one gets into conscious contact with it, one realizes that the mental, vital, and physical are not just one independent block but, rather, a complex amalgam of other interconnected layers, such as an 'outer', 'inner', and 'true' being for each of the mental, vital, and physical with the inmost center, the psychic being, which stands behind them all. These planes and parts are intermingled and interdependent and have no clear-cut boundaries. To add a further layer of complexity, they are also subjected to universal forces that we are not aware of or that we mistake for our own. We are a very complex combination of inextricable layers of consciousness that are all non-physical (except, of course, the cosmic physical and the outer physical—that is, the physical universe and our body, respectively). We should never mistake the surface personality we know from our ordinary waking state for the whole and not even for our true personality (something we do much too easily when we talk about 'consciousness', meaning the surface waking consciousness). In other words, we as humans, with all our marvelous sciences and achievements, are still beings immersed in deep ignorance and self-forgetfulness.

5. The Gnostic Being

a. Involution and Evolution

The word '*evolution*' comes from the Latin 'evolvere', which means to 'unroll' or 'open out' or 'uncover' (the prefix 'e' means 'out' and 'volvere' stands for 'rolling'). Interestingly, contrary to the current understanding of 'descent with modification', which is the modern Darwinian accepted notion of biological evolution, the term 'evolution' betrays lost wisdom. It is an emergent process that unfolds something inherently already contained in the thing that unrolls. Also, the word 'development' implies that something develops by coming out of an envelope. It seems to suggest that there is something already fully developed but concealed or hidden and that evolution unveils—something that was previously veiled by an opposite process of evolution, an 'involution'. But it is not something material, molecular or genetic.

In fact, the peculiarity of Sri Aurobindo's cosmology is that all the physical manifestation is an involution of the Divine in matter—a super-consciousness that subjected itself to oblivion, to what he called a 'sacrifice', by plunging itself into a sort of 'self-concealed' and 'masked' still divine consciousness but latent and 'asleep' in the inconscient matter. Thereby, matter, which is inherently still an expression of an original divinity, nevertheless manifests as

Only then will we be able to ascend to a state of consciousness where a divine bliss, love, delight, unity, harmony, and deathless physical perfection become a natural state of being in a stable and permanent eternal ecstasy of a divine life upon Earth.

"It is such a change and such a reshaping of life for which humanity is blindly beginning to seek, now more and more with a sense that its very existence depends upon finding the way. The evolution of mind working upon life has developed an organization of the activity of mind and use of matter which can no longer be supported by human capacity without an inner change." [194](Ch. XXVIII)

In fact, our organized mental and technological society is becoming increasingly complex and escaping our control. The external sciences and technologies supported by reason alone won't be able to self-sustain themselves for long if they are not also guided by wisdom from within as a consequence of the ascension toward higher planes of consciousness of the race.

What Sri Aurobindo tried to do was to put in direct contact the Spirit of Creation with the raw matter of which our body is made and awaken a hidden and 'crystallized' consciousness, a mind of the cells. This is, however, not supposed to be either a purely material or purely spiritual transformation. It is both and something else entirely. It also reforms and enlarges the view of the classical spiritual teachings that consider the physical transformation of secondary importance or even an illusion, the cosmic illusion of Maya, the veil of Ignorance. It goes against our scientific as spiritual understanding that matter and spirit will never find a point of contact. Aurobindo rejects the idea of the polarity of matter and spirit as being irreconcilable opposites. The spiritual transformation is seen as something not limited to an inner realm but ultimately aims also to an exterior and material metamorphosis, with this being the real reason for the manifestation: the fusion of Spirit with Matter, the transformation of our body to the image of the Divine. This evolutionary concept of an emergent consciousness in matter, which will infuse and transmute the species into a new being, is essentially what makes the integral vision of Sri Aurobindo stand apart from the other forms of yoga or mystical traditions. It integrates the spiritualism of the East with the materialism of the West and completes, widens, and goes beyond both toward a synthesis where both appear to have their final significance.

c. The Mind of the Cells – Part II

That's where Sri Aurobindo's account ends. What is known is that he went into seclusion for 24 years until his death to try this difficult spiritual and material transformation in his body. What this yoga of the cells was really about, he never spelled out explicitly, other than in a few short remarks throughout his writings or in his epic poem Savitri.

However, his cellular work was taken up by Mirra Alfassa, the “Mother.” She also was largely hesitant to speak openly about something that still had to be accomplished and whose success or failure was far from clear. Nevertheless, one of her disciples, Bernard Enginger, also named Satprem, who was frequently in correspondence with her, collected from 1962 to 1973, in a 13-volume series entitled “The Mother’s Agenda” [211], several accounts which outlined her exploration of the body consciousness. It was an exploration in the consciousness of the cells through a myriad of experiences—a documentation of the discovery of a mind of the cells, capable of reforming the conditions of matter and the law of the species. It is a document of experimental evolution and a question about our future, which attests to how we are at the end of an evolutionary cycle. It is the report from the heights of a supramental consciousness of an attempt at a cellular transformation. It is not an easy read or a message that we, as humans, can really understand. After all, what would our ancestors—say, an Australopithecus—‘understand’ if they could get into a conversation with modern humans? Nevertheless, as far as our limited reasoning mind can go, we can at least try to get a glimpse of what this transformation might be about.

It seems that this still ‘sleeping’ consciousness in each biological cell is at work through a kind of ‘mind in matter’ or ‘mind of the cells’. This mind of the cells bestows a mental ability to each cell. But, in its still untransformed inconscient state, it is mostly dependent on a reactive, unconscious, and subconscious instinct that can sicken us, cure us miraculously, or let us die suddenly.

The reason for this, despite the millenniums of materialistic realizations on one part and spiritual realizations on the other part, all that had not been recognized, can be found in the fact that a physical transformation is revealed to be an enterprise of extraordinary difficulty. The biggest obstacle to such a realization was shown to be the subjugation of the lowest layer of consciousness to the supramental Light. Without our being aware of it, this ‘dark side’ is ingrained in the most recondite zones of our being. In her words, the Mother expressed this as follows:

“I went down into a place ... a place simply in the human consciousness, thus necessarily in my body ... I have never seen anything more timorous, fearful, feeble and mean! It's ... it must be a part of the cells, part of the consciousness, something that lives in apprehension, fear, dread, anxiety ... It was truly, truly dreadful. And we carry that within us! We aren't aware of it, it's almost subconscious – for you see, the consciousness is there to prevent us from yielding to that – it's cowardly, and it can make you fall sick in a minute.” [211](Nov. 5, 1960)

Aurobindo’s cryptic poetical verses suggest he already had the same experience:

II. Towards an Integral Cosmology

The previous chapter was an introduction to the metaphysics and vision of Sri Aurobindo. It is a spiritual framework that, in its main traits, was outlined already in the 1920s. His real purpose, however, came to the surface only after his departure and is best recognized in the accounts of cell yoga that were described in the Agenda, thanks to Satprem's transcriptions, and that appeared only in the late 1970s. Until then, the full dimension of their work hadn't come to light.

Meanwhile, the technological progress and especially the new discoveries of science, particularly in biology, evolution, consciousness studies, and quantum physics, were quite dramatic. These can hardly be ignored and necessitate a new way of seeing the world and ourselves. But, despite this progress, the fundamental questions that ask for the deeper meaning of things, for the essence of life and our place in the universe, remain unanswered. What is life? What are we doing here? What is consciousness? Why is there something rather than nothing? These and many other existential enigma continue to be no-progress quests in the frame of a strictly naturalistic paradigm. As we highlighted at the beginning, this failure is the reason for a revived academic interest, especially in the philosophy of mind but also to some degree in other sciences, in theories like panpsychism and panentheism in the light of modern scientific knowledge, which led to the development of new theoretical frameworks such as cosmopsychism, cosmoidealism, and panspiritism, just to mention some.

What we would like to do in this chapter is show that an integral cosmology in line with the insights of Aurobindo, but expanded to the new findings of science, can deliver an even more coherent metaphysical framework inside which several of the issues and shortcomings that vitiated the previous cosmologies can find their natural accommodation. This extended philosophical and spiritual understanding of reality, which includes matter and spirit in a single and unique view, is more comprehensive and, we contend, more in line with modern science.

First, we will focus on some aspects that are most relevant to Aurobindo's supramental vision of reality. Then, these will be applied to our current understanding of the universe, its laws, life, matter, and space-time from a scientific point of view. Special emphasis will be placed on aspects of teleological nature and final causes in evolution to see how they might furnish an answer to longstanding questions which previously seemed to be irreconcilable with both physical and trans-physical conceptions.

of smaller identities. The seer who has realized this Knowledge by identity has an intimate spiritual vision in which one sees, feels, and contacts all as oneself.

3. Conscious Force, Conscious Will and the Nature of Matter

Force and energy have a precise definition in physics⁸³, but definitions, as rigorous as they might be, don't tell us much about the nature and essence of what they define. The ontology remains obscure. Physics is about how processes occur but tells us nothing about what the essence and ultimate reality of these processes are. Physicists study what forces and energies do but don't care about philosophical ruminations that ask what these forces and energies really are. And it can't be otherwise if we accept that we are looking at things from a limited sense-mind consciousness. For example, take electromagnetic or gravitational forces. We can describe their action quite well: Once given the initial state and the boundary conditions, we can predict how they act dynamically on particles or other material objects. We can describe their dynamical evolution in time and space with remarkable accuracy, resorting to some fundamental principles. But all these laws and principles don't tell us much about what forces like electricity and gravity are in themselves. We know that they are just there and work with it.

From the view of a supramental consciousness, things acquire another significance. Following this integral metaphysics, the source of space and time is a timeless, immutable Absolute that nevertheless creates the illusion of motion and mutability in itself without really changing—something which, as the apparent irreconcilability of personality and impersonality, for the human mind is only a wordplay, a contradiction in itself, an absurd impossibility. Because what our sense-mind realizes are only mutable relations of forms of external shocks of forces, it is unable to view all things in a multiple unity, as a Whole, as the Supermind does.

But this might not sound so distant and alien if we look at how modern physics indeed represents forces and energy. All physics could be reduced to force and space-time; there is nothing else. Four fundamental forces are known: the electromagnetic, the gravitational, and two nuclear forces. Force is an action that produces changes in time or keeps aggregates like particles, atoms, and molecules tightly together to give form to things⁸⁴, while energy is

⁸³ Simply put, force is defined as the amount of change in time of the momentum of a body and energy as the amount of physical work something can perform.

⁸⁴ The weak nuclear force is a bit different 'force' inasmuch it transforms a particle type into another particle type and thereby is responsible for nuclear decays.

All the processes in our cosmos are self-presentations of It in itself, and physical forces are a Will, which is also a Knowledge of a Consciousness-Force acting in space and time by an exclusive concentration. For example, the scattering process between two electrons, and that in quantum field theory is represented as the interaction between two force fields, is the dynamic manifestation of an involved and self-forgetful exclusive concentration of a cosmic consciousness in itself—that is, an inconscient and mechanical will acting in a localized space-time region—something that, however, is the action of a Will-Force in its origin. The mental relations we build from the play of forces is that which we call ‘form’, and all the phenomenal world we experience is a cosmic multitude of sensations resulting from a form of force responding to another form of force.

It is in this sense that we must posit Consciousness at the origin of all things. Consciousness is the uncaused and irreducible ontological primitive. Consciousness-Force, Consciousness-Will, and Consciousness-Knowledge are its dynamic spatio-temporal aspect we perceive as action in time and space.

4. The Supramental Vision of Space and Time

Modern theoretical physics is searching for a unified theory of matter, forces, and space-time that aims at merging quantum mechanics and general relativity, in a single and unique description, into a ‘*theory of quantum gravity*’, popularly known as the ‘theory of everything’⁸⁵. For over half a century, generations of physicists have tried hard to find such a theory but, so far, with no tangible results that could be verified experimentally. There is now a growing consensus that one of the reasons for this failure is that physics always took it for granted that space and time—or, more generally, space-time as described in general relativity—is fundamental and for our normal human understanding, something that presents itself as a self-evident given and obvious reality that only philosophers felt was worth further investigating. Until recently, physicists felt it unnecessary to question what space and time are; they just posited it as a self-explanatory fact. After all, that’s what physics always did (with some nuances introduced by Einstein’s relativity), and it worked egregiously for more than three centuries. This lack of further philosophical curiosity was also encouraged by the fact that space and time

⁸⁵ The expression ‘theory of everything’ may suggest that it will explain everything. This is a very popular misinterpretation promoted by the media. A theory of quantum gravity will eventually reformulate the theory of general relativity and quantum mechanics in an extended theoretical framework and express all the physical forces known as a single ‘super-force’. But this won’t explain to us how a cell functions or how a brain works, let alone tell us anything about human psychology or the deepest essence and nature of our spiritual existence.

could, at least in principle, predict what will happen. A dice is subjected to a very complicated action of forces influencing its dynamics; however, if all is known about the physical state of the dice, its initial conditions, and the forces acting upon it, we could predict how it will roll on the table and, finally, what the outcome will be. Would we then still label this process as ‘random’?

At the bottom, what randomness measures is only our ignorance. That’s also why the notions of randomness, order, and disorder are closely connected to entropy. This example makes it clear how the idea of connecting a measure of predictability to a property inherent in the process is dubious: what appears to be totally unpredictable in some experimental context might well turn out to be predictable in another one.

We can illustrate this further with a very simple example that, if you are a programmer with some background knowledge, you can perform on your own computer. In Fig. 119 left, you can see an image that seems to be totally random. It is a picture with only 128 x 128 pixels encoded in 128 colors (grayscale). Each pixel corresponds to a number between 0 and 127. There seems to be no structure in the image nor the geometry or color (grayscale) distribution.

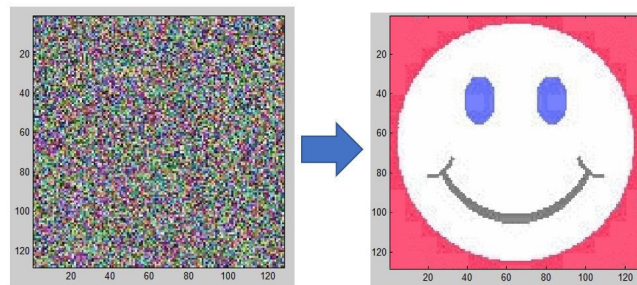


Fig. 119 Left: Encrypted data. Right: Decrypted smiley.

The overall distribution shows no signs of organization, and we can label it as almost pure ‘noise’ with some statistical fluctuations here and there. When one looks at the digital code, at the occurrence of the ones and zeros appearing in the binary file, and calculates the probability that binary number one or zero will show up, one finds that there is an almost perfect 50% chance each of getting a one or a zero—that is, the ones and zeros appear to be statistically distributed with equal weight. It is then fair to say that if we adopt the frequentist interpretation, this is a pretty much random data sequence.

From this, can we conclude that this image had no purpose to convey any information? By this statistical analysis, can we infer something about the existence or nonexistence of the information content of this image? Can we honestly say that this analysis (which is, after all, based on a very superficial understanding of what has brought into existence the structure of this image

the signs of purpose, or the absence of it, behind what we perceive in our limited mind as blind chance.

To sum up, chance, probability, coincidences, randomness, etc., are only abstract anthropomorphic notions that measure only one thing: our ignorance. Randomness and chance are not properties of objects in the world. A mass, an electric charge, and the size of a physical object may be regarded as intrinsic physical properties, but randomness is a conceptual notion designating our state of mind. It is a reasonable statistical label, guess, or estimate of the state of an object which, however, can change and be updated without changing anything in the object itself.

But chance and randomness are not the only approaches to the question of final causes in the universe. There are many more interesting aspects that could lead us to more constructive and scientifically sound reasoning about these sorts of things.

b. The Unsolved Mysteries of Deterministic Evolution

“We as computer scientists don’t know any algorithms that you would want to run for a billion years and would still do something interesting.”

Jeff Clune [224]

Evolutionary sciences are frequently invoked as evidence against finalistic conceptions of a goal-oriented Nature and, implicitly, against any form of theism. The physicalist narrative tells us that there is no goal, purpose, or direction in evolution. Our life is a meaningless and purposeless flicker in an almost empty and chilling universe which is just what it is. Even the question about meaning is a meaningless question we should stop asking.

However, upon an honest and closer inspection, people are increasingly realizing how unconvincing and meaningless this reasoning is as well. This pervading neo-Darwinian belief that the immensely complex evolution that gave form to life could be explained away by a totally unconscious blind indirect processes without an agency is becoming increasingly untenable under the pressure of the new scientific evidence. Keeping out of the equation any teleological temptation in scientific evolution is, perhaps, the right thing to do from a pragmatic point of view, which is not interested in philosophical, existential, or spiritual quests. In the present stage of science’s development, which isn’t sufficiently self-aware and still can’t tip into the higher-mind seeing, a dry attitude that ruthlessly expunges any temptation which asks for why things are, beyond considering how things work, might have been necessary primary school homework for the analytic mind which, otherwise, confuses and mishmashes deeper ideas, ending up in a dogmatic belief system itself. A disinterested and healthy agnosticism would then be the most appropriate attitude. In this context, even disbelief and doubt would be a

multiplicity. Fortunately, Nature embedded a specific universal principle into the cosmos, namely the ‘*Pauli’s exclusion principle*’, which avoids precisely that. Thanks to this inherent quantum principle, electrons can pile up in a manner such that atoms would not all be electrically neutral, thereby enabling the formation of chemical compounds according to a specific scheme constituting the well-known periodic table of elements—that is, an emergent creative layer of novelty.

As the last example, consider that we live in a three-dimensional universe. There is, however, no known physical law or principle that imposes precisely three spatial dimensions. That’s why physicists and astronomers speculate about the existence of other universes that might have other than three dimensions. However, there is a very stringent reason we find ourselves living in this universe—because it can be easily shown that in a two-dimensional or higher-dimensional universe, stable atomic structures and stable planetary orbits would be unable to form and, again, everything would quickly collapse into giant black holes, leaving only a dead and uniform universe without structure and variety. If a universe must be built according to a bottom-up principle of diversity and unity, it must be three-dimensional.

Many other examples of this sort could be mentioned. Of course, what we are talking about is the famous ‘*fine-tuning*’ of the universe that allows for the emergence of life (for a technical review, see [238]). However, an aspect that is seldomly appreciated and that we are pointing out here is that a ‘*selective-tuning*’ is also necessary to create a universe that a reductionist bottom-up model can describe. The creation of the universe based on a bottom-up approach was not at all a guaranteed outcome and became possible only because its primal constituents, the elementary subatomic particles, exist in a specific number and variety by possessing very specific physical properties and only because the universe has a specific structure and is governed by very specific laws enabling it to do so.

So, to make a very long and complicated (but quite fascinating) story short: The reductionist assumes something being self-evident, which is instead

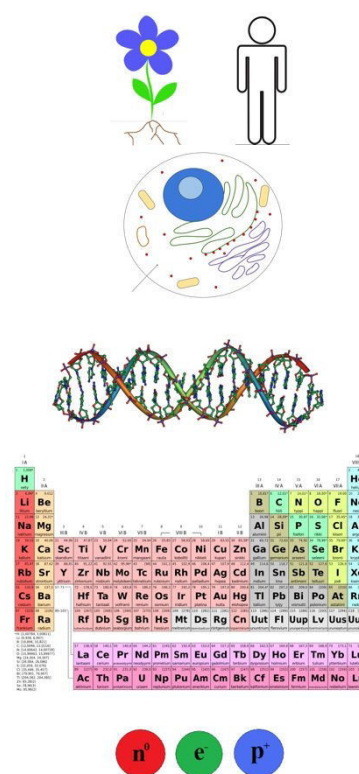


Fig. 125 The bottom-up structure of matter and life: elementary particles, atoms, DNA molecule, cell and living organisms.

e. The Evolution of Life from the Integral Perspective

*“A little science estranges men from God,
but much science leads them back to Him.”*
Louis Pasteur

*“The first gulp from the glass of natural sciences will turn you into an atheist,
but at the bottom of the glass God is waiting for you.”*
Werner Heisenberg

In this integral perspective, things are not as simplistic as they are in the alternative monistic or dualistic cosmologies, but they can nevertheless furnish a much more powerful and consistent theory of consciousness, evolution, and the emergence of life. The universe is not just about matter and spirit, while an organism is not only body and soul and not even just a dissociated alter in a Mind at Large, let alone only a body without spirit and soul, as the physicalist would like to believe. The evolution of life can't be seen as just a play of physical forces alone; it is determined by several other factors acting on other trans-physical and trans-rational planes of existence. There is not just matter, or only mind, or only matter and mind. Above, there is the Transcendent and the immanent in its impersonal and personal forms; there is matter, life and mind, and the planes above the mind, while below there is a subconscious, inconscient, and nescient basis which are interdependent and which mutually interact and compenetrate each other.

By also integrating the integral evolutionary twofold higher- and lower-Nature central principle, which contains in its bosom the principle of unity in diversity, the scientific perspective of *'abiogenesis'*—the process of the origin of life—and its subsequent evolution is turned upside down: The aggregation of matter does not 'produce' any consciousness, life and mind but only furnishes a physical basis for the material manifestation of a universal Consciousness, Life and Mind which express itself in and through a multitude of individualized forms on the sub- and unconscious physical plane.

Of course, Aurobindo did not express particular scientific strong opinions on the matter of the evolution of life in terms of a scientific language. First, he was neither a scientist nor a philosopher; rather, he was a spiritual master who developed a practical psychology with no interest in developing scientific theories. Second, it goes without saying that in the 1920s, scientific knowledge was not the same as that of today. However, with this in mind, the metaphysical framework of integral yoga not only can tell us something about life and its development from a metaphysical perspective transcending the material and mechanical understanding of the workings of Nature but may even be an interesting extension of the modern scientific view of evolution without conflicting with it.

6. Seeing Integrally with a Synthesis of Knowledge

While Aurobindo's integral cosmology can only be fully realized once the 'seer' has ascended the highest steps of the ladder of consciousness, we, as 'ordinary humans', can, nonetheless, recognize by a comprehensive seeing a la Goethe, the development of a human's knowledge represented by its philosophies, sciences, and history from a more integral perspective than before. The theories, ideas, realizations, or insights of the diverse natural philosopher, scientists, and mystics throughout the ages, cultures, and continents, which previously seemed irreconcilable and even mutually exclusive, now, in the light of an integral view, appear in a much more coherent picture that harmonizes all knowledge inside an integral paradigm.

It would be impossible to do this here for all knowledge, but that wouldn't be useful either. What it's all about, at this point, is not mere accumulation of content, but rather about developing another way of an expanded seeing—an integral seeing upon the human's path in the course of history and its intellectual, spiritual, and practical achievements as a whole.

To see what this means, let us work out this integral seeing by some examples that outline how we can look upon reality and the diverse philosophical and spiritual directions of the past to modernity from a more comprehensive perspective which can lead us toward a grand synthesis.

To a certain degree, we have already done this by integrating the concepts of evolution and of physics such as force, will, space and time inside an enlarged integral teleology in the previous chapters. This placed Aurobindo's cosmology in a modern perspective in line with the findings of contemporary science. Let us do something similar by standing on the shoulders of the past intellectual and spiritual giants of the Western tradition and see how these can be integrated with the Eastern tradition in a vaster synthesis of knowledge.

One aspect that always shows up throughout the history of human spiritual philosophy is that of an impersonal theistic monism. Heraclitus' maxim "from all things one and from one all things", Parmenides' uncreated and never-changing timeless and featureless "Being", Plotinus' uncaused but self-caused One, Meister Eckhart's God in us and in all living beings where "all things are God itself", and the vedic all-pervasive Brahman which is all there is, the same Vedantic "One without a second"—all these are examples of a recurring theme, a rather extreme form of impersonal monism (not to be confused with the personal God of monotheistic religions) much too ubiquitous throughout the continents and ages to be coincidental. Even the striking similarity between the Christian Trinity of Father, Son, and Holy Spirit, with the Upanishadic Satchitananda ('Existence-Consciousness-Beatitude') can hardly go unnoticed. We might suspect that there must have been a cultural exchange and cross-fertilization during prehistoric times, which could have determined these philosophical congruences, as indeed some historians claim. But it is

Physicists, like Descartes and Laplace, once thought that the day would come when everything would be described by elementary particles—in the sense of minute material pieces of matter—bouncing around as in a huge billiard. This may not have allowed us to predict everything, but at least it would have been a description of the world reducible to simple elements of matter, sort of like marbles zigzagging all over the place and uncomplicated few elementary processes. The truth of the matter (no pun intended) is that this naïve worldview had to give way to the modern standard model of particle physics, which is one of the most complicated intellectual and mathematical abstract theories the human mind ever conceived. In particle physics, one works with the so-called ‘Lagrangian’ functional—an equation that describes the dynamics of a system of particles and its energy states. Fig. 126 is a snapshot of the full Lagrangian that contains the interactions of the nuclear forces and the electromagnetic forces, the Higgs boson—that is, the quantum field that gives particles a mass—and several other mathematical corrections. Of course, we won’t bother the reader by trying to explain it. In the context of what we are discussing here, we believe it to be self-explanatory.

Biology met a not-too-dissimilar destiny. The model of a living cell being a simple cytoplasmatic bubble containing a nucleus with a DNA molecule supposedly containing all the information about what we are with mitochondria and a few other organelles performing some energetic and functional task also had to give way to a much more complicated picture. Nowadays, the sciences of biochemistry, molecular biology, genetics, and cell biology have become such a complicated discipline that probably few, if any, can master it in all its intricacies. Moreover, the more we examine the single constituents of life, the more exhaustingly difficult it becomes to overview and

$$\begin{aligned}
 & -\frac{1}{2}\partial_\nu g_\mu^\alpha \partial_\nu g_\mu^\beta - g_s f^{abc} \partial_\nu g_\mu^a g_\nu^b g_\mu^c - \frac{1}{4}g_s^2 f^{abc} f^{ade} g_\mu^b g_\nu^c g_\mu^d g_\nu^e + \\
 & \frac{1}{2}ig_\nu^2 (g_\mu^\alpha g_\nu^\beta g_\mu^\gamma g_\nu^\delta + G^\alpha \partial^\beta G^\gamma + g_s f^{abc} \partial_\nu G^\alpha G^\beta G^\gamma) - \partial_\nu W_\mu^+ \partial_\nu W_\mu^- - \\
 & M^2 W_\mu^+ W_\mu^- - \frac{1}{2}\partial_\nu Z_\mu^0 \partial_\nu Z_\mu^0 - \frac{1}{2}M^2 Z_\mu^0 Z_\mu^0 - \frac{1}{2}\partial_\nu A_\mu \partial_\nu A_\nu - \frac{1}{2}\partial_\nu H \partial_\nu H - \\
 & \frac{1}{2}m_H^2 H^2 - \partial_\nu \phi^+ \partial_\nu \phi^- - M^2 \phi^+ \phi^- - \frac{1}{2}\partial_\nu \phi^0 \partial_\nu \phi^0 - \frac{1}{2}M^2 \phi^0 \phi^0 - \beta_h \frac{(2M^2)}{\phi^2} + \\
 & \frac{2M}{g} H + \frac{1}{2}(H^2 + \phi^0 \phi^0 + 2\phi^+ \phi^-) + \frac{2M^2}{g^2} \alpha_h - ig_{cw} [\partial_\nu Z_\mu^0 (W_\mu^+ W_\mu^- - \\
 & W_\mu^- W_\mu^+) - Z_\mu^0 (W_\mu^+ \partial_\nu W_\mu^- - W_\mu^- \partial_\nu W_\mu^+) + Z_\mu^0 (W_\mu^+ \partial_\nu W_\mu^- - \\
 & W_\mu^- \partial_\nu W_\mu^+) - ig_{sw} [\partial_\nu A_\mu (W_\mu^+ W_\mu^- - W_\mu^- W_\mu^+) - A_\mu (W_\mu^+ \partial_\nu W_\mu^- - \\
 & W_\mu^- \partial_\nu W_\mu^+) + A_\mu (W_\mu^+ \partial_\nu W_\mu^- - W_\mu^- \partial_\nu W_\mu^+)] - \frac{1}{2}g^2 W_\mu^+ W_\mu^+ W_\mu^- + \\
 & \frac{1}{2}g^2 W_\mu^- W_\mu^- W_\mu^+ + g^2 c_w^2 (Z_\mu^0 W_\mu^+ Z_\mu^0 W_\mu^- - Z_\mu^0 W_\mu^+ W_\mu^- W_\mu^-) + \\
 & g^2 s_w^2 (A_\mu W_\mu^+ A_\mu W_\mu^- - A_\mu A_\mu W_\mu^+ W_\mu^-) + g^2 s_w c_w [A_\mu Z_\mu^0 (W_\mu^+ W_\mu^- - \\
 & W_\mu^- W_\mu^+) - 2A_\mu Z_\mu^0 W_\mu^+ W_\mu^-] - g\alpha [H^3 + H \phi^0 \phi^0 + 2H \phi^+ \phi^-] - \\
 & \frac{1}{8}g^2 \alpha_h [H^4 + (\phi^0)^4 + 4(\phi^+ \phi^-)^2 + 4(\phi^0)^2 \phi^+ \phi^- + 4H^2 \phi^+ \phi^- + 2(\phi^0)^2 H^2] - \\
 & gM W_\mu^+ W_\mu^- H - \frac{1}{2}g \frac{M}{c_w} Z_\mu^0 Z_\mu^0 H - \frac{1}{2}ig [W_\mu^+ (\phi^0 \partial_\nu \phi^- - \phi^- \partial_\nu \phi^0) - \\
 & W_\mu^- (\phi^0 \partial_\nu \phi^+ - \phi^+ \partial_\nu \phi^0)] + \frac{1}{2}g [W_\mu^+ (H \partial_\nu \phi^- - \phi^- \partial_\nu H) - W_\mu^- (H \partial_\nu \phi^+ - \\
 & \phi^+ \partial_\nu H)] + \frac{1}{2}g \frac{1}{c_w} (Z_\mu^0 (H \partial_\nu \phi^0 - \phi^0 \partial_\nu H) - ig_{sw} M Z_\mu^0 (W_\mu^+ \phi^- - W_\mu^- \phi^+) + \\
 & ig_{sw} M A_\mu (W_\mu^+ \phi^- - W_\mu^- \phi^+) - ig \frac{1-2c_w^2}{2c_w} Z_\mu^0 (\phi^+ \partial_\nu \phi^- - \phi^- \partial_\nu \phi^+) + \\
 & ig_{sw} A_\mu (\phi^+ \partial_\nu \phi^- - \phi^- \partial_\nu \phi^+) - \frac{1}{4}g^4 W_\mu^+ W_\mu^- (H^2 + (\phi^0)^2 + 2\phi^+ \phi^-) - \\
 & \frac{1}{4}g^2 \frac{1}{c_w} Z_\mu^0 [H^2 + (\phi^0)^2 + 2(2s_w^2 - 1)^2 \phi^+ \phi^-] - \frac{1}{2}g^2 \frac{c_w}{c_w} Z_\mu^0 \phi^0 (W_\mu^+ \phi^- + \\
 & W_\mu^- \phi^+) - \frac{1}{2}ig^2 \frac{c_w}{c_w} Z_\mu^0 H (W_\mu^+ \phi^- - W_\mu^- \phi^+) + \frac{1}{2}g^2 s_w A_\mu \phi^0 (W_\mu^+ \phi^- + \\
 & W_\mu^- \phi^+) + \frac{1}{2}ig^2 s_w A_\mu H (W_\mu^+ \phi^- - W_\mu^- \phi^+) - g^2 \frac{2m_c}{2c_w} (2c_w - 1) Z_\mu^0 A_\mu \phi^0 \phi^- - \\
 & g^4 s_w^2 A_\mu A_\mu \phi^+ \phi^- - e^3 (\gamma \partial + m_e^2) e^\lambda - e^\lambda \partial^\gamma \partial^\lambda u_3^2 - \bar{u}_3^2 (\gamma \partial + m_u^2) u_3^2 - \\
 & d_3^2 (\gamma \partial + m_d^2) d_3^2 + ig_{sw} A_\mu [-(e^\lambda \gamma^\mu e^\lambda) + \frac{2}{3}(\bar{u}_3^2 \gamma^\mu u_3^2) - \frac{1}{3}(\bar{d}_3^2 \gamma^\mu d_3^2)] + \\
 & \frac{ig}{4c_w} Z_\mu^0 [(\bar{\nu}^\lambda \gamma^\mu (1 + \gamma^5) \nu^\lambda) + (e^\lambda \gamma^\mu (4s_w^2 - 1 - \gamma^5) e^\lambda) + (\bar{u}_3^2 \gamma^\mu (\frac{4}{3}s_w^2 - \\
 & 1 - \gamma^5) u_3^2) + (\bar{d}_3^2 \gamma^\mu (1 - \frac{8}{3}s_w^2 - \gamma^5) d_3^2)] + \frac{ig}{2\sqrt{2}} W_\mu^+ [(\bar{\nu}^\lambda \gamma^\mu (1 + \gamma^5) e^\lambda) + \\
 & (\bar{u}_3^2 \gamma^\mu (1 + \gamma^5) C_{\lambda\mu} d_3^2)] + \frac{ig}{2\sqrt{2}} W_\mu^- [(e^\lambda \gamma^\mu (1 + \gamma^5) \nu^\lambda) + (\bar{d}_3^2 \gamma^\mu C_{\lambda\mu} (1 + \\
 & \gamma^5) u_3^2)] + \frac{ig}{2\sqrt{2}} M [-\phi^+ (\bar{\nu}^\lambda (1 - \gamma^5) e^\lambda) + \phi^- (e^\lambda (1 + \gamma^5) \nu^\lambda)] - \\
 & \frac{g}{2} \frac{m_h^2}{M} [H (e^\lambda e^\lambda) + i\phi^0 (e^\lambda \gamma^5 e^\lambda)] + \frac{ig}{2M\sqrt{2}} \phi^+ [-m_h^2 (\bar{u}_3^2 C_{\lambda\mu} (1 - \gamma^5) d_3^2) + \\
 & m_h^2 (\bar{u}_3^2 C_{\lambda\mu} (1 + \gamma^5) d_3^2)] + \frac{ig}{2M\sqrt{2}} \phi^- [m_h^2 (\bar{d}_3^2 C_{\lambda\mu}^1 (1 + \gamma^5) u_3^2) - m_h^2 (\bar{d}_3^2 C_{\lambda\mu}^1 (1 - \\
 & \gamma^5) u_3^2) - \frac{g}{2} \frac{m_h^2}{M} H (\bar{u}_3^2 u_3^2) - \frac{g}{2} \frac{m_h^2}{M} H (\bar{d}_3^2 d_3^2) + \frac{ig}{2} \frac{m_h^2}{M} \phi^0 (\bar{u}_3^2 \gamma^5 u_3^2) - \\
 & \frac{ig}{2} \frac{m_h^2}{M} \phi^0 (\bar{d}_3^2 \gamma^5 d_3^2) + [\bar{X}^+ (\partial^\mu - M^2) X^+ + \bar{X}^- (\partial^\mu - M^2) X^- + \bar{X}^0 (\partial^\mu - \\
 & \frac{M^2}{c_w}) X^0 + Y \partial^\mu Y + ig_{cw} W_\mu^+ (\partial_\nu \bar{X}^0 X^- - \partial_\nu \bar{X}^+ X^0) + ig_{sw} W_\mu^+ (\partial_\nu \bar{Y} X^- - \\
 & \partial_\nu \bar{X}^+ Y) + ig_{cw} W_\mu^- (\partial_\nu \bar{X}^- X^0 - \partial_\nu \bar{X}^0 X^+) + ig_{sw} W_\mu^- (\partial_\nu \bar{X}^- Y - \\
 & \partial_\nu \bar{Y} X^+) + ig_{cw} Z_\mu^0 (\partial_\nu \bar{X}^+ X^- + \partial_\nu \bar{X}^- X^+) + ig_{sw} A_\mu (\partial_\nu \bar{X}^+ X^- - \\
 & \partial_\nu \bar{X}^- X^+) - \frac{1}{2}gM [\bar{X}^+ X^+ H + \bar{X}^- X^- H + \frac{1}{c_w} \bar{X}^0 X^0 H] + \\
 & \frac{1-2c_w^2}{2c_w} igM [\bar{X}^+ X^0 \phi^+ - \bar{X}^- X^0 \phi^-] + \frac{1}{2}igM [\bar{X}^0 X^- \phi^+ - \bar{X}^0 X^+ \phi^-] + \\
 & igM s_w [\bar{X}^0 X^- \phi^+ - \bar{X}^0 X^+ \phi^-] + \frac{1}{2}igM [\bar{X}^+ X^+ \phi^0 - \bar{X}^- X^- \phi^0]
 \end{aligned}$$

Fig. 126 The full Lagrangian equation of the standard model of particle physics. (For more details, see [277])

assess its structure, functions, and processes. The classic example could be that of the protein folding problem. After over half a century of research, scientists are still struggling to find out how strings of amino acids wrap together to form intricate macromolecular three-dimensional shapes into functional proteins. There is a huge variety of proteins, each with its complicated 3D structure, responsible for some functions, such as repairing and building tissues, building cell membranes, controlling metabolic reactions, modulating cell signaling, transporting molecules or other proteins, etc. For example, Fig. 127 shows the structure of a protein called ‘*clock protein*’, regulating the circadian rhythm of cyanobacteria (photosynthetic bacteria). There are more than 20,000 types of protein molecules in the human body, each having a different functional specificity. We regularly read of seemingly spectacular breakthroughs supposedly going to solve the protein folding problem. The truth is, we are nowhere near such a goal. After decades of research and billions in funding, the fact remains that nobody knows the origin of the proteins’ anatomical structures, and we have no idea how the folding mechanism works and why a specific architecture leads to specific functionality.

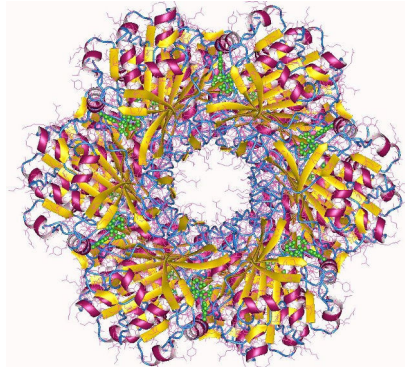


Fig. 127 Molecular structure of the bacterial clock protein.

Another quite mind-boggling protein is the mitochondrial ‘*ATP synthase*’ enzyme. It is a much too complicated process to be described here. To make a long story short, it may only be said that one of the functions of this macromolecule is that, on the active sites (the ‘cap’ in Fig. 128), it generates ATP (adenosine triphosphate) by the diffusion of the adenosine diphosphate (ADP) or adenosine monophosphate (AMP) molecules. ATP is the energy-carrying molecule that releases energy, which is converted in our metabolic processes by combining with the ADP or AMP, say, for instance, the energy necessary for muscle contraction. The most fascinating element of the ATP synthase is its ‘rotor’ structure, which spins like a water wheel while the rest of the structure is held

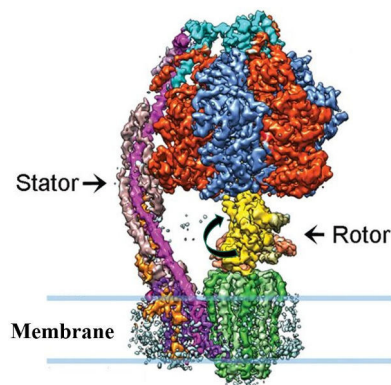


Fig. 128 Molecular structure of the ATP synthase. Credit: [278]

Nature' or to establish an 'ecological balance' or 'help the environment to recover' by intervening in its processes only betrays our childish naivety and ignorance. What we should do is not to intervene or try to master or help Nature, but to learn to become aware of our systemic ignorance first, and then enter into the mentality of a nonlinear self-organizing interconnected complex system dynamics, eventually augmented by a holistic Goethean seeing. Once we are able to enter into this cognitive dimension, the solutions to our current worldwide and global issues will present themselves much more naturally.

Thus, theories of self-organizing complex systems and supercomputer simulation might help us, but that won't lead us to the real understanding, as neither these technological means nor these intellectual, theoretical constructs, as complicated and detailed they might be, are not even in principle able to seize the Real-Idea standing behind all this fantastically complex natural machinery.

This is another aspect of the state of denial in which the modern scientific mind finds itself, and that can only postpone—and not avoid—an inevitable evolutionary impetus. We will have to recognize the narrowminded paradigm we are working with. The mechanistic view of life, biology, and especially medical science that seems unable to conceive of our health and medical treatments beyond complicated machinery is stagnating for this reason. The change of paradigm will come from within and then manifest externally. This change from a unidimensional, strictly reductionist, and material view of life to a multidimensional spiritual approach that recognizes the existence of other forces acting in a body consciousness that determines our biological wellbeing could change everything. It is not a mere question of theoretical metaphysics but about down-to-earth, very concrete, and pragmatic issues that can decide between health or illness and even life or death.

3. The AI and Simulation Delusion

"All the impressive achievements of deep learning amount to just curve fitting".
Judea Pearl [247]

For the same reason, we will have to recognize the AI delusion.

After some success, especially with the application of deep learning neural networks, which seemed to be the breakthrough and great promise for building machines mimicking the human mind, scientists are now becoming aware that the original expectations were greatly exaggerated, thanks also to an ongoing media overhype.

After decades of research, AI algorithms, or brain-inspired neural network simulations, there has been almost no progress in building computers able to understand meaning. As we have seen in Pt.I-II-3-5, semantics was and remains something utterly precluded to machine learning. No matter how

sophisticated and advanced an AI is, it shows no signs of understanding a sentence and the words in it. That's why, despite the intensive research dating back to the 1960s, we are still far from having an automatic language translation system that could replace human interpreters. Moreover, everything indicates that the more recent efforts to build self-driving cars are hitting the wall as well (again, no pun intended). An AI has no idea what a sentence in a book or the images of a dashcam means, as it does not know the world and not even what the patches of pixels representing objects signify. Changing a few pixels of an image can lure the best pattern recognition software to classify the image of a stop sign as a commercial show card or vice versa.

Modern AI machines still exhibit no sign of any ability for critical thinking skills and common sense, let alone wisdom. An AI can be useful for finding patterns in huge amounts of data, but it doesn't associate to it any meaning or semantic content. While advanced and complex AI can mine big data for patterns and structures, nothing indicates any ability in discriminating a meaningful occurrence from a meaningless coincidental spatial or temporal non-causal correlation of patterns that, in reality, are only random data. This last discriminative cognitive step was and remains a necessary human task.

It is misleading to speak of a computer that 'understands', has 'knowledge', or 'sees' something, especially in the sense that humans understand, know, and see the world. We were promised that in a few years, we would have cars driving completely autonomously from the US coast to coast, Skype sessions would have real-time natural speech automatic translation, or IBM Watson would contain "*cognitive systems that can know and reason with purpose*". These were announced as imminent big breakthroughs and were abundantly hyped in the media with sensational-sounding article titles. Nowadays, nobody is talking about them anymore. These projects not only revealed themselves to be wishful thinking among the popular audience and news but they were also endorsed and defended by the majority of professionals in the field. We could read articles full of adjectives and proclamations such as 'acceleration', 'disruptive impacts', 'coming revolutions and apocalypses', 'breakthroughs', 'change of paradigm', etc., with lots of sci-fi applications, but with no concrete reasons to make one believe that we are anywhere near that. In other words, the border that separates weak AI from strong AI (or AGI) has been shown to be an impenetrable curtainwall of a seemingly unconquerable fortress—a no-progress quest.

The idea of a coming AI revolution is not new. It dates back to the Dartmouth Conference of 1956 in New Hampshire, which was organized to discuss the possibility of constructing intelligent machines. During this workshop, the term 'artificial intelligence' was coined. In the 1980s, an AI programming language like *Lisp* and its related *Lisp machines* and the supercomputer AI company *Thinking machines* were supposed to open the gates to an AI Eldorado, but were soon absorbed by history; only the older

7. The Coming of the Subjective Age and the Ideal of Human Unity

We will have to open the doors to this change. Resetting the mind means not abolishing it. Nevertheless, central remains the inner subjective and spiritual change: the next visible social and spiritual leap of humankind, the coming of a '*subjective age*', as Aurobindo used to call it, describing the past, present, and future psychology of social development. [255] It is a subjective age that goes beyond utilitarian individualism but nevertheless will allow each individual to progress towards a larger fulfillment according to his or her true inner nature and eternal law.

Aurobindo's integral vision is 'integral' insofar as it doesn't stop at the psychological transformation of the classical forms of spirituality. The self-realization that aims at a personal ascension towards higher states of consciousness, such as the Buddhist Nirvana or the spiritual 'enlightenment', the realization of the Self of the Indian Vedanta tradition, is an important stage of one's psychological development, but it doesn't exhaust the process of evolutionary self-perfection. The goal is not personal salvation, let alone seclusion into an interior world that doesn't transform the rest of our being and the external conditions of our surroundings. Integral yoga instead goes beyond the mystical experience and demands the purification, transformation, and spiritualization of our whole being—that is, a cleansing and transmutation of the mental, vital and physical parts. It is an endeavor of self-perfection that does not ignore the dark subconscious side of our existence and takes up even this part towards the spiritual light. It is not an escape into a mystic and blissful heaven that leaves behind our emotional, mental, and bodily existence with all its untransformed imperfections. It is an intense discipline that takes up the whole being in all its aspects, even the most recalcitrant and ignorant corners of the subconscious and inconscient, opening it to a higher conscious force of transmutation.

Another distinctive character and aim of this integral practice is that it aims beyond personal salvation. It is not about the transformation of our individuality alone, but about something that can also change the collective as a center of radiation. The ultimate consummation would be to generalize yoga to the whole of humanity, elevating it to a gnostic community and a divine life.

We don't believe this to be unrealistic or wishful thinking detached from reality but, to the contrary, the inevitable and inescapable consequence of an evolutionary process that Nature is actually working on. It may appear to us to be a too-distant goal or even a fantasy, as we don't usually see the collective dimension from the point of view of the evolution of the Spirit. From the materialistic and intellectual perspective, the history of mankind may appear to be dominated almost exclusively by material necessities and egocentric motives. However, if we allow a more intuitive and spiritual vision that goes

Acknowledgements

My special thanks to Tonya Blust and Philip Patrick; they are both exceptional proofreaders whom I surely recommend. Without their help, this book would have sounded ridiculous! (www.fiverr.com/bluston - www.fiverr.com/inbox/philpen24)

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About the author

Marco Masi (born 1965) attended the German School of Milan, Italy. He graduated in physics at the university of Padua, and later obtained a Ph.D. in physics at the university of Trento. He worked as a postdoc in universities in Italy, France, and Germany, and as a school teacher for three years. After he had authored some scientific papers (<http://ow.ly/snz6u>) his interests veered towards new forms of individual learning and a new concept of free progress education originated from his activity both as a tutor in several universities and as a high school teacher, but especially from his direct, lived experience of what education should *not* be. This led him to author a book on "*Free progress Education*". [254] He also wrote a two-volume series on quantum physics entitled "*Quantum Physics: An Overview of a Weird World*", and which tries to close a gap between the too high-level university textbooks and a too low level popular science approach. [167] [168]. His interests in metaphysical and philosophical ruminations led him to the vision of Sri Aurobindo and the Mother. He loves walking in the woods, loves animals (and would never kill a cat to carry out Schrödinger's experiment).



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