

What is the Mind?

Prelude to “Symphony of Matter and Mind”

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What distinguishes living matter from non-living? The answer to this challenging question can be simple. Usually, it came down to the hypothesis of the presence of the Soul in living forms of matter. On the one hand, this is the answer because the presence of some internal processes in living organisms is obvious. On the other hand, the simplicity of the answer is deceptive because it leads to the following question: what is the Soul? And here, the great difficulties begin. This question can be called the fundamental ontological question of all times and cultures. In the entire history of human thought, there have been countless attempts to answer, but the question remains open.

Ancient people attributed the presence of an internal driving force to all objects. Primary animism did not differentiate phenomena into classes. According to this naive holism, everything was alive and possessed a spirit (anima). Gradually, the ubiquitous internal spirits became less numerous and turned into gods: more powerful external sources of will, moving objects of the world. Metamorphoses of the inner spirits in the outer gods were caused by the uncertainty of the will's origin. A division of concepts into living and non-living arose based on the presence or absence of an internal source of movement: living moves purposefully, proceeding from inner motives, the inanimate moves, prompted by external influences. Therefore, the spirit's presence was attributed to phenomena that occurred “on their own” without apparent impact from the outside. The movement of water, wind, a volcanic eruption, and other dynamic phenomena that are now classified as inanimate were considered to be driven by inner spirits.

Division based on an internal and external drive is very arbitrary. The presence of an internal source of will for any object, even if it gives the impression of independent goal-setting, cannot be determined with ultimate reliability. Only the subject, who performs the action, can say about his own will with greater certainty. But even in this case, the source's uncertainty remains, since both external and internal drive is possible. The philosophical question of free will, or rather, the question of internal teleology, intentionality arose from this uncertainty.

The uncertainty of the source of will is the basis for the existence of faith in gods. Under conditions of ambiguity, a need arises to establish an external absolute as the source of everything. Many philosophers said: if there were no God, he would have to be invented. But it can be stated otherwise: if God did not have to be invented, he would not have been. Perhaps, the second version reflects the situation better. But the attempt to answer all questions at once by introducing the divine absolute as the source of the sources, although calming the alarm of uncertainty, did not stop the curiosity. The reason is simple: this was not an answer, but only an illusion, self-deception. Therefore, questions continue to remain open.

A human felt that the movement of his body was based on an inner urge. Something was happening inside, and this something was leading to action. It also manifested itself in the form of

sensations, feelings, images, and thoughts. There were no gods yet, as explanations for everything (both themselves and the spirit in man), but there were sensations of internal movement. There were not even words to describe the gods, but there were sensations.

We do not know when a human first thought about what moves him from the inside, just as it is unknown when we began to think in words. The internal and external speech was not born immediately in humankind's phylogeny, just as it is not born immediately in the ontogenesis of each individual. We can judge the views on the subject of Soul only by written sources. But it can be assumed that the question of the Soul, as an internal source of external actions, was born long before people could put it in writing.

All religions known to us have always been attempts to answer the question about the Soul: from the primary animism of the ancients to later theological constructs. All theosophy and philosophy centered around this riddle. Something was happening inside the living body, but what exactly remained a mystery. An internal source of movement was an empirical fact of daily existence, and it had to be somehow identified in speech, given a name. It all starts with a name, and the rest of the words are applications for describing the phenomenon.

It is simpler with external phenomena: if there is an object, there will be a name; if there is a movement of this object, there will be a verb; if there is a state of the object, there will be an adjective; if there is a state change, there will be an adverb and so on. A gradual, more detailed study of objects and processes creates an ever-larger vocabulary. A distinction of characteristics creates a differentiation of the verbal code to describe them.

But inside, everything was vague: there was something, but it was more challenging to sort through the "shelves." Until the twentieth century, people did not see what was happening inside the body during the process. But the name had to be given, and different words arose in various languages, designating this phenomenon as a whole, as a kind of single entity. Thus, first attempts to answer a basic ontological question gave rise to a fundamental ontological error: creating an entity from a process. By providing a name to the phenomenon, we created the "object" Soul inside another object — Body. The dualistic concept, dividing Soul and Body, Spirit and Matter into different entities, arose from the beginning of attempts to answer the question. It had a simple reason: a lack of knowledge about the process.

The process received a noun and became an entity, and then other parts of speech joined it as a description of the states of this entity. It lasted for millennia. A considerable number of descriptions accumulated, and they all proceeded from the fundamental error of objectification: Soul was considered a separate, independent object.

This error led to an endless wandering around the central question of philosophy about the relationship of Spirit and Matter, Mind and Body. If there are two interacting objects, then a general question about their relationship is inevitable. It turns into questions about the hierarchy of such relations and about options for an independent existence. As soon as we eliminate the error of objectification, the meaninglessness of the central philosophical question and its derivatives becomes apparent. The task is to study the process and not solve the unsolvable issue, which was initially based on the error of taking a process for an object.

The process is immanent to matter: it happens in it (internal aspect) and with it (external aspect). A similar process can occur in different and with different substrates, and various processes can happen in the same and with the same substrate. Still, the process cannot be transcendental, be outside of matter in principle. If a process occurs outside the given substrate and does not concern it, then it happens in another and with another. Soul (Consciousness, Mind) is not an independent object, but a process in the body.

By analogy: what we call by a noun “current” does not make it an object Current; it remains a process that can occur in different and with different objects (river, hot lava, etc.). The creation of an independent entity Soul from the processes in a living body is similar to calling the current a unique spirit of the river, which can enter and leave it, exist independently without a river in some paradise for the spirits of the river or move from the river into lava and vice versa. With this analogy, the error of objectification is obvious. Still, when it comes to the question of the Soul, there are deep reasons for this error, and it is not eliminated by merely pointing to it.

The concept of the eternal Soul arose in the course of human development gradually. Ancient people lived in the “here and now,” or rather, survived, and were not very concerned about the “afterlife” issues for a simple reason: their consciousness did not have a sufficient range of abstract thinking. The cyclical nature of the phenomena of the world led to a cyclical model of this world. Everything was spinning in the “wheel of samsara”: something turned to dust, but something was born from dust.

Ancient people, like all living organisms, had a fear of death in the sense that they strove for self-preservation, but they were still far from existential philosophical questions about life and death. The question “Is there life after life?” or in the no less paradoxical wording “Is there life after death?” has not been formulated yet. To be more precise, there was a natural answer to it, which removed the question before it arose: someone dies, and someone is born; there is life after life because life is a cycle, not a linear path from nowhere to eternity.

The finiteness of personal existence was perceived as a given and did not stand as a problem to be dealt with. The abstract concept of “eternity” did not yet exist: due to the level of memory development, the time horizon of consciousness was too close for such constructs. Humanity was still far from dualistic religious and philosophical concepts based on fear of the finiteness of personal existence, which made an object called Soul eternal, imperishable, and capable of being outside of time, space and matter.

The question about the Soul was initially practical and straightforward: what makes humans and other animals alive, integral, and purposefully moving? What is disturbed when they get sick and suffer? And what disappears when they become dead, stop moving and decay? The question was based on the desire for physical self-preservation and not the hope for non-physical eternity. The question of the Soul had a physical, not a metaphysical meaning.

There were simple empirical observations of physical phenomena. All the Body and the Soul movements are associated with breathing, and if the breath leaves, the Soul leaves too. It is no accident that the first names for this phenomenon were most often associated with breathing sounds. There were other observations: the blood leaves as a result of the wound — life also leaves. The logical conclusion followed: spirit lives in the blood. Then it became clear that the heart is the center of the blood flow. And we always feel the internal movement of this organ. If it stops beating, it means the end. The logical conclusion followed: Soul, as the source of life, lives in the heart. This idea lasted for a long time. Many people still have it.

Gradually, people understood that all movements are controlled by the organ, which at the level of bodily sensations does not beat: the brain. The attribution of the habitat of the “object” Soul to the object Brain is a very recent phenomenon from a historical point of view. And it was based on the same practical but more subtle observations: brain damage caused changes in the Soul, and severe damage led to death. In general, severe damage to any organ of the body or a violation of the ordinary course of the process in it can lead to death. Still, not fatal injuries of the brain lead to changes in behavior, thoughts, feelings, sensations, desires, i.e., everything related to the Soul concept. And although the idea about the workings of the nervous system was still very far from

reality, gradually towards the Middle Ages in European civilization, there was a steady attribution of the Soul to the head and its contents.

But regardless of where we attributed the “address of residence” of the Soul, we invariably repeated the same mistake of taking the process for an object. This mistake has survived to the present day. The paradox is that a mistake, initially arising from the absence of any knowledge about the body’s processes, retained its strength despite the entire amount of accumulated knowledge. The paradox is explained simply.

First, such a mental construction, creating the eternal object “Soul” in the finite container “Body,” allows one to cope with the awareness of personal existence’s finiteness. The body becomes a temporary and disposable container for the Soul, with guaranteed eternity by its producer, the eternal God. A person just needs to keep the “warranty certificate” and take care of the Soul according to the manufacturer’s instructions given in various forms of covenants and commandments. Otherwise, it will be “forever broken”: tormented in hellfire by pain and suffering. Second, so far, no specific, physically substantiated answer has been given to the original question “What is the Soul?”. If there is no answer from a physical, materialistic point of view, then the void is inevitably filled with answers about intangible properties. Thus, a practical question moved into the field of “God’s providence.” The reason was the same: lack of knowledge about internal processes. To eliminate the fundamental error of objectification that exists throughout the history of civilization, it is not enough to say that the Soul is a process and not an independent object temporarily living in the Body. It is necessary to show what this process is.

But the question remains because it is not really about abstract metaphysical “movements of the Soul,” but about specific physical mechanisms. It initially contains implication: how does it work? How is everything arranged typically? What happens when there is a violation of the ordinary course of the process and when it stops altogether? The question, as it was, remains very practical. Eternal life can wait; we must deal with this life: how to make it so that we suffer less, including mentally? This requires a physical, not a metaphysical answer. If we had proceeded to call many ailments “God’s curse” or “witchcraft spells” and not solved the issue of their physical mechanism, then to this day, we would be suffering and dying by millions due to diseases, the names of which are now almost forgotten.

But there is a problem regarding the Soul: it seems that the answer had already been found a long time ago. You can pretend that the question is not about how this process works. Many even now confine themselves to an answer of approximately this content: Soul is a “non-material entity” created by the highest “non-material entity” God; it occupies the body and moves it, and then flies away somewhere. There are only two basic versions of its further location: it either settles in a different container object or flies to “non-material places,” where it lives forever, either tormented or blissed. Inverted comma marks are needed here because the concepts of “non-material entity” and “non-material place,” whatever names we give them, are oxymorons, logical errors of a combination of incongruous. Such a base, full of contradictions, gives rise to the illusion of an answer instead of the required practical answer about the specific mechanisms of the Body and about the processes in it that give rise to the phenomenon to which we gave the name Soul (Mind, Consciousness, Psyche).

Since the answer at the metaphysics level was not an answer, humanity continued to work on the question. The successor of philosophy in this work was psychology. This science’s name speaks for itself: literal translation — knowledge of the Soul (psycho-logos). What did psychology have at its disposal as material for study? Again, only the external manifestations of internal processes. External means here both actions (body movements) and subjective thoughts, feelings,

sensations, since all these are manifestations of internal physical processes that were not available for research until recently.

The main direction was initially introspective psychology. The paradox was that, despite the name of the direction (*introspecto* — look inside), the object of study was not internal processes in the substrate but their consequences in the form of cognitive and emotional manifestations. And although it was already understood that the material substrate of the Mind is the nervous system as a whole, and the brain, in particular, knowledge about it was not enough to give some intelligible version of the answer to the same fundamental question.

This problem was manifested in the life of many scientists of the late nineteenth and early twentieth centuries, who began as doctors and physiologists but went into psychology and tried to create theories of the psyche based on observations of external manifestations. And even despite the concentration of attention in this area of psychology on “subconscious processes” (non-verbal levels of consciousness), the only material remained verbal reports of subjects and observations by researchers of external manifestations.

Initially, in the science of the Mind, there was no division into different branches: the first psychologists were simultaneously physiologists, psychotherapists, psychiatrists, and researchers. Gradually, specialization occurred. Some constructed theories of consciousness based on the observed manifestations of its work (thoughts, feelings, sensations, actions). Others remained in the bosom of physiology and studied the internal structure of the body. Some worked with systemic pathologies of the Mind (psychiatry). Others worked with a wide range of pathologies and practiced Soul treatment (psychotherapy) without any concept of this process’s real physical mechanism.

Specialization was growing. Physiology split into different medicine branches, and those that studied the nervous system found their names: neurophysiology, neurology, neuropsychology, neurobiology, and so on. Gradually, they all united under one name: neuroscience. Psychiatry and psychology continued to multiply their descriptions of the external manifestations of the Mind, creating endless lists of pathologies in the form of syndromes (sets of symptoms) and remaining in the illusion that they denote diseases (real pathological processes). Theories of consciousness also multiplied. But since subjective attributes remained the only object of study, theories simply repeated the same thing in different words. It became a dead-end run in a circle.

There is an explainable reason for this cycle. Psychology initially has an epistemological problem. All other areas of human knowledge study phenomena as objects, i.e., the subject creates models (hypotheses, theories) of objects. Psychology creates a model of the subject. In the first case, the Mind studies the world; in the second, it studies itself. Without “Ariadne’s thread,” there is a risk of hopeless wandering around the “Minotaur Maze.”

But there is such a thread: the Mind can study itself as a physical phenomenon that is part of the physical world and not a transcendent entity. And this is not a hopeless task, as many believe, but a realistic goal. Hopelessness arises only in a vicious circle: the longer we look for the special laws of the emergence and work of consciousness, the farther we are from the goal if the goal is to know the laws of this phenomenon. A breakthrough is required to overcome the vicious circle: a physical, physiological, functional, and technological approach.

Neurology went its way: it studied the nervous system’s pathologies due to injuries, tumors, strokes, degenerative tissue disorders, and other pathological processes, and, whenever possible, used invasive methods for therapy. But in cases of disturbances in the work of consciousness in the absence of an obvious substrate pathology, the patient is sent to specialists in mental illness depending on the assessment of the degree of disturbance: to psychologists or psychiatrists, who

remained in their vicious circles at the level of description of the “movements of the Soul.” With the same success, a person could go to specialists of more ancient professions in this field: shamans, priests, sorcerers, fortune-tellers, astrologers, etc.

At first glance, this list contains incompatible specialties, but all these formally different names are ancient psychologies, and representatives of these professions are psychotherapists. They appeal to various “higher powers” and “mystical forces,” but all work with the Soul of clients who come to them. Everyone has their theories and attributes of practice. Still, like scientific psychology, everyone is at the level of descriptions of the “movements of the Soul” and does not say anything about actual physical internal processes as the basis of these movements. Moreover, they ignore them.

In the modern world, the combination of several professional self-identifications in one person is not uncommon. A psychologist and a psychiatrist can work with shamanistic, astrological, and religious instruments. Conversely, a person with an initial specialization in fortune-telling or religious rites may begin to study psychology as a science. The second option is less common than the first. The same is true for clients: in general, the Church corporation and the smaller corporations of the remaining “mystical” specialties are much more popular with clients than science when it comes to the Soul.

The fact of the day is that people in even the most developed countries in the case of mental problems are more likely to turn to representatives of professions that appeal to miracles and mystic transcendent entities, than those who speak on behalf of science.

There are different reasons for this situation, but from a pragmatic point of view, there is the main one: science has not yet won the competition in answering the questions “What is a Soul?” and “How does it work?” It does not mean that all other specialists gave a real answer, but they have an advantage. In the absence of a real solution, the traditional illusion of the answer remains preferable. After all, we need some answers. Otherwise, what kind of professional is this if he does not know what he is working with?

If science does not yet give a clear answer, then inevitably, other options from the realm of faith prevail. If, for example, science had not answered the questions “What is a heart?” and “How does it work?” then people would continue to go to the priests, sorcerers, and shamans in case of problems with the cardiovascular system. They simply would not know that they had a problem with it but would continue to attribute the source of suffering to “evil spirits,” “God’s punishment,” or other mystical misfortunes. And only when science posed exact questions, was able to give clear answers, and use them for effective therapy, the situation changed radically. For this, we needed a transition to a physical, physiological, functional, and technological approach to the heart.

Now you will not be surprised to meet the priests, shamans, and fortune-tellers at a cardiologist’s appointment. People are more likely to go to the professional who has a real answer to the question than the one who appeals to a miracle. And here, the balance is fundamental: if there are few answers or there are none at all, then belief in a miracle takes a leading position. This belief is a sign of the helplessness of science concerning some issues. When science acquired at least general answers at a conceptual level about some aspect of reality, the “mystical” component waned. And this is natural: the mystical is just a word for unknown. The more we know about physical, material processes, the less space for mysticism of any kind.

In the question of the Soul, the weight category of mysticism is still prevailing. This is both the fault and the misfortune of science. Fault in the sense that science is designed to ask specific questions and give accurate answers. If it does not answer and even tries to avoid the problem, this is a sign of helplessness, and helplessness is a misfortune, even a disaster.

Areas of scientific knowledge about the Soul do what they can and explore this process's available manifestations. Some study external, some internal aspects. Psychiatry pretends to study both aspects of the process and tries to influence them. It intervened and intervenes in the internal process: from shock therapy and surgical lobotomy in the past to the pharmacological "lobotomy" of our days. However, in the absence of an answer to the same fundamental question about consciousness's physical laws, the primary method is the ad hoc and post hoc approach, where each patient is a "testing ground" and a hostage of the trial/error method.

This forced courage is the result of hopelessness and a lack of alternatives. For instance, in the Middle Ages, all diseases were treated with bloodletting. There was no understanding of the disease's mechanisms and causes, but something had to be done. And there was a theory at the heart of such therapy. In short: release "bad blood." Sometimes it helped. But still, more often, it harmed than helped. If it had helped all the time, the doctors would still be doing only "bad blood" release.

Not everyone is bold enough to intervene by invasive methods without understanding the mechanism. In psychology, the initial priority of the psychodynamic theories of consciousness was intercepted by a behavioral approach (behaviorism). The core of the idea is simple: if there is no understanding of what is happening inside the "black box," then we should not intervene in it; the claim of introspective approaches to penetrate the depths of consciousness is self-deception and deception of the patient.

What kind of solution was proposed by the founders of the behavioral approach? If there is no concrete answer to the question "What is a Soul?" then you just need to "forget" about it and study what is available: external behavioral manifestations (stimulus — reaction). Therapy consists of changing incentives to change pathological responses towards adaptive ones — an honest and straightforward position.

For most of the twentieth century, it remained mainstream in psychology. And this approach also worked sometimes since we can change under the influence of external factors. But for the therapist to guide such a change confidently, he must understand what he is changing. If he remains at the level of analysis of external manifestations, he is in a vicious circle: influencing the external, proceeding from the external.

The Soul (Mind, Consciousness) was "thrown overboard" from science, but it did not disappear and retained its mystery. The fundamental question remains.

For a long time, neuroscience even stopped using the very concept of the Mind. It tried to study the details of internal processes and left the answer to the fundamental question for later. It just walked away from the problem. Scientists avoided it until the turn of the 21st century. Until finally, it became clear: this approach is not only strange for sciences in which, by definition, the subject of study is the Mind, but it is also a dead-end since you cannot study something if you do not have a concept of what you are studying. All came to the same problem: the lack of a model with explanatory and predictive power concerning the internal process in the substrate, and, therefore, concerning its external manifestations both in norm and pathology.

As in the parable about the blind and the elephant, everyone touches the object of the study from different sides with different degrees of detail, but there is no general concept of what an elephant is. There are not many attempts to create unified theories of the Mind. Those that exist are either limited to describing the accumulated physiological data with varying degrees of generalization or again "slip" into metaphysics when it comes to a concrete answer to the same fundamental question: how does it work physically? More often, they do both. The description of physiology creates an aura of a scientific approach, and avoiding a specific answer makes a "safety

cushion” for returning to the old answer about the immateriality, and, therefore, the unknowability of the Soul. Any attempt to formulate the physical concept of the Mind without reference to transcendent entities requires scientific courage since the risk of error is high. You also need general courage: any plausible answer can shake the foundations of the old worldview, and the correct answer will simply destroy them.

In the brief historical excursion given above, an objectification occurred: for generalization, it was necessary to create entities called Science, Psychology, Neuroscience, etc., that do something and think about something. Of course, these are not entities but a process of cognition that is dynamic and has many currents. Generalization sounds as if everything is going in the same way. But in science, there are different people and different opinions. There is the mainstream, and there are branches that can later become flows and even main currents, and the old channel can dry out. These past trends were not in vain: we simply walked a long road of accumulating knowledge.

In recent decades, it has turned into a highway. The amount of data gathered in a short time is enormous. And this is not only about psychological and physiological areas. In parallel with the sciences of consciousness, many branches of knowledge developed and even more successfully, in the sense of specific answers to specific questions. Humanity actively studied the world. We made sophisticated instruments for studying physical processes and methods of describing them. We created theories and practical technologies based on them. They have changed the world so much that we can no longer imagine it without science’s achievements. But the Mind remains not just a secret, but almost a taboo secret. We are ready to fly into the vastness of the Universe, but the universe of our Mind requires no less, if not more research efforts. And it is no less, if not more interesting, than far-off space.

Unfortunately, despite an enormous advance in our knowledge about physical and biological phenomena, the problem of the Mind seems to remain at the same level of conceptual impasse. There are two aspects of this state. First, the mainstream physical theories do not provide any clue about how could Matter produce the Mind. Moreover, they are at odds with each other about the physical mechanism of fundamental interactions that produce the observed physical world. Thus, they do not answer the question about the physical and avoid the question about the mental. Second, cognitive sciences that study mental phenomena and their physiological correlates do not propose any coherent concept that would answer the question of how physiology produces the psyche. Moreover, they do not even try to offer any physically grounded definition of the Mind that could be a starting point for any physical model of it.

Any theory of physics should deal with the Mind as it is a physical process. We can put it the other way around: any theory of the Mind should deal with physical phenomena as it is one of them. Or better still: any unified theory of nature should include the model of Matter and Mind.

The concept “Symphony of Matter and Mind” contains two models, Theory of Energy Harmony and Teleological Transduction Theory, that aim to be a unified theory of nature. The first model deals with the universal mechanism that is responsible for all fundamental interactions and the creation of structures of Matter. The second explains physics, physiology and technology that create our Mind as a process in the brain.

Such an attempt to create a unified concept is a scientific theory, a model. By definition, it does not claim to be final and irrefutable. The fundamental point is that it does not use any auxiliary variables to patch up the “holes” in the explanatory base or hide in the “fog” of unprovable abstractions. Any reference to immateriality and transcendence is excluded. All proposed hypotheses are either empirically verified or suggest such verification, refutation, or confirmation. Nothing enters the realm of faith. Everything remains in the field of science.

This study is dedicated to all those who walked the path of finding an answer to the question about ourselves for thousands of years and who will follow this path in the future. The proposed theory “stands on the shoulders” of the past thinkers and passes the baton to future thinkers. A critical approach to previous models is inevitable: building a new model is always a correction of the old one. This is the process of cognition: any new version of a model of reality is based on old ones, even if it refutes them. Both positive and negative results are important in any search. Therefore, despite agreement or disagreement, the basis is a feeling of gratitude to those who dared to go towards the same goal