Review Article

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Improving the Mental Ability of Objective Scientific Reflection of the Universe

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Abstract
The exploratory potential of the mental sensitivity of the Universe is revealed through the brain, as an intermediary between consciousness and the internal reality of a person and his external perceived environment using a set of methods that expand human perception. The exploratory potential of consciousness in the context of the scientific reflection of the Universe is an interdisciplinary topic that formalizes ways of extracting meaning from complex data, where neuroscience, physics, cognitive science and philosophy intersect. The main areas in which consciousness is considered as an instrument for understanding reality are, firstly, neurobiological and cognitive capabilities: integration of heterogeneous information - the brain collects data from the senses, memory and current goals into a single picture of the world; conscious control of attention - a person can purposefully focus on individual aspects of reality, enhancing them in perception and analysis; reflection and hypothesis testing - consciousness allows us to formulate assumptions, test them, notice contradictions and adjust the model of the world. The interdisciplinary formalization of consciousness's reflection of the Universe is accomplished through mathematical formulas. Intuition and creative thinking often lead to unexpected hypotheses, which are then tested using mathematical methods and models. Particularly in fields where data is ambiguous (astronomy, cosmology, high-energy physics), it is the human ability to see patterns and analogies that helps us find new meanings. Science not only describes the world but also decides what is important to study and how the results can impact society—here, the role of consciousness and values is fundamental.

Keywords: Neuroscience, Mental Sensitivity, Consciousness, Objective Reflection of the Universe, Scientific Knowledge of Reality.

Introduction

A person cannot function without visual, auditory, olfactory, tactile, and other sensory perceptions of the body's receptors. They lose the ability to think and communicate communicatively without linguistic sensitivity and skills.

Organic sensors perceive thermodynamic, light, and other wave influences. Blind individuals with strong tactile sensitivity read texts. People perceive musical spectral wave influences.

Consciousness perceives and reflects living information from the Universe. Researchers are improving the spiritual sensory sensitivity of consciousness to perceive the spectral wave influences of living information from reality for its deeper reflection. The neural network mental structures of the brain represent reality reflected by spiritual consciousness in a linguistic format. Spiritual consciousness is connected to the neural network mental structure of the brain. We receive a reflection of reality in a linguistic format in an active state. In dreams, we see reality reflected by spiritual consciousness. Day unto day uttereth speech, and night unto night sheweth knowledge (Psalm 18:3).

A scientist is incapable of objectively reflecting the Universe without the spiritual sensitivity to perceive its living information [1]. The Creator allows researchers to perceive living information in accordance with their spiritual state [2].

Spiritual state and mental abilities are complex phenomena that are understood differently in different traditions: psychology, philosophy, and religious teachings.

A psychological perspective on the connection between state and abilities.

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In psychology, mental abilities are cognitive functions: attention, memory, thinking, perception, and the ability to form meaning [3-4]. State here is a temporary characteristic of the psyche (activation level, emotional background, concentration), which directly influences these abilities. Key points:

- Spiritual state increases the effectiveness of cognitive processes. When stress levels are reduced and internal resilience is enhanced, attention and memory function better, and complex semantic constructs are easier to construct.
- Emotions modulate perception and interpretation. A positive attitude and a sense of security expand cognitive flexibility, while a negative attitude often narrows focus to simple, stereotypical solutions.
- Mental experience is not only knowledge, but also the structure of connections between it. Spirituality in a psychological context is often interpreted as a system of values and meanings that organizes this experience and guides thinking.

Philosophical, Semantic, and Interdisciplinary Perspective

Will discuss the topic through the prism of meaning formation:

- The spiritual state as a special mode of semantic integration. In this state, a person is inclined to seek broader contexts, connect local facts with general principles, and see the "whole" behind the details.
- Metacognitive effect. Spiritual and value attitudes can act as "meaning filters": they determine what is considered important and what is unimportant, thereby directing cognitive resources.
- Connection with figurative and symbolic thinking. Many spiritual traditions actively use images, symbols, and metaphors. This develops the ability to operate with abstract and polysemantic structures—something close to "holographic thinking" and spectral-semantic representations.

Practical methods for strengthening mental abilities

The following practices help sustainably develop the ability for deep reflection and meaning-making:

- Mindfulness and attention management. Meditative and contemplative techniques (in a neutral, non-religious context) train the ability to maintain focus and notice automatic reactions.
- Reflective writing. Keeping a journal, formulating one's own meanings, and revising them help structure mental experience.
- Discipline of thinking. Working with arguments, verifying sources, and comparing different points of view strengthen analytical skills.
- Stress regulation and recovery. Sleep, physical activity, and reducing information overload are fundamental conditions for stable cognitive function.
- Value reflection. Periodic reflection: "What is important to me? What goals am I pursuing?" helps build a semantic foundation that stabilizes thinking in the face of uncertainty.

Christian perspective: "The Ladder" by John Climacus

The Christian tradition focuses on the transformation of the entire personality: purification from passions, development of virtues, and deepening of inner attention. How does this relate to mental abilities:

- Attention control and sobriety. In ascetic practice, the ability to manage attention and avoid distraction is of great importance. This is close to modern concepts of "controlled attention" and working memory.
- Restructuring motivation and value hierarchy. When higher values (love, humility, service) become dominant, the nature of thinking also changes: it becomes less egocentric and more holistic.
- Reflection and discrimination of thoughts. The practice of understanding one's inner movements develops the ability to finely differentiate meanings—the ability to discern nuances of motives and intentions.

In the Christian tradition, enhanced perception of living information from the Universe is understood as increased sensitivity to the moral and spiritual dimensions of existence and to a person's inner state [5]. Understanding the image of God brings one closer to an objective, holistic perception of His creations, mentally, heartfelt, and intuitive.

The Christian development of mental ability is discussed in the first section of the article. The second section of the article is devoted to the objective scientific reflection of the Universe. The third section provides a quantum research understanding of the objective reflection of reality. The article concludes by listing key aspects of the importance of developing mental abilities in scientific research.

Christian Development of Mental Ability

Let us consider the process of developing a researcher's mental ability to objectively scientifically reflect on the Universe, depending on their spiritual development along the ladder of St. John Climacus.

Each step is dedicated to a specific virtue (for example, renunciation of worldly vanity, impartiality, meekness, repentance, prayer) or the struggle with a specific passion (anger, vanity, pride). The goal of this entire ascent is to transform the person themselves: to purify the heart, to free it from egoistic attachments, so that ultimately a deeper, more authentic knowledge of God becomes possible and, through Him, a clearer understanding of the meaning of all things. In other words, we are talking about a qualitative change in the perceiving subject itself.

In the patristic tradition (including "The Ladder"), it is said that as a person ascends spiritually, he truly begins to perceive the world, himself, and the actions of God more acutely and deeply. This is the spiritual fruit of the purification of the soul. Let us briefly consider these spiritual fruits.

In the initial stages (struggling with worldly vanity, renunciation, obedience), a person learns to distract themselves from external stimuli and vanity. This already trains inner mindfulness: they

begin to better notice how external events resonate within, and what thoughts and emotions follow them. The skill of self-observation develops—this is the beginning of mental sensitivity.

Further, at the stages of repentance, remembrance of death, and mourning, a person becomes more deeply aware of their own weakness, sinfulness, and the fragility of life. This sharpens empathy: they feel the suffering of others more acutely, becoming more sensitive in relationships.

In the phase of struggling with vices (meekness, freedom from anger, chastity, etc.), a person purposefully refines individual spiritual powers. For example, by curbing anger, they learn to more subtly discern the motives of their own actions and those of others. Silence trains inner concentration, the ability to hear the quiet voice of conscience, and not just loud thoughts.

At the stages of spiritual peace (silence, prayer, dispassion), an important shift occurs. When external noises recede and passions subside, a person begins to perceive more subtle, spiritual realities. In the patristic tradition, this is called mental activity: the mind, freed from vanity, is able to penetrate more deeply into the meaning of events, perceive God's providence, and more acutely sense the presence of the Divine. Here, sensitivity takes on a new nuance—it becomes spiritual, connected with the experience of prayer and contemplation.

At the summit (the union of faith, hope, and love), mental sensitivity achieves harmony: a person is able to simultaneously experience deeply, judge wisely, and act out of love. Mental sensitivity is accompanied by sober judgment and humility, and learns to direct everything toward good.

Spiritual ascent refines a person's perception; they truly begin to see the world differently. They become more conscious: they better understand their own motives, emotions, and deepest values. They develop the ability to notice subtle nuances in relationships, nature, and events—things that previously eluded them due to vanity or bias. In the Christian tradition, this is associated with the action of grace: as the heart is purified, a person becomes more receptive to "signals" from above, to God's providence, and through this, to a deeper, more holistic understanding of the structure of the world and man's place in it. In other words, it's not so much the analytical mind itself that improves, but rather the integrity of perception—when the mind, heart, and intuition work more harmoniously.

Through the Ladder, the researcher refines their mental sensory abilities. And as a consequence of spiritual purification, the researcher truly becomes more objective in a spiritual sense at each subsequent stage of spiritual development. Spiritual ascent up the Ladder refines the mental abilities to perceive the Universe.

An Objective Scientific View of the Universe

An objective scientific view is a unified picture and a set of testable models built on observations and experiments [6-9]. In the case of the Universe, the primary tool is cosmology—a branch of astrophysics based on physics, mathematics, and astronomical data.

Key Pillars of the Scientific View

Observability and Reproducibility. Science describes not "the entire Universe" (it is inaccessible to direct study), but rather its observable part—the so-called observable Universe. Its radius is approximately 46 billion light-years, and its age is approximately 13.8 billion years. Due to the finite speed of light, telescopes effectively act as "time machines": we see distant objects as they were in the distant past.

Mathematical models instead of "photographs." Instead of a single snapshot, science builds models that are consistent with multiple independent observations. For example, the ΛCDM (Lambda Cold Dark Matter) model is the current standard, which combines data on the cosmic microwave background (CMB), the distribution of galaxies, and the accelerated expansion of the Universe.

Fundamental theories. These include general relativity (for gravity and large-scale structure) and the Standard Model of particle physics (for matter and interactions).

What exactly does science consider objective facts?

Expansion of the Universe. This is confirmed by the redshift of galaxy spectra (Hubble's law) and is consistent with general relativity.

CMB radiation. The uniform microwave background radiation with a temperature of about 2.725 K is an "echo" of the early hot phase of the Universe. Its spectrum and anisotropies have been measured with high precision and serve as one of the main sources of data for cosmology.

Composition of energy and matter. According to observations, the energy balance is approximately as follows:

- dark energy — ~69% (responsible for accelerated expansion);
- dark matter — ~27%;
- ordinary (baryonic) matter — ~5%.

Large-scale structure. Galaxies form a "cosmic web" of filaments and clusters, with voids between them. This is confirmed by sky surveys and computer simulations.

How objectivity is ensured

Independent methods. The same parameter (for example, the age of the Universe) is determined in different ways: from the cosmic microwave background, from the ages of the oldest stars, from the expansion dynamics. Consistency of the results increases confidence in the model.

Quantitative Predictions. Good models not only describe the past but also predict new effects. For example, the "hot universe" theory predicted the existence of the cosmic microwave background radiation, which was later discovered.

Criticism and Refinement. Scientific models are constantly tested and can be revised as new data emerges. This is not a sign of weakness, but a self-correcting mechanism for science.

Limitations

Boundary of the Knowable. We cannot observe what lies beyond

the cosmological horizon; any statements about the "entire universe" inevitably rely on extrapolation.

Unknown Components. Dark matter and dark energy are so named precisely because their nature has not yet been determined. They manifest themselves through gravity and expansion dynamics, but are not directly observable.

Different Scales – Different Laws. Different sets of rules operate at the quantum level and at cosmological scales, and a complete, consistent theory of them has not yet been created.

Spectroscopy and spectral analysis are among the most important tools in cosmology:
Spectral lines in galactic radiation provide redshifts and allow us to measure velocities and distances.

The spectrum of the cosmic microwave background is a nearly ideal blackbody spectrum, deviations from which (anisotropies) carry information about the early Universe.

Spectral-meaningful approaches (in terms of data analysis) are used to extract physical parameters from vast arrays of observations: for example, spectral line profiles help determine the chemical composition, temperature, and density of gas in the interstellar medium.

Quantum Research Technologies

Quantum technologies reflect the universe objectively in its dynamics and force us to rethink the very idea of objectivity [10]. The point is that quantum mechanics truly changes our understanding of how reality works at a fundamental level, and this directly affects how we reflect it:

The role of the observer. In the quantum world, the very act of interacting with a system (for example, measuring) influences its state. This is often formulated as the "observer effect." In classical experiments, we try to minimize interference, but in the microworld, any interaction inevitably changes something. This has sparked debate: does reality exist completely independently of who observes it and how? A well-known example is the "Wigner's friend paradox": for one observer, the system has already "chosen" a state, while for another (who has not yet received the information), it is still in a superposition. Experiments with violations of Bell inequalities have shown that such differences in descriptions are real, calling into question the idea of a single, absolutely objective picture for everyone. Many physicists clarify: the point is that the description of reality depends on the way it is studied.

Superposition and probabilistic nature. At the quantum level, a particle can be in several states simultaneously (superposition). We cannot say that it has one "true" position or spin before measurement—only probabilities of different outcomes. This changes the very nature of "reflection": we are describing not rigidly defined properties, but a spectrum of possibilities.

Entanglement. Two particles can be so linked that the state of one instantly influences the state of the other, regardless of distance. This demonstrates that reality at a deep level can be non-local—and this also changes the picture of the world we construct.

Quantum technologies are the tools that allow us to further explore these ideas and test theories [11-15]. For example:
Quantum simulators. Scientists use them to model the behavior of complex quantum systems—for example, simulating processes in the early universe (the creation of particles in expanding space, the collapse of a false vacuum). This helps test hypotheses that are extremely difficult to calculate on classical computers. Quantum computers. They are also used to model quantum systems and study fundamental questions.

Experiments with entanglement and superposition. New technological setups allow for increasingly sophisticated experiments that test the limits of quantum mechanics and help refine interpretations.

Quantum technologies provide us with powerful tools for studying the universe and simultaneously demonstrate that our "reflection" of reality is not a passive copy—it is actively shaped by interactions (including measurement) and depends on the chosen method. Science seeks stable patterns and reproducible results. It simply becomes clear that objectivity in a quantum context is not about “the world itself, independent of everything,” but about the fact that different observers, using consistent methods, can come to consistent descriptions, even if their individual descriptions differ slightly.

Conclusion

A researcher's mental abilities are a key tool that directly influences how accurately and completely we reflect the Universe in our theories. Let's highlight key points that explain why their development is so essential.

- Overcoming subjective biases. Each of us has cognitive tendencies to notice some things and ignore others, and to make hasty generalizations. Without developing critical thinking, these "blind spots" easily permeate our interpretation of data: we may see a pattern where there isn't one, or reject a fact that doesn't fit our hypothesis. Improving mental skills (for example, mindfulness training, studying cognitive biases) helps scientists recognize such moments in time and adjust their approach to reduce subjectivity.
- Ability to construct and test hypotheses. Science advances by formulating hypotheses and rigorously testing them. This requires developed analytical skills: the ability to break a complex problem down into its components, see cause-and-effect relationships, and predict consequences. Flexibility of thought is also essential: scientific paradigms often shift as new data emerges. The ability to discard an outdated idea in favor of a more accurate model is also a result of training mental abilities.
- Working with abstractions and complex systems. Many fields of science (cosmology, quantum physics, theoretical biology) deal with objects and processes that cannot be directly observed. Abstract thinking skills, the ability to construct mental models, manipulate mathematical apparatus, and see connections between seemingly disparate phenomena are critical here. The more developed these abilities are, the deeper and more accurate the theoretical constructs can be.

- Systematic and holistic perspective. For a picture of the world to be objective, it is important to consider phenomena not in isolation, but in context—taking into account multiple factors, interdependencies, and historical and cultural assumptions. Systems thinking develops this ability to see the "big picture," which helps avoid reductionism (reducing the complex to the simple) and obtain more balanced knowledge.
- Scientific Intuition and Creativity. In the search for solutions, intuition—the ability to formulate a guess based on accumulated experience and patterns—also plays a crucial role. But the key here is that an intuitive breakthrough must be immediately subjected to rigorous critical scrutiny.

In other words, developed mental skills are needed not only for generating ideas but also for rigorously evaluating them.

Mental abilities are a tool that enables the transformation of raw empirical data into objective knowledge [16-29]. By improving them, researchers enhance the quality of their cognitive process: they reduce the risk of error, expand the possibilities for discovery, and ultimately bring the scientific picture of the world closer to a more accurate reflection of reality.

Science also has social mechanisms (peer review, reproducible experiments, collective dialogue) that further "filter" subjectivity. But it is precisely developed mental skills that give a scientist the personal competence to effectively rely on mathematics—the queen of sciences—and to carry out mathematical formalization in interdisciplinary research.

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