

Quantum Mechanics: Monos, Logos, and State Fixation

This article examines quantum mechanics through the lens of metamorphism—an interdisciplinary processual framework based on the axiom of the prohibition of indifference. It is shown that quantum processes and models describing them are isomorphic in their set of operations (diff / fix), but radically differ in their ontological status. On this basis, the epistemological limit of fixing quantum states is formalized, and the role of metamorphism as a bridge between quantum reality and its formal descriptions is substantiated.

1. Isomorphism in Quantum Physics: A Common Language of Operations

The key move of metamorphism in the analysis of quantum systems lies not in opposing the "microworld" and "macroworld," but in revealing their structural isomorphism. Both quantum reality (Monos) and physical models (Logos) operate with the same basic set of operations:

- **diff** — the operation of differentiation. In this context, superposition is considered not as mathematical summation, but as an epistemological regime in which fixation of identity is structurally impossible.
- **fix** — the operation of fixation (measurement/establishment of identity).

The difference between a quantum process and its model lies not in the language, but in the regime of admissibility of operations. Both levels use the same logical instruments, but are subject to different ontological constraints.

2. The Axiom of the Prohibition of Indifference as Quantum Foundation

At the foundation lies the axiom of the prohibition of indifference: a state of absolute indistinguishability (complete identity) is ontologically impossible. Indifference is equivalent to the absence of structure and process. Therefore, absolute identity cannot be a property of quantum reality, but exists only in the space of models.

From this axiom directly follows the fundamental statement of quantum Monos:

$$\text{diff}(\mathbf{x}, \mathbf{x}) \neq 0$$

Any attempt by the system to relate to itself reveals a non-zero difference. This difference is not a measurement error, but constitutes a structural condition of the quantum object's existence.

3. Monos: The Regime of Irreducible Quantum Difference

Monos represents the regime of quantum reality as process, in which the prohibition of indifference operates directly. In the Monos regime, difference is fundamentally irreducible:

$$\text{diff}(\mathbf{x}, \mathbf{x}) \neq 0$$

This means that a quantum object of cognition cannot fully coincide with any of its descriptions. Any attempt at complete epistemic fixation encounters a structural limitation:

$$\text{fix}(\mathbf{x}) \text{ is impossible if } \mathbf{x} \in \text{Monos}$$

This is not a practical difficulty, but a fundamental epistemological limit. Complete fixation would mean restoring the state of indifference. Consequently, any quantum knowledge about Monos remains approximate, contextual, and open to the emergence of new distinctions.

4. Logos: The Space of Admissible Identity and Fixation

Logos represents the space of physical models and measurement results, in which the operation of fixation is admissible and necessary. In the Logos regime, the following conditions hold:

$$\text{diff}(\mathbf{x}, \mathbf{x}) = 0, \text{ fix}(\mathbf{x}) = \mathbf{x}$$

Here, stable forms, repeatability, and formal abstractions are possible. Logos admits operations that are ontologically impossible in quantum Monos, for example, defining an object through a formal empty set (not to be confused with physical vacuum):

fix(\emptyset) = something

This emphasizes the difference in statuses of the quantum process and its model while preserving a common language.

5. Metamonism as an Epistemological Bridge in Physics

Metamonism describes the interaction, not the substitution, of quantum process by physical measurement. It serves as a bridge that:

- Fixes the difference between reality and model
- Preserves their structural isomorphism
- Establishes rules for correct transition between them

A model of Logos is adequate to quantum Monos only if $\text{diff}(x, x) \neq 0$ is recognized. The model remains connected to reality only insofar as it does not claim to completely fix it.

6. Conclusion

Monos forms the order of quantum being as a unique process. **Logos** forms the order of modeling, where identity and fixation are possible. **Metamonism** connects them, making differences operationally explicit. It shows that quantum limits (uncertainty) are not a deficiency of cognition, but a direct consequence of the fundamental ontological structure of reality. Metamonism allows maintaining the connection between the uniqueness of quantum processes and the necessity of their formal description.

Keywords: *metamonism, quantum mechanics, Monos, Logos, prohibition of indifference, epistemology*

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