

## Joohyun Yoo / Zagreb Logic Conference 2026 Trip Report

I participated in the Zagreb Logic Conference 2026, held in Zagreb, where I presented my paper "Rescuing Quantum Logic from a Category Mistake: On the Historical Heterogeneity of Logic." The conference brought together researchers from mathematical logic, philosophy of logic, category theory, and related foundations of mathematics and computer science, forming a focused yet genuinely interdisciplinary forum.

My presentation reassessed the status of Birkhoff–von Neumann quantum logic in light of what I argued is a persistent category mistake in the literature: namely, that many influential criticisms evaluate an algebraic, lattice-theoretic notion of logic by standards that properly belong to the deductive, Fregean tradition. The talk reconstructed the historical split between these two conceptions of logic, showing that quantum logic was never intended to provide implication or to function as a general meta-language, while nevertheless remaining a meaningful internal structure of quantum theory. I drew out the implications of this distinction for the foundations of informatics, in particular for categorical semantics and the design and interpretation of type theories, including substructural and quantum variants.

The presentation generated substantive discussion, particularly around the question of what criteria a formal structure must satisfy to count as a logic at all, and how the algebraic and deductive traditions can or cannot be reconciled. Several participants engaged closely with the categorical framing, and the conversation opened up connections to ongoing work in linear logic, proof-theoretic semantics, and the semantics of quantum programming languages. These exchanges provided critical feedback that will allow me to sharpen the argument for journal submission, and a number of researchers expressed interest in continued contact around categorical approaches to logic and type theory. The discussions also connected directly to my doctoral research at the Faculty of Informatics at ELTE on the category-theoretical and logical foundations of type theory, with participants noting the relevance and timeliness of this line of work.

Beyond my own presentation, I attended sessions on proof theory, modal and substructural logics, and the philosophy of formal languages, which provided valuable context for situating my project within current debates in the foundations of logic. The invited lectures were especially useful in clarifying live disagreements about the scope and methodology of logic as a discipline, from its algebraic to its proof-theoretic and computational dimensions. I also participated in informal exchanges with researchers from across Europe and beyond, which broadened my sense of the landscape of foundational research relevant to my work.

Overall, the conference represented a significant step in the development of both my research and my professional network. The feedback I received will directly inform revisions toward publication, and the contacts I established may support future collaborations in logic, category theory, and quantum foundations. My participation also contributed to the international visibility of ELTE's Faculty of Informatics, with my affiliation associated with foundational, mathematically rigorous research at the intersection of logic and theoretical computer science.