

The Birth of a Quantum Physics on the Eastern European Periphery: Władysław Natanson and the First Solvay Conference of 1911

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Abstract:

In this paper I will explore the relationship between the production and dissemination of early quantum thought in the great Western European centers of science at the beginning of the twentieth century, and institutions on the Eastern European imperial peripheries. The context in which I will explore this relationship is the crisis in European physics that emerged in 1900 when Max Planck announced his derivation of black-body radiation and the eventual convening of the First Solvay Conference in 1911. I begin with the question: despite advanced work on the very issues at stake at Solvay in 1911, and extensive contact with Western European institutions and practitioners of physics, why were no scientists working at universities in the peripheries of East-Central European empires invited? Ultimately, I argue that their exclusion was not based on an ignorance of their work or a prejudice against scientific workers on the periphery per se, but rather that Eastern European physicists approached the issues at stake at Solvay from fundamentally different epistemological and ontological dispositions, which rendered their work beyond the bounds of the dominant scientific discourse and thus intellectually incompatible.

As the participants of the Solvay Conference—twenty-one physicists, primarily from Germany and France, but also Britain, Holland, Austria, Belgium, and Denmark—struggled with a fundamental shift in the understanding of the nature of matter and energy, beyond the aptly named *Hotel Metropole* and beyond the great Western European centers of science, the physicist, Władysław Natanson, sat in his Jagiellonian University office on Studencka Street in Krakow—then in the Habsburg province of Galicia—working on many of the same issues that occupied the Solvay participants. Despite his research at the forefront of the field of physics, neither Natanson nor representatives of any of the national minorities of the Central-European multinational empires of Prussia and Austro-Hungary were among the participants of the Solvay Conference.

In explaining this curious fact, I will illustrate first how Natanson's work indeed placed him among the avant garde of physicists working on the nascent field of quantum physics of the day. Through Natanson's work, I will show the development of a project that relied on a strand of quantum thought beyond the dominant "Western European" strains, but one that was no less relevant and, indeed, in many ways was more cognizant of the revolutionary implications of Planck's derivation for the nature of matter and energy.

Though Natanson ultimately failed in this project, it would be teleological to read this failure as the reason for his exclusion in 1911. Rather, I will show, Natanson's unique cultural and intellectual milieu—indeed a milieu that was in many ways more intellectually cosmopolitan and more broadly “European” than those in the West—fostered methodological, epistemological, and ontological approaches that fell outside the bounds of Western European scientific discourse. I hope this paper might not only shed light on the development of quantum physics and modern European scientific discourse, but also raise questions about these ideas' relevance for the emergence of a “modern Europe” more broadly.