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Title: Lobachevsky's Views on Geometry

Abstract:

The received historical narrative, which has been established in the 1960s by Jean Dieudonné, Marshal Stone and other proponents of the Bourbaki-style Structuralist mathematics, represents the discovery of Non-Euclidean Geometry in the 19th century as a pivotal moment of history when mathematics turned to studying abstractions unrelated to the physical experience. This discovery, so the story goes, triggered a development, which eventually transformed mathematics into a science of abstract structures.

This historical narrative stands in sharp contrast with how some of the pioneers of the new geometry conceived of their own discoveries back in the 19th century. Nikolai Lobachevsky's general view on geometry was formed by D'Alembert's articles in Diderot's *Encyclopaedia*. According to this view, Geometry is an art of spatial measurement supported by a symbolic analytic calculus. The traditional Euclid-style axiomatic presentation of Geometry conceals, in this view, the true nature and the true purpose of Geometry and for this reason needs to be wholly abandoned.

Following D'Alembert Lobachevsky did not simply align with a popular trend of his time. He was a convinced D'Alembertian of a radical sort who attempted to reformulate the conceptual foundations of geometry in order to close what he perceived as a harmful gap between the traditional Euclid-style axiomatic geometry, on the one hand, and the needs of natural sciences and engineering, on the other hand. Lobachevsky's research in Non-Euclidean Geometry was a part of this ambitious project.

In my talk I shall briefly present Lobachevsky's philosophical views on geometry using archival materials published by L.B. Modzalevsky in 1948. In the Conclusion I will argue that Lobachevsky's take on geometry remains sound and fruitful in the context of today's mathematics, and should not be dismissed as outdated notwithstanding the Structuralist historical claims.