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Studies in History and Philosophy of Science Part A

Volume 32, Issue 2, June 2001, Pages 265-302

Paper tools in experimental cultures

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[https://doi.org/10.1016/S0039-3681\(01\)00010-3](https://doi.org/10.1016/S0039-3681(01)00010-3)

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Abstract

The paper studies various functions of Berzelian formulas in European organic chemistry prior to the mid-nineteenth century from a semiotic, historical and epistemological perspective. I argue that chemists applied Berzelian formulas as productive "paper tools" for creating a chemical order in the "jungle" of organic chemistry.

Beginning in the late 1820s, chemists applied chemical formulas to build models of the binary constitution of organic compounds in analogy to inorganic compounds. Based on these formula models, they constructed new classifications of organic substances. They further applied Berzelian formulas in a twofold way to experimentally investigate organic chemical reactions: as tools which supplemented laboratory tools and as tools for constructing interpretive models of organic reactions. The scrutiny of chemists' performances with chemical formulas on paper also reveals a dialectic which contributed considerably to the formation of the new experimental culture of synthetic carbon chemistry that emerged between the late 1820s and the early 1840s. In an unintended and unforeseen way, the tools reacted back on the goals of their users and contributed to conceptual development and a shift of scientific objects and practices

(\sim substitution TM) which transcended the originally intended chemical order.



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Keywords

Chains of Inscriptions; Paper Tools; Berzelian Formulas; Organic Chemistry

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