

Chemistry, an ontology-free science?

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Abstract

It is often assumed that chemistry was a typical positivistic science as long as chemists used atomic and molecular models as mere fictions and denied any concern with their real existence. Even when they use notions such as molecular orbitals chemists do not reify them and often claim that they are mere models or instrumental artefacts.

However a glimpse on the history of chemistry in the *longue durée* suggests that such denials of the ontological status of chemical entities do not testify for any specific allegiance of chemists to positivism. Rather it suggests that the dilemma positivism vs realism is inappropriate for characterizing the ontology of chemistry. This alternative shaped at the turn of the twentieth century in the context of controversies about atomic physics does not take into account the major concern of chemists, i.e. making up things. Only by considering what matters for chemists, their matters of concern rather than their matter theories, can we expect to get an insight on their ontological assumptions. The argumentation based on historical data is twofold.

Generating new substances out of initial ingredients which is the *raison d'être* of chemistry raised a vexing puzzle which has been alternatively solved with the Aristotelian notion of mixt and the Lavoisieran notion of compound. I will argue that an essential tension remains intrinsic in chemistry between the two conceptual frameworks.

But how are we to make sense of the long tradition of ontological non-commitment in chemistry? I argue that what is usually considered as a denial of the existence of the basic units of matter is better characterized as a focus on more important actors on the chemical stage.

Subjects: [Specific Sciences: Chemistry](#)

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