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EDITORIAL 19  
SPECIAL ISSUE ON PHILOSOPHICAL PROBLEMS OF  
CHEMICAL KINDS

I am pleased to announce that the International Society for the Philosophy of Chemistry now has a president in the form of Rom Harré, the distinguished Oxford philosopher of science. Harré is the guest editor of this special issue, to which he has also contributed an introduction and an article.<sup>1</sup>

As is rather well known, analytical philosophers, and particularly philosophers of language, have had a pre-occupation with the issue of sense and reference and have often couched their arguments in terms of chemical kinds such as gold and water. Now that philosophy of chemistry has come into its own we are beginning to see more challenges to these armchair philosophical views from philosophers who understand the chemical aspects.

In addition there has been an independent growth in interest concerning natural kinds, essence and the nature of substance in the philosophy of chemistry. It is quite appropriate therefore that a special issue should be devoted to such questions.

Harré suggests that a re-introduction of the distinction between real and nominal essences can cast light on the question of chemical kinds. In keeping with his support for scientific realism, as espoused in many books and articles,<sup>2</sup> Harré argues that chemists are primarily concerned with “grounding nominal essence distinctions in hypotheses about inner and usually unobservable natures of the substances being studied.” In another place he writes, “the taste of the chemical taxonomist even when using nominal essence criteria for identifying something as belonging to a certain kind, *must* be interpreted as indirectly classifying according to real essences.”<sup>3</sup>



Jaap van Brakel is known for his espousal of a radical form of anti-reductionism in which he maintains that the “Manifest Image”, a term he borrows from Sellers, is as fundamental as the micro description of chemical phenomena.<sup>4</sup> In his article, van Brakel mounts a strong and chemically informed attack, as well as summarizing the recent literature, on the Kripke–Putnam view that essence is determined by microstructure.

As this issue goes to press, Robin Hendry will be hosting the 8th ISPC meeting at the University of Durham in the UK. Hendry’s article considers the continuity or otherwise of reference in the case of the term “element” by historically examining the way that Lavoisier and Mendeleev regarded this term. Hendry then uses his conclusions, in part, to discuss the *qua* problem which has become an increasingly debated question in connection with Kripke and Putnam’s theory of reference.

Joseph Simonian, a newcomer to our fold, is an analytical philosopher who uses the example of “water” to criticize some recently published views, and logical puzzles, on the question of reference by the philosopher Scott Soames. In addition Simonian proposes a new definition of a natural kind, namely “any kind originally posited within the confines of a theory of a natural science”.

Joseph Earley, a chemist and philosopher and the host of the 6th ISPC meeting wins the prize for the best title in this issue with, “Why There is No Salt in the Sea.” He begins by discussing what he takes to be an analogous problem concerning elements. In what sense, if any, do the elements survive in chemical compounds? The answer to this question hinges of course on the meaning that one assigns to the term “element,” a topic that is being increasingly debated in philosophy of chemistry, as in the case of the above mentioned paper by Hendry. Earley proceeds to criticize the views of Paul Needham on the nature of substance and whether or not the properties of salt solutions are intensive. Earley further proposes that standard philosophical mereology needs to be adjusted to deal with the chemical facts concerning what happens when salts dissolve in water.

In response Paul Needham, a frequent contributor to this journal, examines some aspects of elementhood and mixtures. In the case of elements he suggests that the closest to a modern

understanding might be provided by “something like the Stoic view with a twist of Aristoteleanism.”<sup>5</sup> Moving on to mixtures Needham argues, contrary to Earley, that the status of elements in compounds is not in fact analogous to the situation that exists with compounds and their solutions and maintains his belief that solutions such as those of salt water are not intensive.

One feature that I find quite interesting among most of these authors is the apparent rejection of any outright metaphysical aspects of chemistry. Harré wants to ground real essences in micro-entities postulated by classical structural chemistry, although he sees reluctant to extend his ontology to embrace quantum chemistry. Hendry criticizes Paneth for claiming that the elements in the sense of basic substances have anything metaphysical about them, while preferring to regard Paneth’s basic substances as merely more abstract than his simple substances. Simonian also mentions metaphysics in passing when he says of his proposed definition of natural kinds,

What this definition does is make explicit the fact that the relationship that exists between water and H<sub>2</sub>O is conceptual and not metaphysical.

The only author prepared to take a metaphysical approach, in the sense that I am hinting at, may be Joseph Early as shown for example in his allegiance to Paneth’s views on the elements, although Earley does not develop this aspect in the present article.<sup>6</sup>

All in all, we see further signs of growing maturity in the field with authors tending to focus increasingly on common issues and an apparent desire to enter into detailed discussions of each other’s work. We are all looking forwards to the Durham meeting which will include contributions from some chemists, philosophers and historians who will be speaking for the first time at an ISPC session. These new people include Eugen Schwarz, Alan Chalmers and David Knight. A hearty welcome to them as well as all returning members of the philosophy of chemistry community in this the tenth anniversary year since the field was officially initiated.

## NOTES

1. The papers were first delivered at the 7th ISPC meeting in Tartu, Estonia.
2. For example in his, J.L. Aronson, R. Harré, E.C. Way, *Realism Rescued: How Scientific Progress is Possible*, Open Court, Chicago, 1995.
3. The italics have been added by the present editor.
4. J. Van Brakel, *The Philosophy of Chemistry*. Leuven University Press, Leuven, 2000.
5. Needham appears to be troubled by the fact that the official modern definition of an element, due to Paneth, makes no reference to electrons, arguing that most of chemistry involves changes having to do with electrons. Needham believes that as a result this definition cannot illuminate what happens to sodium chloride when it dissolves in water.
6. Earley merely hints that he would not be averse to regarding Paneth's basic substances in the "transcendental" sense that Paneth intends them to have. If I am reading too much into this passage perhaps it is because I too am inclined to take seriously Paneth's original account of the twofold meaning of elements.

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