



# Centenary Workshop on the Bifurcation of Acidity -Protonism vs. Electronism

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On March 7, 2023, a personal circle was closed. Thirty years ago, a handful of young academics founded what they called the “APC” (Arbeitskreis Philosophie und Chemie) in my home institution, Coburg’s small university (Upper Franconia/Bavaria/Germany). Latest after that June 1993, my main research interests turned to the history and philosophy of chemistry. Hence, with the Centenary Workshop, I am happy to look back to a busy period filled with (hopefully not always unsuccessful) teaching, instructing, and administrating. During that very period, however, I also witnessed (and took part in) the birth and development of what some observers tend to call modern philosophy of chemistry.

The idea to hold a meeting on the mentioned topic emerged from my research activities over the last almost ten years, during which I was lucky to spend some time at the Department of History and Philosophy of Science in Cambridge and collaborate with Hasok Chang (Ruthenberg and Chang 2017, 2020). In 2022, Eric Scerri published a paper in this journal, in which he supported what I call the electronistic position regarding acidity, which commenced with Gilbert Lewis’ book “Valence” in 1923. Hence, it seemed to be a natural step to ask both scholars to contribute to our Workshop, and I was extremely happy that the two of them agreed to do this. Because their pertinent publications were already out, I ask the readers to kindly refer to the following references: Chang 2011, 2012, 2016, 2022; Scerri 2022).

Also actively contributing to the Zoom-meeting were three other friends. Apostolos Gerontas, a historian of science with a background in chemistry, is a lecturer at Coburg University. After having served as one of the examiners in his doctoral examination at the Norwegian University of Science and Technology in Trondheim, I was part of the hiring committee as to a lectureship in the history and philosophy of science (a still unusual field for a small university of applied sciences). For many years, Apostolos and I have been colleagues, conducted student projects on acidity (Ruthenberg 2020), and have published together (Ruthenberg and Gerontas 2018). He contributed the talk “Concepts of acidity in

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antiquity and early history”, which gives an impression of the sensory background of the notion “acid”.

Pieter Thyssen is not a newcomer to the international group of philosophers of chemistry. He is one of the very few colleagues who are formally trained in both chemistry and philosophy. On several ISPC meetings he presented his work and hosted one of these meetings (in Leuven) himself. When I asked him he immediately found a topic for his contribution, “Are acids natural kinds?”, which he elaborates in the printed version in some detail.

For several years, Gerd-Uwe Flechsig, who presented “Usanovich and his all-in-one acid-base concept”, has been a professor of chemistry at Coburg. He joined us after some years in Britain and the United States. In fact, he can be called my successor, in that he took over most of my teaching obligations, including a seminar titled “Biophilosophy”, which is an introduction to the history and philosophy of science. His main field of research is analytical electrochemistry. I am particularly glad that I could convince him to participate. Historical and philosophical topics with respect to chemistry are not entirely new to him though: In his doctoral examination in Rostock, Gerd chose philosophy as a minor. His paper refers to later theoretical developments regarding acid-base concepts and redox chemistry. I am optimistic that he will keep contact with our scientific community.

Alongside an introduction, my own contributions to the Workshop were “Ostwald, affinity, and descriptivist acidity” and “Why Lowry?”. The latter topic refers to my historical claim that it is not justified to call the “protonist” point of view the “Brønsted-Lowry-theory”. Lowry was (at least partly) a protonist, but the originator of the theory was clearly Brønsted. I decided to publish a detailed paper about that aspect elsewhere (a first short account in German is Ruthenberg 2023). The paper published in the present Workshop package is devoted to the theoretical bifurcation and thus of a more philosophical emphasis (Fig. 1).

During the preparatory phase of the Workshop, I contacted several other colleagues, and some of them were generally interested, so that there is some hope that the historical and philosophical research on acidity will be continued. I again thank all contributors and participants, John Grossman for the bifurcation drawing and the translational help, Christian Gasde for participating in the music of our “Sailing Strings”, which we used during the breaks, and, not least, David Kessel for his technical assistance.

Exactly one week after the Workshop, I changed into the status of Emeritus, awaiting new exciting projects....



**Fig. 1** The theoretical “bifurcation” of acidity which began in 1923 with the “protonist” proposal of Johannes Nicolaus Brønsted (left) and the “electronist” suggestion of Gilbert Newton Lewis (right). Drawing by John Grossman

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## References

- Chang, H.: The persistence of epistemic objects through scientific change. *Erkenntnis*. **75**, 413–429 (2011)
- Chang, H.: Acidity: The persistence of the everyday in the scientific. *Philos. Sci.* **79**, 690–700 (2012)
- Chang, H.: The rising of chemical natural kinds through epistemic iteration. In: Kendig, C. (ed.) *Natural Kinds and Classification in Scientific Practice*, pp. 33–46. Routledge, London (2016)
- Chang, H.: *Realism for Realistic People*. Cambridge University Press, Cambridge (2022)
- Ruthenberg, K. (ed.): *Säuren- eine kleine Kulturgeschichte*. Edition Aumann, Coburg (2020)
- Ruthenberg, K.: Warum Lowry? *Nachrichten aus der Chemie* **71**, pp. 13–16. Oktober (2023)
- Ruthenberg, K., Chang, H.: Acidity: Modes of characterization and quantification. *Stud. Hist. Philos. Sci.* **65–66**, 121–131 (2017)
- Ruthenberg, K., Chang, H.: Glass and life – the biochemical Origins of pH. *Mitteilungen*. **26**, 63–87 (2020)
- Ruthenberg, K., Gerontas, A.: Säuren in der Antike und frühen Neuzeit. *Antike Naturwissenschaft und ihre Rezeption*. **Band XXVIII**, 227–242 (2018)
- Scerri, E.: Hasok Chang on the nature of acids. *Found. Chem.* **24**, 389–404 (2022)

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