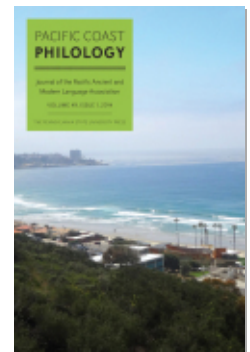




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Physik um 1800—Kunst, Wissenschaft oder Philosophie? ed.
by Olaf Breidbach, Roswitha Burwick, and: *The Transformation
of Science in Germany at the Beginning of the Nineteenth
Century: Physics, Mathematics, Poetry, and Philosophy* ed. by
Olaf Breidbach, Roswitha Burwick (review)

Marita Hübner



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Reviews



Olaf Breidbach and Roswitha Burwick, eds. *Physik um 1800–Kunst, Wissenschaft oder Philosophie?*

München: Wilhelm Fink, 2012. Laboratorium Aufklärung 5. Pp. 332, € 39,90

English edition: Olaf Breidbach and Roswitha Burwick, eds. *The Transformation of Science in Germany at the Beginning of the Nineteenth Century: Physics, Mathematics, Poetry, and Philosophy*

Lewiston, NY: The Edwin Mellen Press, 2013. Pp. 400, \$149.95

Olaf Breidbach and Roswitha Burwick present two edited volumes about physics, literature, art, and philosophy around 1800. The German edition's eleven articles highlight the relations between speculation and experimental physics, examining experimental practices and transformations in philosophy, physics, and mathematics, which are located with groups of writers related to the Weimar/Jena hotbed of Romanticism, Storm and Stress, and German Idealism. The English edition comprises an eight-chapter selection from the German essays, plus two chapters on English Romantic poetry and metaphysics. Throughout the two volumes, manuscripts and sources previously untapped provide delightful reading, for example, about the worldviews of Achim von Arnim and Novalis. A treasure of quotes, translated from the German, vividly illustrates the philosophical and physical climate around 1800.

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The main thesis in both volumes is twofold: in opposition to earlier misrepresentations of Romantic *Naturphilosophie* (philosophy of nature), the editors assert that *Naturphilosophie* was intrinsically experimental. *Naturphilosophie* was interested in unquantifiable forces but not opposed to mathematical or mechanical thinking. Experiment had a double function: it allowed intellectuals to look at nature through the sober and analytical eye of an organic physicist like Carl Friedrich Kielmeyer and to view it simultaneously with the visionary glance of a prophet or troubadour like Johann Gottfried v. Herder.

The collections represent Romantic experimentation as dualistic: “Physics was the art of experiment; it was philosophy in the sense of a founding of a system of order, and it was aesthetics in the representation and perception of the results of an experiment” (English ed. 13). Understanding Romantic experimentation as an open process, the editors assert that it holds great potential for understanding modernity and may help to cope with the disciplinary narrowness, fragmentation, and specialization of modern knowledge (English ed. 4). Some authors make even stronger claims. Coleridge appears as a precursor of modern humanities and science; Maxwell’s equations, Einstein’s relativity, and Heisenberg’s uncertainty had been anticipated by Romantic intuition (English ed. 232, 236, 244), though such underlining similarities between philosophical ideas around 1800 and theories of twentieth-century physics is intriguing, even if it explains little.

When dealing with Romantic literature, language can at times pose a serious challenge. Using Romantic idioms to explain Romantic paradoxes may not help readers unacquainted with dialectics to grasp the importance of *Naturphilosophie*. However, by taking up actors’ categories or treating various fields of knowledge as physics, these works present as physicists a number of authors who today are mostly regarded as literary figures but were known to their contemporaries as skillful experimenters, effective administrators, practically oriented lawyers, and professors at universities and academies.

The German edition stresses the importance of electrical and magnetic phenomena for the transformations in physics around 1800. Johann Wilhelm Ritter presented a cornucopia of experimental combinations and settings, hoping that the interrelatedness of nature’s phenomena and forces might one day be understood experimentally (Ritter, Goethe). Driven by the desire to understand the whole of nature through its unbound variability, thinkers of Ritter’s generation stimulated each other’s worldviews, which remained in flux. They interpreted not only data and knowledge but also the knowledge-making and ordering process. Thus Romantic literary expression appeared “experimental,” fresh, and tentative. Unfortunately the chapters

on Tourmaline and on Lichtenberg, Ritter, Kiemeyer, and Novalis are not included in the English edition.

If possible, both editions should be studied together. The whole set of articles is too specialized to serve as an introduction to Romantic physics, but the choice of contributions exemplifies and supports the editors' theses in a variety of fields. To name a few:

(1) The notion of experiment around 1800 was not limited to phenomena of nature, but it included a free use of analogies between different types of phenomena, e.g. electric and magnetic, chemical and social (Lichtenberg, Goethe, Arnim). While self-experimentation gets relatively little attention, several authors extensively refer to the poets' hopes to adjust nature's necessity and freedom of choice, their guessing about the whole of nature and its relation with the individual mind, and their psychological states of mind and dreams (Arnim, Novalis, Coleridge). (2) Aesthetics was given heuristic value and philosophical relevance that far exceeded its role in the philosophical traditions of the eighteenth century (Fries). Although poets and physicists around 1800 differ in their appreciation of matter and mind, the gap between finite and infinite becomes a challenge and is reflected by taking the subjective character of observation into account. (3) A change occurred in the notions of subjectivity and nature. They were now thought to determine and guarantee each other's inner and outer reality (Schelling). Overcoming Newton's hypothesis of absolute space and time, and, apparently independently, Euclidian geometry, drove the transformation of physics (Gauss, Coleridge).

The editors of the present volumes argue that physics was an open category around 1800, especially in regard to chemistry and mathematics, and in contrast to Johann Carl Fischer's *Geschichte der Physik seit Wiederherstellung der Künste und Wissenschaften* (vol. 6, 1805), they have included mineralogy. At several places authors of the essays hint that political and social issues too are being negotiated alongside with physical and aesthetical topics. Unfortunately we learn but little about those factors. Some of the articles (Werner, Novalis, and Kiemeyer) indicate that the theoretical discussion of the Jena group and similar-minded writers elsewhere were embedded in a wider discussion of economical reform, politics, and religious interest. What social aspirations drove the Romantic generation not only to attend Schelling's lectures but also to engage in empirical research?

The chapter on A. G. Werner sheds some light on such questions. Readers may conclude from Werner's work and influence in mining reform that lawyers and high-ranking administrators found support for their work in *Naturphilosophie*, because it placed their administrative work in a legitimate and well-respected tradition of reform. This does not explain why physics and aesthetics were bound together from a social point of view, but markers

like this could explain why the transformations in physics, even if carried out initially by a small number of actors, had an impact on science and society.

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John Lyon. *Out of Place: German Realism, Displacement and Modernity*

London: Bloomsbury, 2013. Pp. 224, \$110

In this book, author John Lyon makes a dual claim. First, he contends that the writing of the German poetic realists reflects a nineteenth-century transition in the way people viewed the physical world—from conceiving of place as uniting human experience and identity with physical locale to thinking of space as empty and quantifiable. Second, he rejects the critical tendency to view German poetic realism as retreating from or disregarding this modern development. Late realist writings, Lyon claims, view the advent of a “spatially” organized world clear-sightedly and, often, dispassionately. In fact, he believes that poetic realism was primed to apprehend and represent this shift, since “both realism as an artistic and theoretical movement and place as a concept are characterized by the competing pulls of materialism and idealism” (17). Using readings of novels by Wilhelm Raabe, Theodor Fontane, and Gottfried Keller, he offers a convincing case for such arguments. The texts he discusses depict a disintegration of place and suggest that, while their authors mourn some aspects of this dissolution, they also refuse a transfiguring nostalgia for place. Indeed, they recognize the constraints that the ties to place impose—constraints that may be shed in the emerging, potentially open spaces of modernity.

This argument is developed through four chapters. In chapter 1 Lyon provides a historical ground for the argument by discussing Berlin’s rapid expansion and urbanization in the latter half of the nineteenth century. Using historical accounts, population statistics, and statements by architects, housing reformers, bureaucrats, and city planners, the author traces how physical, demographic, and attitudinal changes transformed place into space. In chapters 2 through 4, Lyon discusses Raabe, Fontane, and Keller in turn, first seeking to follow the transformation of place into space within literary writing by contrasting their representation in Raabe’s first and penultimate novels, *Chronik der Sperlingsgasse* / *The Chronicle of Sparrow Lane* (1856) and *Die Akten des Vogelsangs* / *The Files of Birdsong* (1896), then focusing on late