

Thorade, Nora: *Das Schwarze Gold. Eine Stoffgeschichte der Steinkohle im 19. Jahrhundert*. Paderborn: Ferdinand Schöningh 2020. ISBN: 978-3-506-70289-0; XII, 342 S., 7 s/w Abb., 9 s/w Grafiken, 9 s/w Tab., 1 s/w, 4 farb. Karten

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What is the difference between a social and economic history of coal and a historical study of the materiality of coal? While economic and social consequences of industrialization were important branches within historiography, a history of coal as a material is a brand-new perspective that can help us to understand the material conditions in which certain forms of production became viable. When the latter approach is combined with regional examples, it sheds valuable light on the differences between the industrialization processes and between the epistemo-technological dynamics. By addressing the subject in this manner, Nora Thorade's study on „black gold“ in her (in German) published doctoral thesis reveals why industrial regions developed differently during the nineteenth century. The diverging evolutions were influenced by the economic, political, and social situations in the respective regions but by seeing and smelling, touching and reading the reciprocal relationships between the specificities of one regionally mined hard coal and the technical uses become clearer.

The author presents three nineteenth-century German regions and the different material characteristics of the coal mined there: Aachen and its surroundings in far western Prussia, the Zwickau region in the Kingdom of Saxony, and the Lower Silesian coal mining region of Waldenburg. Following the zeitgeist, this study presents coal as an agent that determined production practices and epistemological processes. This approach is enhanced, here, by the inclusion of the roles, which, among others, culture, economics, politics and technologies played in industrialization.

We receive a very utile introduction into the still quite new field of material history (Stoffgeschichte) in the first chapter of the

book, and we learn about the three different coal mining regions of Aachen, Lower Silesia, and West Saxony, in the second chapter. The third chapter deals with the question of knowledge about the material. Here, Thorade leaves the highlighted regions and uses nineteenth-century publications to discuss the supposed origins of coal in a broader setting. She presents the consequences that coal deposit studies had on the knowledge of eras in Earth history. She also shows how knowledge about the character of the respective deposits served to better determine the character of coal in general. This rather abstract geological knowledge was used in the three regions to redefine the fossil fuel and to consider additional usages. Thorade insists that understanding specific knowledge of a regional or even local type of coal would help today's historians to differentiate geology, nomenclature, and deployment of coals.

Thorade states that the difficulties in employing coal in some technological devices intensified the geological research. We find here a reciprocal evolution between local or regional knowledge and knowledge from other regions. Disciplinary knowledge about Earth history, geology, and specialized techniques, such as surveying or cartography, were adopted „imports“ of foreign knowledge and were applied to local contexts. For example, in an effort to standardize techniques a central administration may have begun to require that certain forms of surveying replace traditional methods, and in doing so the knowledge gained locally would then be incorporated into maps or synoptic studies with a supra-regional perspective.

Thorade never loses sight of her main concern, which is to write a history of coal as a material. She shows how knowledge from geological studies, prospecting, and cartography contributed to a deeper understanding of the specific local conditions of this material. In addition, she shows how these techniques also established and represented the material relationships in a supra-regional context. Here, the history of materials actually becomes a category in its own right and an important addition to the historiography of knowledge, cartography, and mining. Knowledge about seams and geological conditions

or the topography of a region was important because it could also explain unique compositions of coal. In consideration of the expectations for further development of mining and industry at the time, the embeddedness of this knowledge of the material bears a significant weight.

A discussion about the materiality of coal, its regional differences, and its applications needs to address chemistry, which we find in chapter four. There is almost no historical study about this subject, which is why this general introduction is very welcome. In regard to the geochemical aspects of research, Thorade concentrates on the creation of uniform and supra-regional classifications, produced by chemists in the course of the nineteenth century. She illustrates that the designation of coal at the regional level varied considerably and was contradictory. Thus, a tension between „scientific“ taxonomies and local traditions of classification arose, which is mainly reflected in the terminology. Further indications of conflicting classifications can be found in the areas of application and delayed technological developments, though these tensions were partially alleviated by the introduction of coal processing technologies during the nineteenth century. Indeed, being the second aspect of chemical research, processing was aimed at the chemical homogenization of coal and subsequently defined the possible uses more clearly, despite the persistent terminological imprecision. The almost 100 pages of chapter four focus mainly on the developments and local adaptations of technical-chemical processing of coal with a particular focus on three regions. An important goal was the production of better-quality coal rather than simply a greater quantity. Within those developments and decision-taking, economic arguments played an important role, because they helped to secure traditional markets. In all mining areas, coal washing was introduced and the processing of hard coal was further developed and differentiated during the last third of the nineteenth century. Briquettes, coke, and coke oven gas were three of the products of this advanced processing. Thorade reiterates her argument that the respective materiality determined the type of techniques employed and

that a continuous adaptation of equipment and machinery made it possible to fabricate better coal products from a larger variety of different types of coal. Regionally distinct processing methods were now able to serve the market with their special products that still met the material requirements. Furthermore, new technical processes meant that coal processing could be expanded.

Thorade's innovative approach to material history opens an independent space for coal in addition to human eyes, definitions and technologies. The material in its geological life cycle is considered to the extent of its utilization by humans in technical processes and machines. Coal functions between the tension of general and regional knowledge, which for Thorade is always a difference between comprehensive and specialized knowledge. It is a fine study in which the material of the modern past becomes a colorful object of historical investigation. It stimulates us to look at other regions, to examine other periods of time, and to take a closer look at the materiality of coal today. Thorade deals with the great period of Industrialization that saw mobile steam engines cross continents and coal gas illuminate cities. But this period was not the beginning of coal research. Aachen, Lower Silesia, and Western Saxony were not the only areas where coal as a material gained importance. At the same time, geological research had begun to compare findings from all parts of the world, hard coal was being exported globally, and steam ships dominated the oceans, when black gold became a global substance within its political, economic, and epistemological limits.

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