Secondary Matters:  
On Disturbances,  
Contamination, and  
Waste as Objects of  
Research  

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Jutta Schickore

The contributions to this volume originate from the workshop “Hauptsachen und Nebenlagen—Pure Science and its Impurities,” organized by Christoph Hoffmann, which took place at the Max-Planck-Institute for the History of Science (Berlin) in July 2000. We wish to thank all participants for rich and stimulating talks and discussions.

In 1869, Hermann Helmholtz observed that in scientific inquiries “most of our time and labor is consumed by secondary matters that are but remotely connected with the purpose of the investigation.” With this remark, he acknowledged that controlling the ever-increasing variety of disturbances and contamination had become a common concern of scientists and scholars working in very different fields. Scientists invested a vast amount of time, labor, and material resources exploring the minutiae of scientific inquiry and designing methods and spaces of research. They investigated the nature and potency of effects originating from the setup and its situation that might influence an experiment. Even the objects of investigation, fickle and unwieldy, were seen to obstruct the proceeds of research. The assembly of tools and apparatus required to perform experiments was laid out so as to preclude disturbing variations, vibrations, sounds, and rays both from the immediate setting and the laboratory’s more remote environment. Such efforts indicate the extent to which the scientists considered the particulars of the whole research arrangement to interfere with their observations and results.

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Side effects and disturbances have often been regarded as obstacles to the advancement of science. The articles in this volume offer a new angle of scrutiny. The suggestion is to examine exactly how such phenomena were identified, assessed, and tamed, how they resisted and evaded control. Jutta Schickore illustrates how nineteenth-century microscopists began to probe the limits, disturbances, and peculiarities which they encountered in their research. The article explores how the instruments and methods of microscopy came to be regarded as intrinsically flawed and forever imperfect, and to what extent these imperfections gained methodological and epistemological significance. Such a shift of perspective acknowledges that it is precisely through the taming of potentially damaging and distorting effects that “pure” science emerges and takes shape against the background of other investigative practices. Christoph Gradmann’s contribution traces how the notions of “Isolation, Contamination, and Pure Culture” became instrumental in medical research. It was only after thorough and detailed examinations of the manifold of organic pollution that concepts such as purity and isolation entered the debates about the nature of infectious diseases. Only then the idea of a specific bacterial pathogen took shape.

Starting from various kinds of precautions against mechanical, thermal and magnetic disturbances that shaped the building of physics institutes around 1900, Christoph Hoffmann questions the clear-cut distinction between an object of research and outside effects interfering with it. Not only does the “Design of Disturbance” itself impede experimental and measuring procedures but in fact, everybody and everything can disturb anybody and everything else. A disturbance-free physics institute is thinkable only if research and teaching ends. But if one concedes that effects like vibrations or magnetic influences are inevitable, one can understand them differently. Neither are disturbances external to physics, nor do they subvert scientific research. Rather, disturbances (like mediators) indicate, tie together, and reinforce the connection between objects of research, instruments, and researcher.

While scientists were engaged in identifying and controlling contamination and side effects, a new approach to waste and the scattered remains of culture emerged. Materials that had previously been regarded as worthless or useless came to be transformed into objects of knowledge. Precisely because they were cast aside without any intention, obsolete legal documents and domestic waste were now considered as traces that could provide access to a hidden past. In dealing with these de-contextualized or de-signified things nineteenth-century historians and archaeologists were forced to develop new methodologies that bestowed these materials with meaning and coherence. In her essay “The Love of Ruins” Cornelia
Vismann underlines that the status of historical remnants changed dramatically under the positivistic approach of historicism. What had appeared as the fragments of a lost whole to humanist scholars of the sixteenth and seventeenth century now promised direct access to the past. Drawing on Johann Gustav Droysen’s epoch-making distinction between historical sources and historical leftovers (Überreste) Vismann shows that this shift follows from a distinct epistemological presupposition: Contrary to documents intended to hand down history, remnants preserve the past untainted by human distortions.

By focusing on the ways in which waste—in the broadest sense of designified and de-contextualized remains—became an object of cultural knowledge around 1850, new issues can be accentuated. Normally, historians, sociologists and anthropologists deal with waste as a cultural category merely to uncover the habits and norms of past and present societies. Emphasizing that waste arose as a category only in the nineteenth century, Dietmar Schmidt follows very early attempts towards a “Refuse Archaeology.” Although differing in detail, both the kitchen waste that the anatomist and anthropologist Rudolf Virchow found on a Berlin building site and the masses of damaged artefacts that Heinrich Schliemann encountered during the excavation of Troy were unified in that they triggered actions and brought about a whole process of knowledge production. The operations by which shattered pottery and animal bones were given a symbolic value not only confirm that waste possesses an agency of its own. Focusing on Freud’s exploration of the unconscious, Schmidt also reveals that the very similar treatment of unintentional expressions of life like dreams, slips of the tongue and writing reinvented the archaeological attention to the marginal as a general model of understanding. Thus epistemic practices and attitudes in the humanities that are very similar to those in contemporary natural sciences are elicited. Matthias Dörries exhibits such striking parallels in nineteenth-century metrology and literature. Both the physicist Henri-Victor Regnault and the novelist Gustave Flaubert paid particular attention to secondary matters. Both Regnault and Flaubert regarded the exploration of all and every detail, circumstance, and variation as the means of disclosing truth.

By presenting such attempts, the contributions as a whole suggest an understanding of disturbances, contamination, and waste as objects in their own right with a history of their own, rather than as mere impediments. After all, minor details might turn out to be the very purpose of the investigation.