Artifacts of Memory: Michael Faraday and the Construction of Meaning

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In a series of recent papers, our research group has been examining a large number of surviving microscope slides and other specimens made in 1856 by Michael Faraday (1791-1867). The research has centered on the way Faraday used these specimens to formulate and guide his research endeavors (Tweney, Mears, & Spitzmüller, in press). Faraday's microscope slides were shown to be *epistemic artifacts*; "agentive" participants in his research (Tweney, 2002). Such a finding extends recent research on cognitive artifacts (e.g., Zhang & Norman, 1994), as well as existing cognitive accounts of Faraday's experimental practices (e.g., Gooding, 1990).

The present study re-examines an aspect of the research diaries kept by Faraday throughout his career. These diaries became so extensive (recording literally tens of thousands of experiments, speculations, and so on) that sophisticated finding aids were necessary. We emphasize the role of these aids as epistemic artifacts in their own right. That is, we seek to demonstrate that laboratory notebooks, like Faraday's microscope slides, were agentive devices whose use went beyond the stereotypical role of notebooks as passive repositories of factual information.

The Structure of Faraday's Diary

The most important part of "Faraday's Diary" is a bound and sequentially numbered set of books, containing 16041 numbered entries dated August 25, 1832 to March 6, 1860. The Diary is supplemented by unbound retrieval artifacts of two broad kinds, loose slips and retrieval sheets; hundreds of each survive. Loose slips are usually one line in length and contain a brief descriptor followed by one or more references to the diary numbers, or else contain speculations, references to the literature, or experiments to be tried. Often slips are found pasted onto larger sheets, called here retrieval sheets.

Retrieval sheets can be classified into at least 12 types (see Tweney, 1991 for a full description). Some are made up from loose slips (of both kinds), while others are written on the sheet itself. The pasted versions appear to be the product of an active search for the right ordering of the entries. In addition, some index sheets are dated, suggesting that Faraday wanted to locate them chronologically against his other endeavors. Examination of the watermark dates found on some of the sheets showed that these could be correlated with the paper used to write the diary itself. Thus, the retrieval aids can be regarded as contemporaneous with the diary. That they were dynamic and agentive is shown by a unique survival, an unfinished manuscript of a paper.

Using The Retrieval Artifacts

By examining a draft of an unfinished methodological paper written by Faraday, we argue that Faraday used retrieval artifacts to create a first draft of the manuscript. Of particular interest, it was observed that certain sections were written with index tags (referring to diary entries) pasted to the verso (left-hand) side of the sheets and the accompanying draft text appearing on the recto (right-hand) side, suggesting the tags were used while the accompanying text was being written. This interpretation was consistent with a content analysis of the paper.

Conclusion

The richness of types found in the artifacts suggests that they were "tailor made" for specific purposes. Further, like laboratory specimens, Faraday used the slips and sheets as agentive tools that were deployed along the way from the confusion of phenomenological reality (Cavicchi, 1997) to the finished characterization of lawful phenomena in text and apparatus.

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