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## Telling Instruments

The Material Culture of Hugo Münsterberg's Laboratories in Freiburg and at Harvard

By Henning Schmidgen

New instruments provoke the emergence of new scientific facts. But this is not the only reason why they are important objects of study in the history of science. At the same time instruments connect what happens in the seclusion of the laboratory with the overall history of culture and technology.

Doing justice to both of these aspects requires handling a multiplicity of sources, ranging from scientific articles, to catalogs of instruments, all the way to photographs and museum artifacts. For this purpose the “Experimentalization of Life” research project (Department III) has set up a “Virtual Laboratory” in the Internet. This site facilitates the digital collection, linkage, evaluation and publication of a wide variety of documents. A new case study illustrates how this environment makes it possible to analyze original photographs of instruments used by the physiologist and psycholo-

gist Hugo Münsterberg (1863-1916) to illustrate a new research agenda in his laboratories in Freiburg and at Harvard.

Hugo Münsterberg (1863-1916) is known above all as a pioneer of applied psychology. Around 1900 most psychologists were still attempting to get to the bottom of the laws of mental life in the laboratory setting. Münsterberg was one of the first to dare the step from experimentation into society. This makes him a key figure in the “Experimentalization of Life,” a development that expanded during the nine-



Figure 1: Interior of a room in the Harvard laboratory for experimental psychology directed by Münsterberg (1893). The main purpose of this still life is the presentation of instruments, models and others scientific objects. On the large table (right) numerous well-known optical instruments are on display (from microscopes to reading glasses, stereoscopes and pseudoscopes), whereas in the background, in front of the window, one can detect one of the devices developed by Münsterberg together with his instrument maker Hermann Elbs, here an apparatus for investigating the power of the eye to compare lengths (“Augenmassapparat”). It was meant for investigating mental representations of muscle movements. (Harvard University Archives - HUPSF Psychological Laboratories 1).

teenth century from physiology to ever more disciplines (psychology, linguistics, aesthetics, etc.), before ultimately spreading to other areas of culture (literature, the visual arts, music, etc.). In fact, in numerous publications from the turn of the century on, the Harvard professor had advocated that the findings and prac-

tices of psychological laboratory science be applied to economic life, jurisprudence, education and the arts.

Less known is Münsterberg’s role as a creative experimenter and dynamic laboratory director: In 1889 he founded one of the first psychologi-



Figure 2: Evocative of Leonardo's Last Supper, this photograph shows Hugo Münsterberg (center) amidst students and instruments in his Freiburg lab in 1891, shortly before his move to Harvard. Carefully arranged objects in the back illustrate Münsterberg's debt to German psycho-physiology: a Hipp chronoscope (right), a complication apparatus according to Wundt (left), and a framed photograph of Wundt himself (center). On the lower margin, Münsterberg wrote the following dedication: "To Herrn Prof. James, with devoted greetings, from the Laboratory for exper. Psychol., by Hugo Münsterberg." (Photograph by C. Ruf, Harvard University Archives - HUP Munsterberg, Hugo, 1BP, box 13)

cal laboratories in the German-speaking countries, in Freiburg, financed out of his own pocket. Shortly thereafter he accepted a three-year guest professorship and laboratory directorship at Harvard University. After a short interlude back home, in 1897 he returned to Harvard, where he continued working for the rest of his life. Yet even at the beginning of

Münsterberg's career it became apparent that his understanding of psychological science was much broader and more comprehensive than that of most academic psychologists in the German-speaking world.

This can be elucidated in an exemplary fashion on the basis of the setup and equipment of the

laboratories he directed. Contemporary photographs show the material culture of these research institutions: In a photograph from 1891 Münsterberg poses with the students and instruments of his Freiburg laboratory (Fig. 2); two years later, in 1893, a total of eight shots show the instruments and experiments in his laboratory in Harvard (Fig. 1). Although some of these photographs already have been published, it is worth going back to the source: Only the original prints surviving today can be digitally rendered in such high resolution that it becomes possible to identify precisely the individual instruments depicted.

Within the Virtual Laboratory these mute witnesses are linked with corresponding illustrations from historical instrument catalogs and textbooks, which provide information about their origin, purpose and manipulation. One thing such links reveal is that Münsterberg cooperated closely with a precision mechanic who manufactured the instruments according to his specifications: Hermann Elbs. Besides the laboratory devices for Münsterberg, Elbs also produced measuring instruments for railroad construction – a transport technology which aroused Münsterberg’s interest from the perspective of applied psychology, with regard to aptitude tests for locomotive engineers, among other things. Furthermore, on the basis of these instruments it became possible to con-

cretize the development of new psychological aims. As such, Münsterberg deliberately dispensed with the standard tools of the established psychology of his day, which were oriented primarily toward the investigation of cognitive processes. Using innovative apparatuses for the investigation of the “muscle sense” and “eye measurements” he shifted the focus of his laboratory activities toward the investigation of the “peripheral” processes of muscles and nerves.

Some of Münsterberg’s instruments remain preserved today. Corresponding links lead from the Virtual Laboratory to the Internet presentation of the instrument collection of the Department of the History of Science at Harvard University. Only the synopsis of these different kinds of sources – from flat photographs all the way to the solid objects in the museum – allow the instruments to “speak,” enriching to our understanding of how their material culture contributes to the emergence of new scientific facts.

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The Virtual Laboratory is accessible at [http://vlp.mpiwg-berlin.mpg.de/index\\_html](http://vlp.mpiwg-berlin.mpg.de/index_html)

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