

Material Devices from the Past: Historical Instruments and their Role in Research and Education

Peter Heering

Universität Flensburg, Germany

Historical instruments are usually associated with their storage in a museum. There, they appear in showcases like mummies that were kept as the remains from a period that is no longer real and can only be understood by its outcomes. Such an image is of course misleading, there are several historical instruments that are kept in school and university collections and are still in use, and there are some approaches to rebuild historical instruments in order to use them, aiming at understanding the process of producing scientific knowledge as well as the performative acts that were related to this process. From such an approach in the research on scientific instruments and scientific practices, a more detailed image on science can be developed that is also relevant for science education.

Besides this knowledge, historical scientific instruments can also play directly an important role in science education, for various reasons: On the one hand, using historical instruments can develop a more thorough understanding of science as a process instead of science as a mere body of knowledge. In doing so, one can ask why particular persons were able to generate a specific knowledge at a specific time and at a specific place. Aspects such as procedures and prior knowledge, beliefs as well as motives can thus be reconstructed and can be made a topic of discussion. Moreover, scientific concepts that are nowadays relevant in the education were developed with these instruments. As a result, the concepts themselves were not a 'hidden part' of a black-boxed set-up that can only be understood when the concept is already part of the knowledge. Consequently, the historical device could be more appropriate to familiarize learners with the related scientific concept than a modern device, which is not as 'transparent' as the historical device.

Questions to be discussed:

1. What is the relation between an instrument, the cerebral knowledge produced with the instrument and the performative knowledge that is related to the process of the production?
2. How are instruments related to the outcomes?
3. What is the role of the experimenter in the process of knowledge production?
4. What other persons are involved in the process of experimenting, and how can they become relevant to educational aspects?