IUGS International Commission on the History of Geological Sciences (INHIGEO)

"Anniversaries": The geologist's hammer: tool, instrument and badge — 180 years ago

By Marianne Klemun, Professor of History of Science, Department of History, University of Vienna, Austria; INHIGEO Secretary-General, 2016–2020 (Marianne.klemun@univie.ac.at)

Figure A: Austrian geologists (Hauer, Suess, Stache) with their hammers, by permission of the Geological Survey Vienna [Geologische Bundesanstalt].

Although the hammer has a long history in civilisation the "geologist's hammer" was only born when field science and geology came into being, and this happened at the end of the 18th century. Manuals written by geologists appeared in which the ideal shape of the geologist's hammer was explained.

Although today the geologist's hammer is certainly not one of the most important instruments of geology, it has long exerted an almost magical power in the geological imagination, and it is still associated with the geologist's profession and used as a logo by scientific associations. Other disciplines are sad that they do not have such a clearly recognizable tool and badge as the geologists!

Like almost no other tool, the hammer is to be found in all areas of manual work in the early modern period. This pre-industrial origin and unchanged shape of the hammer in a highly technologized world makes it today a 'fossil' tool. The predecessor of the geologist's hammer is the mountaineer's or mining hammer, from which the newly constructed geologist's hammer was already distinct by the end of the eighteenth century, when its form was being perfected. Since the time when field science was established as normal practice in geology, the best shape of a hammer has been discussed and suggestions have been made. One of the books, with the title *Agenda geognostica: Handbook for travelling mountain researchers and guidelines for lectures on applied geognosy*, was written by the German mineralogist Karl Cäsar von Leonhard (1779–1862) in 1838. It is the best example of the phenomenon of introducing this tool to travelling geologists. Several different types of hammer were demonstrated. These included a heavier version that Leonhard called a 'Schlage' (or 'striker') and a hammer with moderate weight. Other manuals also considered it necessary to carry several different forms during a fieldtrip. The tool of the geologist's hammer was understood as an extension of the geologist's hand.

The immediate connection of geology to fieldwork is a given fact for today's geologists. But from a historical viewpoint, fieldwork did not exist automatically: it cannot be taken for granted. It first had to be introduced and accepted epistemically among researchers as a means of establishing knowledge. This occurred at the end of the eighteenth century, when fieldwork-based earth science began to be established through a new practice, travelling. As Ezio Vaccari pointed out, 'The appearance of the first specific instructions for geological fieldwork was clearly linked to the emergence of geology as a scientific discipline' (Vaccari, 2007, p. 7).

Figure B: Eduard Suess (1831-1914) with his hammers in the Department of Geology (Vienna), by permission of the Geological Survey Vienna.

Geologists of the 19th century wanted to be portrayed with a geologist's hammer, it became a fetish of geologists. Geologists' hammers were exchanged between close friends, and after their death they were bequeathed to one another. Eduard Suess, the famous Viennese geologist, collected geologists' hammers of his colleagues, and after his death his memory was kept alive with the installation of a sculpture of his head surrounded by hammers that once belonged to colleagues all over the world

For more information about the history of the geologist's hammer:

Klemun, Marianne (2011). "The Geologist's Hammer – "fossil tool, equipment, instrument and/or badge?", in: Ana Carneiro and Marianne (eds.), *Seeing and Measuring, Constructing and Judging: Instruments in the History of the Earth Sciences*. Centaurus, An International Journal of the History of Science and its Cultural Aspects, Vol. 53, Issue 2, 2011, pp. 86–101.

Klemun, Marianne (2014). „Hammerkult und Geologie", in: Marion Meyer und Deborah Klimburg-Salter (eds.), *Visualisierungen von Kult*, Wien/Köln/Weimar: Böhlau, 2014, pp. 16–39.

Leonhard, Karl C. (1838). *Agenda geognostica. Hülfsbuch für reisende Gebirgsforscher und Leitfaden zu Vorträgen über angewandte Geognosie*. Heidelberg: J. C. B. Mohr.

Vaccari, Ezio (2007). "The organized traveller: scientific instructions for geological travels in Italy and Europe during the eighteenth and nineteenth centuries", in: Patrick N. Wyse Jackson (ed.), *Four Centuries of Geological Travel: The Search for Knowledge on Foot, Bicycle, Sledge and Camel*. Geological Society of London, pp. 7–17.