

## GP 8: Physics and Instruments

Chair: Johannes-Geert Haggmann

Time: Wednesday 10:30–11:30

Location: GP-H7

GP 8.1 Wed 10:30 GP-H7

**The Communication of Object-Bound Knowledge in Networks of Lead-Users** — ●CHRISTIAN FORSTNER — Ernst-Haeckel-Haus, Friedrich-Schiller-University, Jena, Germany

Research technologies circulate between different fields of society and are continuously adapted to new contexts in a process of dis- and re-embedding. But how is the tacit knowledge that is tied to their practical use made explicit? Does it reveal itself to the user? What strategies were taken by the instrument makers to make tacit knowledge accessible to the user? In my talk I will discuss a historical example of communicating physical practices. Therefore I analyze the optical measurement instruments of the Carl Zeiss Company, in particular analytical interferometers, to show how a network of lead users was created and how practical knowledge circulated in this network.

GP 8.2 Wed 10:50 GP-H7

**Analysis of Portable Quadrants from Different Cultures** — ●ENES TEPE — Europa-Universität Flensburg, Auf dem Campus 1, 24943 Flensburg

Portable quadrants (*rub<sup>c</sup>al-dā<sup>2</sup>iras*) are instruments that were used for purposes such as astronomical observations, timekeeping, navigation, surveying, maritime, ballistics, and mathematical calculations for more than a Millennium. In a previous study (my MA thesis), the role of this class of instruments in classical astronomy was analyzed within the context of a comparison between the Islamic World and the Western Europe. For this purpose, information of surviving instruments that can be found through the online catalogues of museums and auctions were examined. Therefore, it has been shown that the

astronomical portable quadrant traditions in Mamluk, Maghreb, Iran, Ottoman Syria, Ottoman, Continental Europe, Italy and England can be distinguished and studied in detail. In my current project, two of the most well-established portable quadrants, one from the Islamic World and the other from the West, are chosen in order to analyze the respective practice with the replication method. One of them is a quadrant of almucantars (*rub<sup>c</sup>al-muqanṭarāt*) for Damascus by Zayn al-Dīn [Shams al-Dīn] Abū <sup>c</sup>Abd Allāh Muḥammad ibn Aḥmad ibn <sup>c</sup>Abd al-Raḥīm al-Mizzī (d. 1349). The other one is a Sutton-type large quadrant by Henricus Sutton Londini (d. 1665) for London. In this talk, the prominence of these two instruments will be discussed and their general features of them will be shared.

GP 8.3 Wed 11:10 GP-H7

**Binocular or stereoscopic telemeters? Two countries, two concepts** — ●ANDREAS JUNK — Europa-Universität Flensburg

The development of rangefinders in Europe towards the end of the 19th century seems to have been a competition between the British company Barr&Stroud and their German counterparts Carl Zeiss Jena. These companies used different approaches for their so-called telemeters whilst the instruments looked very much alike.

Barr & Stroud preferred a binocular approach for a coincidence rangefinder, Zeiss in turn designed a stereoscopic rangefinder. Whilst the preliminary test results indicated, that the stereoscopic approach would produce better results, Barr & Stroud insisted, that these results could only be produced by users, who did not have certain physiological handicaps. In my paper, I want to line out the (dis)advantages of the instruments as well as the respective motivation and conditions for their construction.