“All Heavenly Motions Daily in View”:

Interdisciplinary Approaches to the Conservation of Philipp Imser’s Planetary Clock in the Technisches Museum Wien

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Introduction

The project brings one of the most ingenious and beautiful machines of the Renaissance to center stage: the Imser Clock in the Technisches Museum in Vienna (TMW). Work on this “planetary clock”, a clockwork-driven planisphere signed by Philipp Imser (1500–1570), was begun in 1555 (Fig. 1). Imser, a mathematician at the University of Tübingen, the Augsburg clockmaker Gerhard Emmoser (d. 1584) was also involved in its construction. Emmoser Ott- 

The central purpose of a planetary clock is to indicate in real time where the seven classical “planets” – Mercury, Venus, Mars, Jupiter, and Saturn plus the Sun and Moon – are to be found in the sky, as seen from the Earth. Unlike many other contemporary clocks with astronomical indica-

The Imser Clock is unique for several reasons, for among these four automatical only it:

• has the positions of all the planets shown upon a single Zodiac dial (Fig. 3).
• is topped by a multi-storey structure with an elaborate program of automatic figures.
• gives an automatic display of the planet ruling the current hour.
• has a “user’s manual” written by the clockmaker’s designer.

Research Project

An interdisciplinary research team composed of historians of science, clock conservators, and media-based computer scientists from Dresden, Kassel, and Lisbon is conducting compara-

The team’s collaborative study of the Imser Clock in close partners-

A stunning feature of the Imser Clock is its analog display of day length (Fig. 5). Two segmented metal discs of gilt and silver copper foil fold into each other in order to reveal the changing length of daylight and nighttime, in what may well be the first mechanical realization of such a dial. The team found that later and now unstable alterations have compro-

Fig. 1. Philipp Imser, Planetary clock, ca. 1555–1561, Technisches Museum Wien (inv. 11.939/22). Photo: Sedlaczek.

Fig. 3. Calendar dial with 24-hour dial. Images: Michael Wacker.

Fig. 4. Aligned segment from the length-of-day indicator. Photo: Gessner.

Fig. 5. Mechanism for trig-

Fig. 6. Nighttime disc segment from the calendar.

Fig. 7. Mechanism for trig-

Fig. 8. Planetary gear train with non-circular axle. Photo: Gessner.

Conclusion

A precise understanding of the aim and functioning of the features described above is essential in order to display the clock correctly and fully communicate its importance in the history of astronomy, technology, and craftsmanship. Future collaborative research will facilitate not only a better understanding but also a more quantitative parameters used.

Fig. 8. Planetary gear train with non-circular axle. Photo: Gessner.

References

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Fig. 4. Samuel Gessner analyzing the planetary gear train.

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