LAUDATIO JENS HØYRUP

Erik Weber & Albrecht Heeffer

Jens Høyrup was born in Copenhagen in 1943. He studied physics and mathematics at the Niels Bohr Institute of the University of Copenhagen and at the Institut Henri Poincaré of Paris University. In 1969 he obtained his master's degree. From 1971 till 1973 he was assistant lecturer at the Danish Academy for Engineering (Danmarks Ingeniørsakademi), where we taught courses in physics. In 1973 he became senior lecturer (and later on, in 1989, reader) at Roskilde University. He started in the Department of Social Sciences and ended up in the Section for Philosophy and Science Studies. Since 2005 he is emeritus. Since his retirement he publishes more books and articles and he attends more congresses than ever before.

His main field of teaching was the history of the natural, human and social sciences. His main field of research was, and still is, the history of science, especially the history of mathematics in pre- and early Modern cultures. He has studied the Babylonian, ancient Greek, Latin, medieval Islamic mathematical traditions, and – more recently – the 14th and 15th century Italian abbacus tradition. Taken together, his research covers 3000 years of history of mathematics.

Jens Høyrup is a full member of the *Académie Internationale d'Histoire des Sciences*, is associate editor of *Historia Mathematica* and member of the editorial board of *Revue d'Histoire des Mathématiques.* He is a regular reviewer for several journals and publishers in the history of mathematics. He has published approximately thirteen books as author or co-author, about sixty articles in journals, about forty articles in conference proceedings and other books, and several contributions in encyclopaedic works. But of course, these numbers are not the reason why he has been proposed for the Sarton chair and medal. Jens Høyrup has made many important contributions to the history of mathematics, and is responsible for many new insights and the revision of several once popular views. Let us give an overview.

His book *Lengths, Width, Surfaces: a Portrait of Old Babylonian Algebra and its Kin*, published in 2002 by Springer in New York, is on the one hand a typical example of history of science in the classic tradition of Heiberg, Tannery and Vogel: original texts are carefully reconstructed, translated and interpreted. On the other hand, Høyrup successfully provides new frameworks for interpretation and points to parallels between different traditions. Because of his command of more than ten languages, Høyrup often manages to establish links and develop etymological arguments which result in surprising new insights with respect to sources that have been analysed by several other scholars. This is also the case for this book. In order to study Babylonian clay tablets, he learned basic Akkadian and the essentials of Sumerian. The command of these languages enabled him to develop a revolutionary new interpretation: Babylonian algebra is based on geometrical methods used by lay surveyors. This interpretation is radically opposed to the classical interpretation of Otto Neugebauer. Neugebauer and his peers made the methodological choice to reach a "first approximation" to the terminology by applying modern mathematical conceptions to the texts. They found the formulae they were looking for and ignored small anomalies in the text referring to non-mathematical operations such as "laying down", "breaking" or "to tear out". Adopting the sound methodological principles of structural analysis and close reading Høyrup demonstrated that these terms refer to cut-and-paste geometrical operations of surveyors. Because there are no figures on the Babylonian clay tablets, such an interpretation was never considered before. It is an instructive lesson how to take distance from our modern

conceptions while doing history and to discern conceptions different from ours. To put it in Høyrup's words: "It is definitely easier to recognize which part of *our* mental luggage is absent from the Babylonian mind than to identify ingredients of this foreign thinking that are absent from ours".

His book *Jacopo da Firenze's Tractatus Algorismi and Early Italian Abbacus Culture,* published in 2007 by Birkäuser in Basel, contains many important new insights about the abbacus tradition. Conventionally, this tradition is considered to originate in Leonardo Fibonacci's *Liber Abbaci*, written in 1202. On the basis of a transcription of the earliest abbacus text, Høyrup argues that the tradition is older, has its roots in the Provence and Northern Spain rather than Italy, and that it is much less directly influenced by the scholarly level of Arabic mathematics than generally thought. The book on the abbacus tradition not only provides important new insights, it also illustrates how Høyrup's methodology differs from that of many other historians of science. He pays a lot of attention to what he calls the sub-scientific tradition, which includes the transmission of knowledge from master craftsmen to apprentices and social processes like the transmission of problems in practical geometry, recreational mathematics and their solutions. Historians of science tend to focus on "the big books" and neglect the other modes of knowledge transmission.

The Sarton chair was established in November 1984, at the centenary of Sarton's birthday, for which occasion a large conference was held in the very same building we are in today. Jens Høyrup was present at that conference with an early contribution on mathematics in medieval Islam. In the introduction to his latest book he kindly recalls the impressive talk given by Joseph Needham during the conference dinner calling him "my only teacher in the history of science". It is with great pleasure and honour that we can invite Høyrup again in these beautiful surroundings of Het Pand and hope that Høyrup will be an inspiration for a new generation in the same way he found inspiration in scholars as Needham.