

# UNIVERSITY OF COPENHAGEN



## Exchange of knowledge between literate cultures

Department of Cross-Cultural and Regional Studies

University of Copenhagen

Copenhagen

19–21 July 2021

*Schedule of Talks*



*Book of Titles and Abstracts*

Organised by

Robert Middeke-Conlin

[robert.middekeconlin@hum.ku.dk](mailto:robert.middekeconlin@hum.ku.dk)



Anuj Misra

[anuj.misra@hum.ku.dk](mailto:anuj.misra@hum.ku.dk)

## COPYRIGHT NOTICE

The *Schedule of Talks & Book of Titles and Abstracts* is made available to all participants with the understanding that no part of an abstract will be cited, circulated, or reproduced without the express permission of the author. The copyrights of all titles and abstracts rest with the respective authors.

This conference is jointly organised by the research projects *Literacy in the Old Babylonian City of Nippur* (MESOPOLIT, grant No 841928, Robert Middeke-Conlin) and *Early Modern Exchanges in Sanskrit Astral Sciences* (EMESAS, grant No 836055, Anuj Misra). Both project have received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie Individual Fellowship Agreement.



## CONFERENCE OVERVIEW

### Exchange of knowledge between literate cultures

Copenhagen, 19–21 July 2021

**T**HIS CONFERENCE EXPLORES THE DIFFERENT ASPECTS of how knowledge is exchanged between literate cultures. We recognise that in exchanges between literate cultures, knowledge is often construed, constructed, and contextualised to adapt to a recipient's culture. This transformation is subject to the historical, philosophical, sociopolitical, and scientific traditions prevalent among the recipient people. As these traditions change with the passage of time and the movement of people, so too does the locus and language of literacy in those cultures.

Here we speak of literacy as a part of this changing episteme of a society, noting in particular three varieties of literacy: prose, document, and numeracy. The ability to read and comprehend a text (the prose), understand and manipulate its format (the document), and interpret and calculate with the numerical symbols (the numeracy) that may accompany, compliment, influence, or even constitute the text offers a tripartite image of the society's knowledge system. The movement of this knowledge between cultures, societies, or communities involves a translation of the mode, the medium, and the mathematics.

Every society experiences different levels of literacy—from the basic functional literacy that allows actors to read short texts, understand simple formats, and perform basic (numerical and metrological) calculations to the full erudite literacy where actors are able to interact with and manipulate all aspects of a text. As the locus of interactions changes, different knowledge systems from different cultures mark their presence in the literary practices of a society, e.g., Syrian numerical practices seen in Babylonian texts, or the multiple mathematical traditions at play in imperial China, or even the discussions on Islamicate astronomy in Sanskrit texts from Mughal India. These interactions create and nurture the conceptual space in which ideas are continually appropriated, assimilated, or repudiated with the varying levels of literacy in those societies.

To understand the dynamics of these movements, we bring together scholars working on diverse aspects of knowledge transfer within and between literate cultures and in historical periods spanning from the ancient to the modern. The titles and abstracts of the talks to be presented at the conference are included here in the alphabetical order of the contributors' names.

## SCHEDULE OF TALKS

*Exchange of knowledge between literate cultures, Copenhagen, 19–21 July 2021*

(All times indicated are Central European Time, GMT+2)

<i>Day 1</i>	<i>On literacy and cognition</i>	(19 July)
11:00–11:15	Conference introduction	
11:15–11:30	Introductory talk, Day 1	
11:30–12:30	Keynote address delivered by Karine CHEMLA	
12:30–13:30	Lunch	
13:30–14:30	<i>Collective literacy, knowledge systems and memory: blurring the lines between orality and literacy in ancient Egypt</i> , Katharina ZINN	
14:30–14:45	Pause	
14:45–15:45	<i>Representational modes and their effects on written signs</i> , Karenleigh OVERMANN	
15:45–16:30	End-of-day discussions	
<i>Day 2</i>	<i>On knowledge changes and diversity within literate cultures</i>	(20 July)
10:00–10:15	Introductory talk, Day 2	
10:15–11:15	<i>The Parvadvayasādhana of Mallāri: a Sanskrit table text to compute eclipses</i> , Clemency MONTELLE	
11:15–11:30	Pause	
11:30–12:30	<i>The surveyor's controversy: a condensed view of a changing knowledge economy</i> , Robert MIDDEKE-CONLIN	
12:30–13:30	Lunch	
13:30–14:30	<i>On different cultures of computations with geometrical entities in Sanskrit mathematical and astral sources</i> , Agathe KELLER	
14:30–14:45	Pause	
14:45–15:45	<i>Production of knowledge in West Asia in the Medieval Period: from linguistic to paradigmatic shift</i> , Hadi JORATI	
15:45–16:30	End-of-day discussions	

continued...

---

10:00–10:15	Introductory talk, Day 3
10:15–11:15	<i>Religious polemics and natural philosophy in Islamic literate cultures from Christian Spain</i> , Mònica COLOMINAS APARICIO
11:15–11:30	Pause
11:30–12:30	<i>Wisdom is out there! Roger Bacon and the epistemic reconstruction of lost books and missed knowledge</i> , Nicola POLLONI
12:30–13:30	Lunch
13:30–14:30	<i>The ill-starred kisimā: an astrological technique lost in translation</i> , Martin GANSTEN
14:30–14:45	Pause
14:45–15:45	<i>Thinking of language and the language of thought: exchanges in early modern Sanskrit astronomy</i> , Anuj MISRA
15:45–17:00	End-of-conference discussions

## BOOK OF TITLES AND ABSTRACTS

<i>List of Contributors</i>	<i>Page</i>
Mònica COLOMINAS APARICIO	1
Martin GANSTEN	2
Hadi JORATI	3
Agathe KELLER	4
Robert MIDDEKE-CONLIN	5
Anuj MISRA	6
Clemency MONTELLE	7
Karenleigh OVERMANN	8
Nicola POLLONI	9
Katharina ZINN	10

## TITLES AND ABSTRACTS

### ***Religious polemics and natural philosophy in Islamic literate cultures from Christian Spain***

Mònica COLOMINAS APARICIO

University of Groningen, THE NETHERLANDS and  
Max Planck Institute for the History of Science, GERMANY

RELIGIOUS POLEMICS ARE NATURAL SITES for knowledge exchange between literate cultures. Those by Muslims in Christian Spain (ca. eleventh to seventeenth century) are revealing of the dynamics of these exchanges, particularly when their uses of natural philosophy are put under the focus. This is because, on the one hand, Muslim minority communities related transversally to the changing epistemes of knowledge along a temporal-geographical axis that was affected by their longstanding contacts with Christians and Jews; while, on the other, their knowledge of natural philosophy was heavily indebted to the Islamic literate cultures of the peninsula and the Maghreb. The juggling of natural philosophy with religious discourse, thus, gave common ground for inter-religious dispute, but was, nevertheless, a contested move in the Islamic tradition.

This paper will address natural philosophy in a treatise of Muslim polemics against Christianity and Judaism copied in Arabic in the Christian territories in 1405 (*Kitāb al-Mujādala maʿa al-Yahūd wa-l-Naṣārā*, or briefly called The “Book of Disputation”). Focus will be placed on the change in Islamic literate cultures: change here being understood in relation to the locus of the articulation of knowledge (from majority Muslim to Christian lands) and in relation to its place in an epistemic system (the alignment of natural philosophy with revealed sources). The investigation of various aspects of Islamic literacy in the “Book of Disputation” will help argue the position that the understanding of the natural philosophy of Muslims under Christian rule was limited by a basic functional knowledge of an upper-middle social class that was well connected with the Christian and Jewish intelligentsia, and accordingly, led to instances of knowledge exchange and the co-production of epistemic frameworks.

## *The ill-starred kisimā: an astrological technique lost in translation*

Martin GANSTEN

Lund University, SWEDEN

THE PROGNOSTIC TECHNIQUE OF DIRECTION OR PROROGATION, known in Greek as ἄφεσις and first described in its classical form by Claudius Ptolemy, was central to the practice of Arabic-language astrology, where it was called *tasyīr*. As the Sanskritization of this astrological tradition began in the thirteenth century, however, the mathematical-astronomical foundations of prorogation were misunderstood, and the technique does not appear to have survived the first generation of Indian practitioners.



## *Production of knowledge in West Asia in the Medieval Period: from linguistic to paradigmatic shift*

Hadi JORATI

University of Massachusetts Amherst, US

SOCIAL AND INTELLECTUAL HISTORIANS have long acknowledged and elaborated an early divide or divergence between the so-called “Eastern” and “Western” Islamic societies (the latter referring to the Maghrib and al-Andalus). While united linguistically, through the dominance of classical Arabic as the medium of production of knowledge, other aspects of intellectual life diverged, over time, from the central and eastern Islamic lands. A variety of political and economic factors led to discrepancies and divergences in scholarship, some of which are reflected in the common interpretations of the nature and scope of the contact between the Islamic societies, and the Latin West.

The more crucial rift, however, and by far the less studied one, is the emergence of the distinct Persophone zone in the East, i.e., in Iran and its “Islamic Hinterlands”, namely, India, Central Asia, and its various contacts with East Asia, and the ramification of the linguistic shift for the production and circulation of scholarly texts in the East. While traditionally the focus of the studies on this linguistic divide has been topical studies of intellectual life in the dominant Pre-modern “gunpowder” Islamic Empires (the Ottomans, the Safavids, and the Mughals), recent study suggests the roots of the linguistic divide, and the ultimate paradigmatic shift in the East goes far deeper than the fateful moment of this three-fold division. More substantially, I will argue that the emergence of the intellectual Persophone zone, and the divergence with the Arabic heartlands should be traced earlier, with the emerging patterns of migration in Western and Central Asia.

# *On different cultures of computations with geometrical entities in Sanskrit mathematical and astral sources*

Agathe KELLER

Université Paris Diderot, FRANCE

**W**HAT DOES IT MEAN to associate a numerical value with a geometrical entity such as a segment or an area? Different answers were given to this question in Sanskrit mathematical and astral sources leading to different ways of computing with numerical entities related to geometrical ones. This paper will argue that different “literate” cultures of computation with geometrical entities existed within Sanskrit sources even before ideas inspired by Arabic and Persian texts seeped into South Asian Sanskrit literature. We will use do so by looking at excerpts ranging from the *Śulbasūtras* (ca. first millennium BCE) to the *Krīyakramakarī* (ca. 1540).

## *The surveyor's controversy: a condensed view of a changing knowledge economy*

Robert MIDDEKE-CONLIN

University of Copenhagen, DENMARK

Knowledge exchange requires, to a greater or lesser degree, a change in knowledge economies. This is vital to the successful adaptation of new knowledge into a society. Exchange and change may seem rapid to the outside observer, but on closer inspection such sudden change is just the culmination of events leading to this change. This presentation seeks to examine a change in a knowledge economy by examining how numbers and measurement values were viewed and changed during the early Old Babylonian period (ca. 2000–1750 BCE) in modern-day southern Iraq. To explore this, I will focus on numbers and measurement values used by surveyors.

A surveyor's tradition is well documented in the Old Babylonian period, visible in both mathematical texts and administrative texts. The numbers used in these texts to plan and evaluate land use, irrigation, and construction are vital to exploring the surveyor's tradition. On the one hand, the earliest numbers could be treated as countable objects. This is exhibited in the surveyor's tradition of the third millennium BCE in which land was, in many ways, treated as countable objects to be appended together. On the other hand, the very end of the third millennium BCE saw a significant development in how numbers were exploited, what may be called a "paradigm shift", with the development of what is often called sexagesimal place value notation by modern researchers. This system afforded an easier method to multiply dissimilar objects or values, such as length by width to produce area.

This presentation proposes that a kind of "controversy" appeared among the surveyors with the advent of this development, a controversy that would not be resolved until the middle of the Old Babylonian period (around 1750 BCE), perhaps together with the use of military force. In this period, surveyors were exploring whether and how to integrate this sexagesimal place value notation into their knowledge economy. The controversy's impact would have long-lasting effects, from land administration to the observation of the heavens, that is, astronomy through the first millennium BCE.

## *Thinking of language and the language of thought: exchanges in early modern Sanskrit astronomy*

Anuj MISRA

University of Copenhagen, DENMARK

**B**EGINNING FROM THE LATE MEDIEVAL PERIOD of Indian history, Islamicate (Arabic and Persian) and Sanskrit astral sciences exchanged ideas in complex discourses shaped by the power struggles of language, culture, and identity. The practice of translation played a vital role in transporting science across the physical and mental realms of an ever-changing society. At the Mughal courts (1526–1857), Sanskrit scholars and their Persianate counterparts—along with a newly emergent class of bilingual interpreters—jostled for imperial sponsorship and employment opportunities at the royal translation bureaus (*maktab khāna*). In this competing and cosmopolitan society, Sanskrit astronomers truly began engaging with Greco-Islamicate ideas, and the language, logic, and structure of their arguments shaped subsequent discourses on foreign ideas (*yavana-mata*) in Sanskrit astronomy.

In this talk, I explore the language with which Nityānanda, a seventeenth-century Hindu astronomer at the Mughal court of Emperor Shāh Jahān, translated into Sanskrit the Persian astronomical text *Zīj-i Shāh Jahānī* “The tables of Shāh Jahān” (ca. 1629/30) of his Muslim colleague Mullā Farīd. Nityānanda’s works, the *Siddhāntasindhu* “The Ocean of *Siddhāntas*” (ca. early 1630s) and the *Sarvasiddhāntarāja* “The King of all *Siddhāntas*” (1639), are an example of how sacred tradition, secular innovation, and scientific rationalism express themselves in the language of early modern Sanskrit mathematical poetry.

***The Parvadvayasādhana of Mallāri: a Sanskrit table text to compute eclipses***

Clemency MONTELLE

University of Canterbury, Christchurch, NZ

**T**HE *Parvadvayasādhana* “Computation of the two syzygies” of Mallāri (fl. late sixteenth century) is a short treatise dedicated to the computation of lunar and solar eclipses. Composed in 1588, the work is an amalgam of algorithms and numerical data encoded in verse and graphical tables. In addition to epitomising a transition in format from text to tables, Mallāri’s numerical data rests heavily on the relations expressed by his predecessor Gaṇeśa (b. 1507). In this talk, I explore the transmission of eclipse algorithms from an astronomical *karaṇa* text to a tabular one in the Indian exact sciences.

## *Representational modes and their effects on written signs*

Karenleigh OVERMANN

University of Colorado, Colorado Springs, and University of Pittsburgh, US

NOTATIONS FOR NUMBERS represent in a fundamentally different manner from writing for non-numerical language: numbers *instantiate* quantity, while signs for language *signify* through resemblance and convention. Simply, three cuneiform wedges *are* three, while a picture of a head means something related to what it looks like—for example, a man, a head, a face, etc. Because they instantiate quantity, notations for numbers are unambiguously meaningful without phonetic specification, and in fact work better as numbers without the visual complexity it would add, the difference between 7 and *seven*. These qualities enable numerical notations to cross linguistic and cultural barriers with unusual ease and speed, often with little to no change in their form or meaning. In comparison, writing for language is generally ambiguous until it is specified, typically by incorporating strategies like identifying the type of word (determinatives) or providing clues to its pronunciation (phonography). Not all writing systems incorporate such strategies and rely instead on memorisation and interpretation. In writing systems that do incorporate strategies for specificity, signs increase in visual complexity, and crossing linguistic and cultural barriers means they must represent new sounds and different meanings, with both having significant potential to alter form and meaning. These differences in representational modes are ultimately traceable to neurofunctional and behavioural aspects of the cognitive systems for numbers and writing.

## *Wisdom is out there! Roger Bacon and the epistemic reconstruction of lost books and missed knowledge*

Nicola POLLONI

Katholieke Universiteit Leuven, BELGIUM

**D**URING THE LATIN MIDDLE AGES, translations of scientific and philosophical texts from Greek and Arabic into Latin crucially contributed to cause the Aristotelian shift that characterised the Scholastic tradition up to the seventeenth century. These translations also fostered an idealistic conception about the “knowledge of the others” (ancient sages and Islamicate thinkers alike) that needed be retrieved and implemented in Latin Christendom. A philosopher and scientist from the thirteenth century, Roger Bacon was an enthusiastic and omnivorous reader and a harsh critic of how the translators often rendered the original texts into Latin. He daringly proposed a reform of Latin knowledge which included the study of foreign languages as necessary instrument to proper understand sacred, philosophical, and scientific texts. Engaging with the lines of Bacon’s attitude towards Greek and Islamicate wisdom, my talk expands on a specific aspect: Bacon’s description of the epistemic treasures that science and philosophy still had to offer to the Latinate debate. In particular, I will focus on Bacon’s treatment of Aristotle and Ibn Sīnā, examining how Bacon reconstructs the list of works that these thinkers had authored yet were not available to the Latins (nor existing, in most cases). In this context, I will discuss how such beliefs impacted on Bacon’s own interpretation of both philosophers, with curious and relevant outcomes in the intellectual history of the Latin Middle Ages.

# ***Collective literacy, knowledge systems and memory: blurring the lines between orality and literacy in ancient Egypt***

Katharina ZINN

University of Wales Trinity Saint Davids, Lampeter, UK

**T**HIS PAPER INTRODUCES A NEW CONCEPTUAL FRAMEWORK conceptualising *literacy* more broadly as a cultural and social practice to build up social and cultural memory by looking at the specifics of knowledge systems prevalent in ancient Egypt. For this it is necessary to focus on the complex relationship between orality and writing, accentuate the materiality of writing and documents, follow questions of agency and acknowledge the social role of texts and writing in general as part of Egyptian memory culture.



