BRITISH SOCIETY FOR THE HISTORY OF MATHEMATICS

Durham University
Department of Mathematics

Reappraising the 'Art of Counting'. An international symposium to celebrate 500 years of Cuthbert Tunstall's *De arte supputandi libri quattuor*

University of Durham, 9-10 Sept 2022

Provisional Programme and Abstracts, Version 2: 6 August 2022

Friday 9 Sept
am: Arrival and accommodation checkin (for those who arrive earlyish)
12.15 Sandwich Lunch & Registration at Castle
13.15 Introduction
13.30 Exhibition & Castle
14.40 Transfer to Maths Dept (transport provided)
15.10 Satyanad Kichenassamy (Reims), *Tunstall, Pacioli, and Tartaglia's English connections: facts and perspectives*
15.55 Harald Gropp (Heidelberg), *The earliest printed math books in Continental Europe*
16.20 Tea/Coffee
16.50 Eleonora Sammarchi (ETH Zurich), *Mathematics during the Renaissance: language, concepts and social factors. The case study of Luca Pacioli's Summa (1494)*
17.35 Comfort break
17.45 Public Lecture: Travis Williams (Rhode Island), *Tunstall's Eloquent Arithmetic: Renaissance Mathematics as Pleasure Reading*
18.45 Free time to go to Accommodation – 15 mins walk
19.45 Dinner in town (not included in registration fee)

Saturday 10 Sept
09.20 Deborah Kent (St Andrews), *Mysteries in the margins: Annotations in* De arte supputandi
09.45 Stefano Gulizia (Milan), *'Illa […] insula volvit Aristotelem': Anglo-Italian exchanges, Paduan Aristotelians, and Tunstall's mathematics*
10.30 Tea/Coffee
11.00 Thomas Henderson (Durham), *Before Tunstall: Arithmetic in England from the eleventh century to 1522*
11.25 Fenny Smith (Independent), *"...Ciceronian eloquence is fine, but not suitable for those who don't understand Latin." The earliest printed arithmetics in English*
12.10 Sandwich Lunch
13.15 Optional Ushaw Library Tour (transport provided)
15.30 Finish (transport provided from Ushaw Library to railway station and hall of residence)

Abstracts

Satyanad Kichenassamy (Reims), *Tunstall, Pacioli, and Tartaglia's English connections: facts and perspectives*
Abstract to follow

Harald Gropp (Heidelberg), *The earliest printed math books in Continental Europe*

This talk tries to give a general survey on early printed books on mathematics and will focus on the years around 1520, also taking into account diplomatic relations between Britain and Continental Europe.

It is exactly 500 years ago (in September 2022) that the Magellanexpedition came back to Spain (without Magellan). This so called first circumnavigation must be seen in the context of Portuguese and Spanish explorations overseas on the one hand, and of diplomatic and dynastic conflicts between the influential European powers. Embedded in this general historical context is the production of mathematical books in different European countries, mainly serving the purposes of merchants rather than discussing the traditional curricula which were taught at universities of the time. In Britain there are scholars who also work in neighbouring fields such as physics and medicine who contribute to the dissemination of knowledge and who are also involved in important aspects of church and state affairs.

The discussion will be, among others, on Francesc Santcliment, Gaspar Nicolas, Richard Pace, Thomas Linacre, and of course, Cuthbert Tunstall.

Eleonora Sammarchi (ETH-Zürich and Laboratoire SPHERE (CNRS)), *Mathematics during the Renaissance: language, concepts and social factors. The case study of Luca Pacioli's Summa (1494)*

Within the frame of the Italian Renaissance, the *Summa de arithmetica, geometria, proportioni et proportionalita* became a milestone of the mathematical education. Printed in Venice in 1494, Fra' Luca Pacioli conceived it as a text providing the reader with the state of the art of the discipline. In my talk, I aim to present the book and its author. I will focus on some mathematical (especially algebraic) concepts developed by Pacioli, and combine their investigation with the lexical analysis of the text, as well as with the mention of some meaningful aspects related to the social context of Pacioli's mathematics. Finally, I will emphasize the legacy of the *Summa* in Italy and –indirectly– Europe.

Travis Williams (Rhode Island), *Tunstall's Eloquent Arithmetic: Renaissance Mathematics as Pleasure Reading*

This lecture will place Tunstall's book in a contemporary cultural frame, with special attention to the era's delight in variety and multiplicity. Tunstall famously prized eloquence as a goal for his treatise, but this put his work in tension with emergent drives to institute generality as an essential quality of mathematics. As we try to understand this tension and

its evolution through the next century of European mathematics, we will find that mathematics was something slightly different for the sixteenth century than it is for us, and relearn important lessons about reading old books with modern eyes.

Deborah Kent (St Andrews), *Mysteries in the margins: Annota□ons in* De arte supputandi

The first edition of Cuthbert Tunstall's *De arte supputandi libri quattuor* was printed in England in 1522. Several UK repositories currently hold copies of this and subsequent editions (Paris, 1529 and 1538; Germany,1551) that feature mathematical marginalia. These calculations, sketches, comments, underlines, and assorted scribbles not only illustrate ways in which readers engaged with Tunstall's text, but also pose some tantalising mysteries.

Stefano Gulizia (Milan), *'Illa […] insula volvit Aristotelem': Anglo-Italian exchanges, Paduan Aristotelians, and Tunstall's mathematics*

Like other notable scholars born in the British Isles, such as Edward Wotton, Thomas Linacre, or Reginald Pole, the Tudor humanist, bishop, and diplomat Cuthbert Tunstall (1474-1559) studied Greek at the University of Padua; indeed, in his 1533 edition of Euclid, Simon Grynaeus offered a dedicatory letter to Tunstall, which cemented the priority of the mathematical disciplines in this larger renewal of scholarship. Significantly, however, our studies largely concentrate on medicine or anatomy, and in Tunstall's case, one still has to rely on slippery circumstantial evidence, i.e. BL, MS Add 40,676, as well on sporadic assessments like Loudon's PhD dissertation (Toronto 2004). To mitigate this neglect, I first review some traces of the miscellaneous material culture that was associated with this *peregrinatio academica*, which still wielded considerable influence on England's networks. In the second part, I present an argument for seeing *De arte supputandi* as a curious mirror of the relationships established in Padua between theory, especially the development of Proclean commentaries, and mathematical practice. The final section of the paper compares the attitudes towards mathematics of two prominent Aristotelians, Niccolò Leonico Tomeo and Pietro Pomponazzi, with or against whom Tunstall must have worked out his own affinities.

Thomas Henderson (Durham), *Before Tunstall: Arithmetic in England from the eleventh century to 1522*

This paper shall provide an overview of 500 years of premodern English mathematics to set *De arte supputandi libri quattuor* in its long-term context, using conclusions drawn from institutional, intellectual and political history. These theoretical arguments shall be embellished with specific insights drawn from a codicological approach to the history of mathematics. It shall also use the arguments of recent mathematics historiography to establish a place for medieval European arithmetic in the canonical history of mathematics. The argument shall trace a broad array of changes in mathematical techniques (notably the introduction of the algorism), mathematical symbols (from Roman to Arabic numerals) and systems of counting (the shift from a duodecimal to a decimal system). It shall also examine

changes in arithmetic's institutional settings (from cathedral schools to secular courts) and authorial context (from anonymous treatise to named author). This represents a synthesis of the secondary literature, as few scholars of European medieval mathematics have considered the period as a whole. Alongside these long-term changes, the paper shall also identify continuities: whether applied to *computus* or commerce mathematics was a practical discipline and, integrated into the liberal arts curriculum, closely associated with teaching.

The paper shall primarily consider eleventh century arithmetical texts as they appear in a number of post-Conquest English manuscript books now found in Oxford, Cambridge, London and Durham. A comparison between these and Tunstall's *De arte supputandi*... shall illuminate and illustrate the mathematical trends of half a millennium. These sources are deliberately chosen as 'English': unlike most histories of mathematics, the analysis offered here will consider the role of geography in the development on thought.
By adjusting the usual parameters of mathematics history, the paper shall show what we can learn texts as chronologically distant from Tunstall as Tunstall is now from us.

Fenny Smith (Independent), *"...Ciceronian eloquence is fine, but not suitable for those who don't understand Latin." The earliest printed arithmetics in English*

It was with these words, in his expansive bilingual dedication to his noble patron Duke Guidobaldo da Montefeltro, son of Duke Federico of Urbino, that Luca Pacioli justified writing the bulk of his encyclopaedic *Summa de arithmetica, geometria, proportione, et proportionalitá* (Venice, 1494) in the vernacular, but this sentiment could just as well apply to the first two printed arithmetics in English (published 1537 and 1543). Cuthbert Tunstall prepared the way with his Latin *De arte supputandi libri quattuor* (1522), but far more influential were these later two. They will be described in this talk, along with their legacies and the influence of the earlier works mentioned.