

Preface

Niccolo Fontana (1499–1557), better known as Tartaglia, is one of a loosely connected group of Italian scientists living between the middle of the fifteenth and the end of the sixteenth century, between Leonardo and Galileo. They all worked on what we call today statics, what they called the “science of weights”, following the ideas of Archimedes’ *On the equilibrium of planes*, Pappus’ “Collection”, Heron’s *Automata*, the Pseudo Aristotle’s *Quaestiones mechanicae* and Jordanus Nemorarius’ *De ratione ponderibus* (thirteenth century). The first of them is Leonardo da Vinci, but his influence in that domain is very difficult to estimate. Most of the others have reproduced, translated, commented or as they said themselves “paraphrased” those texts. Niccolò Leonico Tomeo even published the *Quaestiones* twice, first in 1525 with an extensive commentary, and then in 1573, the original text alone in his edition of Aristotle’s complete works.

In 1551, Girolamo Cardano dedicated the end of the first book of his *De subtilitate* to the equilibrium of the balance, mentioning works of Archimedes. In his *Mechanicorum liber* (1577), Guidobaldo del Monte tries to organize the study of the Pseudo Aristotle’s simple machines, balance, lever, pulley, wedge, etc. in a Euclidean way, basing the demonstrations of their properties on “common notions” and “suppositions”. Eleven years later, he gives in *duos Archimedis aequponderantium libros paraphrasis*, as he presents it himself, a “paraphrase” of Archimedes on the “equilibrium of planes”.

In Giovanni Battista Benedetti’s *Diversarum speculationum mathematicarum et physicorum* (1585) we find a *De mechanicis* largely inspired by the *Quaestiones*. Three years later, Federico Commandino, published posthume Pappus’s original text, *Mathematicae collectiones*; some years before, he had published *De centro gravitatis* (1565) referring to Pappus.

Bernardino Baldi translated into Italian *Di Herone Alessandrino De gli automati* (1589) and in his *Mechanica Aristotelis problemata exercitationes* (1621) is only loosely inspired by the *Questiones*. Francesco Maurolico largely comments the same text in his *Problemata mechanica* (1613) and in his *Admirandi Archimedis*

he published an *Archimedi momentis aequalis* corresponding to the “equilibrium of planes” (Maurolico 1685).

The aim of all these men is identical to that of Galileo: to describe the world mathematically. Nevertheless, their works are nowadays largely unknown, except to specialists, despite the fact that Galileo found there the first inspiration for *Le mecaniche* and for the rest of his work on statics. However, his genius soon outshined them. For historians, those texts contain the roots of that part of Galileo’s work and they help them to understand his masterpieces.

Therein lies the reason why Raffaele Pisano and Danilo Capecchi have decided to publish a reproduction of two books of Tartaglia’s *Quesiti et inventioni diverse* together with an English translation. In fact, books VII and VIII are the only ones concerning the “Science of Weights” in Tartaglia’s work. The first six books of *Quesiti* are concerned with artillery and war science, the last one with arithmetic, geometry and algebra. He also published Jordanus Nemorarius’s *De ponderositate* (1565).

The book opens on biographical sketches that, cautiously, are based only on official documents such as Tartaglia’s last will and testament, as well as on contemporary biographies written by some of the authors mentioned supra.

That first part of the book ends with a general presentation of Tartaglia’s whole work.

The second part shows the connections of Tartaglia’s science of weights, not only with the Italian group that we presented first but also with the Arabic tradition and with Simon Stevin.

The third part is a careful presentation of the scientific content of books VII and VIII of the *Quesiti*.

The reader is then well prepared to read Tartaglia’s text, a difficult task indeed, but how fruitful!

This book, with its original texts and its translations, with numerous references to other original texts as well as to the secondary literature, will be a useful tool for all those who study this particularly rich period.

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VII–VIII

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