

Historical & Cultural Astronomy

Series Editors: Wayne Orchiston · Marc Rothenberg ·
Clifford Cunningham

Kristen Lippincott

Alessandro Piccolomini's Early Astronomical Works: I. An Exploration of Their Cultural Significance

With Editions and Translations of
De la Sfera del Mondo and *De le Stelle Fisse*

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Historical & Cultural Astronomy


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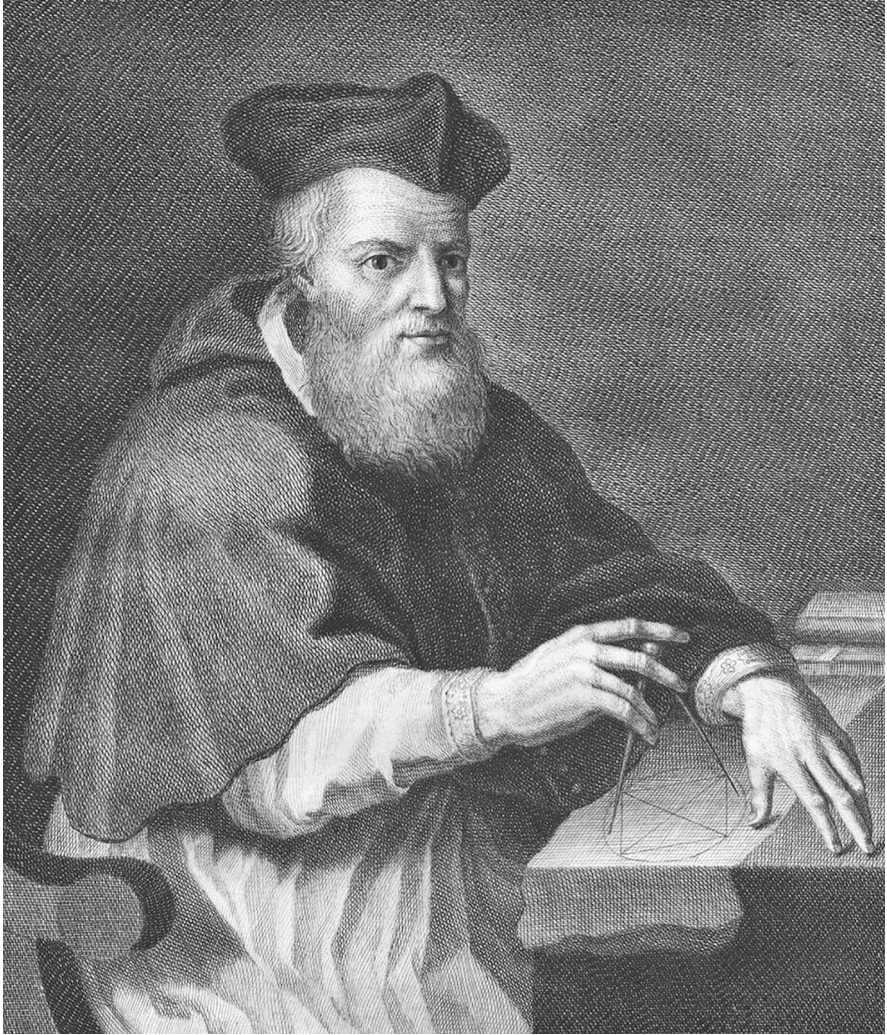
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Cover image: Portrait of Piccolomini with his “De La Sfera Imprese” and his sketch of a geo-central solar system.

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'Monsignor Alessandro Piccolomini, Bishop of Patras, Elect of Siena, Poet, Orator, Philosopher and Illustrious Mathematician', engraved by Raimondo Faucci after the original portrait by Lorenzo Feliciati, c. 1770. Amsterdam, Rijksmuseum, inv. RP-P-1909-4918. Public Domain via Wikimedia Commons

Preface and Acknowledgments

The Sienese polymath, Alessandro Piccolomini (1508-1579), was one of the leading proponents of his day for making the natural sciences available to the lay reader in the vernacular—in Piccolomini’s case, in his native Tuscan. His earliest attempt is comprised of two works: *De la Sfera del Mondo* and *De le Stelle Fisse*, both of which were first printed in Venice in 1540.

The two treatises were dedicated to Laudomia Forteguerra, an accomplished Italian poet and a member of one of the most powerful families in the sixteenth-century Republic of Siena. In his dedicatory preface, Piccolomini stresses that they were written specifically to elucidate the theories underpinning the science of astronomy for someone who has little or no training in mathematics—‘whether it be a man or a woman—so that he or she will be able to understand them very easily’.

To date, neither volume has received more than cursory scholarly attention. The current study examines the significance of the works on a cultural level and includes chapters on Piccolomini’s education and early life; the differing intellectual milieus of sixteenth-century Siena and Padua—both of which formed Piccolomini’s own intellectual outlook and aspirations; the role he played and the challenges he faced in promoting Tuscan as a viable language for philosophical and scientific studies; and the complex world of publishing in Venice and the Veneto during the middle years of the Seicento. There is also an exploration of what can and has been surmised about the relationship between Piccolomini and his dedicatee, Laudomia Forteguerra.

This volume was written in tandem with Dr Elly Dekker’s examination of the scientific content of the Piccolomini’s early astronomical treatises, and we planned our two works as independent, but complementary investigations. I wish to take this opportunity to thank her for on-going dedication to the project, for her intellectual generosity and for her patience in what turned out to be a much longer process than either of us had envisioned, largely due to complications generated by the 2019-2023 pandemic.

I also wish to thank Marco Spreafico, who provided invaluable support in crafting the English translation of both texts (which appear as digital links mentioned in Chap. 5). Piccolomini’s Tuscan reflects a fascinating stage in the evolution of the

Italian language, but the intended meaning many of his phrases can prove to be challenging for most modern readers. Marco has helped to provide a light and stylish touch to the English translation, which we hope that Piccolomini himself would have appreciated. I also wish to thank those colleagues who read and commented on early drafts of this study or who provided useful insights or details that improved the works substantially. These include Charles Burnett, Jill Krave, Filippomaria Pontani, Antonia Karaisl, Julia Boyd and Jenefer Boyle. Gratitude, too, is due to Gordon Barrass for his unwavering support over the years it has taken to see this project to completion.

Note to the Reader

A selected bibliography of Alessandro Piccolomini's works appears in the first section of the bibliography. For a more complete list, with indications of the numerous reprintings of each of his works, the reader is directed to consult Cerreta 1960, esp. pp. 175-96; the bibliography edited by Eugenio Refini and Franco Tomasi in Piéjus, Plaisance, Residori, eds. 2012, pp. 275-86 and Valentino 2021, pp. 298-300.

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The diagrams in the following pages and the **ESM** links have been constructed by the author, following the exemplars that appear in the 1540 (Arrivabene) and 1561 (Varisco) editions of Piccolomini's *De la Sfera del Mondo* and *De le Stelle Fisse*.

London, UK

Kristen Lippincott

About the Book

This book presents the first interdisciplinary study of Alessandro Piccolomini's two early astronomical works – *De la Sfera del Mondo* and *De le Stelle Fisse*. First published in Venice in 1540, the two treatises are amongst the earliest scientific texts written in the vernacular (Italian) and were specifically composed to make astronomical principles and practices available to a lay reader.

The book provides modern editions of the original Italian texts and an English translation of both treatises (all appended as Electronic Supplementary Material to the online edition), while also examining the contents of each treatise in depth. It explores the way in which Piccolomini addresses the theoretical underpinnings of the science of astronomy in his *De la Sfera del Mondo* by providing a version of Sacrobosco's *De sphaera*, which he has expanded and updated to include some of the views of subsequent natural philosophers and astronomers. The book also presents an extended study of *De le Stelle Fisse* and the unique method that Piccolomini devised for observing the stars, as well as explanatory notes on the sources behind his explanations of the mythographic sources of each constellation.

In addition to this, the book offers a detailed examination of the cultural context in which Piccolomini wrote his treatises, focussing on such issues as how astronomy was taught in Italian universities in the sixteenth century; the on-going debates on the viability of the Italian language as a means for discussing scientific ideas; and how Piccolomini navigated through the competitive and complicated world of book production in sixteenth-century Venice. Given that Piccolomini originally dedicated both treatises to his female friend, the Sienese aristocrat Laudomia Forteguerra, there is also a discussion of the mysteries behind their personal relationship; of the dynamics of Sienese society at the time; and, in particular, the role that the Sienese Accademia degli Intronati played in Piccolomini's own intellectual development and in the composition of his astronomical treatises.

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About the Author

Kristen Lippincott is a London-based historian, specialising in art history, cultural history and the history of science and scientific instruments. She has spent most of her career working in and with museums, most notably as the Director of the Royal Observatory Greenwich, Deputy Director of the National Maritime Museum in London and as a Founding Director of The Exhibitions Team. She is currently Director of the Saxl Project.

Her academic affiliations include the Warburg Institute and University of Chicago. Her research has been supported by a series of prestigious academic awards and fellowships, including grants from the National Endowment for the Arts, the J. Paul Getty Trust and the Samuel H. Kress Foundation. During the academic year 1987-88, she was a Fellow at the Harvard University's Center for Renaissance Studies at the Villa I Tatti in Florence and in 2003-04, she was Visiting Professor there.

She is the author of numerous scholarly articles, and her books include: *Astronomy* [Dorling Kindersley/ Eyewitness Science series] (London, etc. 1994); *The Story of Time* [exhibition catalogue, London, the National Maritime Museum, 1 December 1999–28 September 2000] (London 1999; also translated into French, Spanish, Dutch, Korean and Hungarian); *A Guide to the Royal Observatory, Greenwich* (London 2007); *The Aratea ascribed to Germanicus. MS 735C Aberystwyth, National Library of Wales. Commentary to the Facsimile Edition and Latin Edition with English translation* (Lucerne 2019); and *The Curious History of the Text and Illustrations of Hyginus's De Astronomia* (Cologne 2021). Most recently, she was the joint author of *Liber Astrologiae. Abū Maʿshar Treatise* (Barcelona 2022).

Chapter 1

Alessandro Piccolomini and the Background to his Astronomical Treatises



In 1960, Florindo Cerreta published what remains the definitive intellectual biography of Alessandro Piccolomini's life and works, describing him in the title as a *letterato e filosofo senese del cinquecento* ('a 16th-century Sienese man of letters and philosopher').¹ Cerreta introduced his subject by quoting two passages that had appeared in a previous biography, published by Giuseppe Fabiani in 1759.² The first was from the dedicatory preface to the English diplomat and Fellow of the Royal Society, John Strange,³ written by the Sienese publisher of Fabiani's volume, Vincenzo Pazzini Carli. In this preface, Pazzini Carli described Piccolomini as:⁴

... a tremendously illustrious and renowned man of letters, who was always immersed in philosophy, and who, with his heightened abilities, equally knew how to handle its most important precepts using the highest level of Tuscan elegance, and he managed to be admired not only as a great philosopher, but also a great mathematician, a great orator, and a poet—being not only a friend of Latin, but also of Greek letters.

The second passage quotes Fabiani's own opinion from the opening lines to his biography of Piccolomini:⁵

For the sharpness of his wit and eloquence, Alessandro Piccolomini was as the first amongst those who lived at his time.

¹Cerreta 1960.

²Fabiani 1759.

³For additional information about John Strange (1732–1799), his career and his publications, see the entries by Seccombe 1885–1900, 55, p. 23 and Sharpe 2004, 53, pp. 9–10.

⁴See Pazzini Carli in Fabiani 1759, pp. ii–iii: ... *un sì illustre, e rinomato [sic = rinomato] Letterato, il quale tuttora immerso nella Filosofia seppe parimente col suo elevato ingegno trattare coll'ultima eleganza Toscana i di lei più importanti precetti, e seppe farsi ammirare non solo gran Filosofo, ma anche gran Matematico, grande Oratore, e Poeta, amico non solo delle Latine, che delle Greche Lettere.* Cited by Cerreta 1960, p. vii.

⁵Fabiani 1759, p. 1: *Alessandro Piccolomini fu per acutezza d'ingegno, e per facondia quasi il primo fra quansi vissero al suo tempo.* Cited by Cerreta 1960, p. vii.

Cerreta is quick to point out that, whereas many modern readers might dismiss such descriptions as ‘excessive rhetorical exaggerations’ (*smaccata esagerazione retorica*),⁶ in the case of Alessandro Piccolomini, such characterisations are not only credible, but possibly modest—given that he was not only the author of over thirty published works, but that the range of his interests was so broad and profound that he could be equally classified as a philosopher, mathematician, orator, poet and playwright.⁷ And yet, impressive as this tally of proficiencies might be, Cerreta’s list actually does scant justice to his subject’s accomplishments to which one might also add: translator and expositor of both Greek and Latin texts; a patriot and ardent promoter of the Tuscan language; a facilitator of learning for both men and women who have not had the benefit of a classical, academic education and the author of studies on such various scientific topics as topography, meteors, rainbows, calendar reform and, of course, cosmology and astronomy.

When Cerreta was writing his biography, it was fair to say—as he does—that if the name of Alessandro Piccolomini was known, it was primarily as the author of a series of comedic plays that he had written during his early twenties. The more serious writings of his later career seemed to have been all but forgotten. Cerreta attributed this state-of-affairs to the general decline of interest in the erudite subject matter of the works that Piccolomini had left behind.⁸ Despite Cerreta’s pessimism and surely due at least in part to his own research into Piccolomini’s life and *oeuvre*, however, scholarly curiosity concerning Piccolomini’s writings, as well as more general explorations of the role he played in the vibrant intellectual and cultural life of his times, has grown exponentially over the past sixty years. Given the nature of much of late twentieth-century scholarship, though, with its tendency towards increasing specialisation, many of these more modern studies tended to focus exclusively on isolated topics within Piccolomini’s broad spectrum of publications—to such an extent that a different sort of danger emerged: namely, that any sense of the unifying intellect behind such an exceptionally broad range of endeavours could have become fragmented and one’s sense of ‘the man’ and his seemingly relentless curiosity and drive might have been lost to the unwarranted perception of Piccolomini as a second-rate dilettante. More recently, however, this concern has been addressed in two ways. The first is that, by means of the much more flexible and potentially more widely-encompassing format of the colloquium, it has been possible for scholars from varying disciplines to compare and interweave their insights with colleagues.⁹ The second is that those scholars who, for the most part, have been studying Piccolomini’s publications in the *volgare* have begun to tie-together a number of underlying themes and concerns that run through many of

⁶Cerreta 1960, p. vii.

⁷Cerreta 1960, pp. vii-viii.

⁸Cerreta 1960, p. viii: *La causa di questo declino dovremmo ricercarla piuttosto nella natura erudita delle opere che ci ha lasciato.*

⁹See, for example, the range of essays in Piéjus, Plaisance, Residori, eds. 2012 collected with the express desire to present their subject ‘*dans l’ensemble de ses activités*’ (p. 9).

his works and, by doing so, have proved the extent to which—even though the subject matter of his writings may be varied—Piccolomini's intellectual *ethos* and method remain remarkably consistent throughout his entire career.

1.1 Piccolomini's Early Life and Education

Alessandro Piccolomini was born on 13 June 1508 into one of the grand families of the Sienese aristocracy. He was the eldest child of Angelo (or Agnolo) Piccolomini and his wife, Margherita Santi, who would produce an additional ten or, perhaps, eleven children over the next fifteen years.¹⁰

It appears that Alessandro was destined for a life in the Church from a very young age. Towards the end of 1517, when he was only nine years old, Alessandro received his tonsure and was granted various ecclesiastical benefices—*cum cura et sine cura*—by his uncle, Cardinal Giovanni Piccolomini, while also securing the right to accede to major orders once he had reached the minimum age requirement of seventeen years old.¹¹

Accordingly, six years after his acceptance into the clergy, he was granted additional ecclesiastical benefices via a Papal Bull issued by Pope Clement VII and dated February of 1523 (*os/1524 ns*). The document also provided assurances that Alessandro would be nominated to the office of Archpriest of the Diocese of Siena (*Arciprete della Metropolitana*) with a stipend of up to 25 ducats when he reached his maturity in two years's time.¹²

For the next fourteen years, there is no mention of any significant ecclesiastical responsibilities apart from an aside contained in a letter sent from Marcantonio Piccolomini (*Il Sodo Intronato*) to Alessandro in Siena dated 28 February 1538 (*a nativitate*), where *Il Sodo* outlines the variety of the young Piccolomini's intellectual achievements, mentioning that—'after he had attended his duties as archpriest'—he studied poetry, rhetoric, history, military strategy, languages, music and

¹⁰ Cerreta 1960, pp. 4–5. As Cerreta points out, the documents are not entirely clear on the exact number of Angelo Piccolomini's children, largely due to the difficulties entailed in untangling the various members of the extended Piccolomini clan. Angelo himself was a member of the Modanello branch of the family. See Cerreta 1960, pp. 4–5. Alessandro's baptismal record lists him as: *Alixandro Girolamo Ansano Maria figlio di Agnolo d'Alixandro Piccolomini si baptezo addi xiii giugno compare messer Richomanno da Castello Vescovo di Benafri e Francesco di Messer Giovanni de Scotti* (p. 4).

¹¹ See Cerreta 1960, p. 6.

¹² The outlines of Piccolomini's ecclesiastical career are described in Sigismondo Tizio's *Historiarum Senensium tomi X*, ed. Doni Garfagnini 1992. Pertinent extracts and paraphrases appear in Cerreta 1960, pp. 6–7; Tomasi 2015a, p. 203 and Belladonna 1975a, p. 54, n. 24, citing the shelfmark of the original manuscript: Florence, Biblioteca nazionale centrale, Fondo nazionale, Ms. II. V. 140, pp. 354 and 375.

mathematics.¹³ In April 1542, he was given the ‘hat’ for the church of San Giorgio in Siena; and he is described as an *archipresbiter* in a document of 1545.¹⁴ In March 1556, he was awarded a new canonry in Silice nel Padovano, and in 1564 he received the canonry of San Pietro in Banchi in Siena. Finally, after having successfully passed his exams and received his doctorate in theology,¹⁵ he was nominated as *Coadiutore* of the Archbishop of Siena, with the honorific title of Archbishop of Patras and the benefices from the Monastery of Sta Mustiola in Torri near Siena.¹⁶

Despite such illustrious early sponsorship, Piccolomini remained at a relatively low level within the clergy for most of his ecclesiastical life, probably by choice.¹⁷ Significantly, he did not take Holy Orders until March 1555, nearly forty years after he received his tonsure. An examination of his published writing and surviving private correspondence reveals a man who is consistently conservative in his religious views and always cautious when exploring any religious, political or philosophical ideas that could possibly be considered contentious.¹⁸ During the 1550s, however, the Sienese elite and its Academies became a specific target of the post-Tridentine clergy, who were eager to track down and prosecute any trace of heretical behaviour or sympathy in the town.¹⁹ Seen against this background, it is tempting to suggest that his ordination in 1555 reflects a conscious and timely ‘politically-motivated’ decision on Piccolomini’s part to align himself more closely

¹³The manuscript letter is held by the Biblioteca Comunale degli Intronati di Siena, Misc. Benvogliati, Ms. C. IV. 25, pp. 51–53. For the citation, see p. 52: *Neque enim tibi fuit satis tempus a divini cultus administratione vacuum . . .*. Reproduced by Belladonna 1975a, pp. 317–19 and discussed on p. 170.

¹⁴Cerreta 1960, pp. 52–53 and 55.

¹⁵Belladonna notes that the securing of a doctorate in theology appears to have been one of the new stipulations initiated by the rulings of the Council of Trent. See Belladonna 1975a, p. 54.

¹⁶Cerreta 1960, pp. 73–74 and 96–99.

¹⁷Cerreta notes that once Piccolomini begins to take on ecclesiastical appointments with added responsibility, he is full of complaints that the duties entailed in these positions take up too much of the precious time he should be devoting to his studies and his books. See, for example, Cerreta 1960, pp. 57–59.

¹⁸See Belladonna 1975a, p. 233: ‘One the whole, he appears to place himself on the side of tradition [and] his treatise [the *Institutione*] presents a curiously counter-reformation character, *ante litteram*’. See also, Belladonna 1975a, p. 306.

¹⁹For a further articulation of this view, see Belladonna 1975a, pp. 255–301. She also cites the findings of the Jesuit father, Emmanuel Sà, whose 1559 report stated that heresy was rife in Siena—especially among the upper classes—and that the *Intronati*, in particular, was known to disseminate radical ideas. Piccolomini, however, is singled out as one of the ‘good members’. Sà notes that Piccolomini’s help during his tenure as Prince of the *Intronati* had been ‘precious and that it would be unwise to take proceedings against the *Accademia* as a whole; [and that] it was better to proceed against [individual] members’. See Belladonna 1975a, p. 263. For an overview of the repression of heresy in Siena at the time, see von Henneberg 1965; Marchetti 1969a; Marchetti 1969b and Marchetti 1970.

with the counter-Reformers or, at least, to distance himself even further from his former friends and colleagues with heretical views.²⁰

In terms of his formal education, we know very little beyond the fact that the young Alessandro was placed into the care of tutors following the untimely death of his father in 1524, when he was only sixteen years old. There is a tacit assumption that he matriculated at the University of Siena, but due to substantial losses in the University Rolls from this period, we know nothing beyond the comments made by fellow *Intronato*, Scipione Bargagli, in the funeral oration he delivered on Piccolomini's death in 1579, that he had been taught poetry and rhetoric by Carlo Piccolomini, and mathematics and astronomy by Carlo Pini.²¹

Perhaps due to this lack of documentation concerning Piccolomini's early education, many scholars have concluded that his association with the newly-formed *Accademia degli Intronati*, which he seems to have joined formally sometime between 1528 and 1530, provided him with the intellectual and cultural stimuli that set the foundations for many of his later intellectual interests and ambitions.²² In support of this view, it is worth noting that the activities of the *Accademia* were composed of two strands: the first was the production of light-hearted theatrical productions, which usually had marked satirical and often bawdy undertones; the second was an on-going programme of lectures, delivered by members of the Academy as well as invited guests, based on 'reading, interpreting, writing and discussing' (*legendo, interpretando, scribendo, disputando*) not only Greek and Latin literature, but also Tuscan poetry.²³ In particular, it actively promoted the translation of the Classical texts into the Tuscan *volgare*. It was also one of the very

²⁰Belladonna 1975a, pp. 255–56, where she suggests that it was due to the pressure of these new strictures that Piccolomini substantially revised his first version of the *Institutione* (Piccolomini 1542a)—including changing its title and dedication (replacing Laudomia Forteguerra de'Colombini with his brother, Giovambattista Piccolomini, who was a well-respected professor of civil law, then working in Università di Macerata)—for the second version, which was published in 1560 (Piccolomini 1560). For additional information on Giovambattista, see Cerreta 1960, pp. 9 (n. 16); 81–82, 83 (n. 4); 99 (n.3); 112–13; 114 (n. 12) and 219.

²¹Bargagli 1579, p. 550.

²²The *Accademia* was founded between 1525 and 1527 with its name reflecting the desire of its members to escape from the noises of the world that deafened (*ritronavano*) them. Its six basic 'laws' were: *Deum colere; Studere; Gaudere; Neminem laedere; Nemini credere* and *De mundo non curare*. For an overview of the history of the *Accademia*, see Maylender 1926–30; Costantini Petracchi 1928; Iacometti 1941/1950; Belladonna 1975a; Seragnoli 1980; Marcucci, Crevani, Adorno 1988; Collier 2006 and Tomasi 2012a. For a discussion of the significance of the *impresa* of the Academy, see Bargagli 1594, pp. 210–211 (sigs. O 1^v—O 2^r); Bargagli 1611b, p. 463 and pp. 482–83; Caldwell 2004, p. 133; Oberto 2016 and Rodda 2017.

²³See Cerreta 1960, p. 12, citing the description recorded in a letter from the Sienese scholar and politician Mino Cèlso to Betto Romano (cf. Beyerlinck 1678–1707, 1 (1678), p. 35; Mazzi 1882, pp. 389–90; Maylender 1926–30, 1 (1926), p. 354; Petracchi Costantini 1928, p. 80 and Samuels 1976, p. 608).

few cultural institutions—if not, indeed, the only one during this period—that not only permitted women to attend its meetings, but it actively supported and encouraged their participation.²⁴

Piccolomini's precocious response to the influence of the *Accademia*—where he was given the nickname of *Lo Stordito*, or 'the dazed one', possibly due to his slightly awkward, bookish tendencies²⁵—is clearly demonstrated by the scope of his early works. By the time he had reached the age of 30, he had produced several literary works in Tuscan, ranging from satirical parodies in the form of dialogues or plays to more serious scholarly works.

In the first category, one finds *Gli'Ingannati*²⁶ and *Amor costante*,²⁷ both probably written when Piccolomini was in his early twenties; and a piece completed a few months after his thirtieth birthday, the *Dialogo delle bella creanza de le donne* (or *La Raffaella*, after its main protagonist).²⁸ Cerreta cites the immense and on-going popularity of these comic and often bawdy literary productions executed

²⁴For further information on the possibly uniquely high regard with which the *Accademia degl'Intronati* considered female participation, see Piéjus 1980/2009; Piéjus 1994b/2009; Coller 2006 and Eisenbichler 2012b, pp. 68–69.

²⁵It was the tradition that every member of the *Accademia* was given a nickname, which was claimed to capture the essence of his character. For a list of the nicknames, see Clèder 1864, esp. pp. xlv-liv and for additional information concerning Piccolomini's nickname as *Lo Stordito*, see Sect. 3.1.

²⁶*Gli'Ingannati* (Piccolomini 1537) was a collaborative piece, written jointly with Girolamo Bargagli and Belisario Bulgarini for the for the Carnevale of 1531. The work was subsequently published as part of the descriptions of the *Sacrificio dell' Amore degli Intronati* in Venice by Sessa in 1537. Modern editions have been published by Sanesi 1912/1975 and Cerreta 1980. See also Cerreta 1960, pp. 10–13 and 17, nn. 3 and 17.

²⁷*Amor costante* (Piccolomini 1540a) is said to have been commissioned to be performed as part of the ceremonies marking Charles V's visit to Siena in 1531. Due to civil unrest by the local populace, however, its first performance was postponed until his return visit in 1536—hence the mention in the title page of '... composta per la venuta dell'imperatore in Siena anno del XXXVI'. The *editio princeps* lacks a date of place of publication, but Cerreta (following Graesse) suggests that it was first published in Venice by Arrivabene in 1540. It was reprinted an additional nine times during the sixteenth century and it was repeatedly performed throughout Italy for the next thirty years. For a discussion of the work, see Cerreta 1960, p. 13; Refini and Tomasi 2012, pp. 275–76 and Tomasi 2015a, p. 204.

²⁸The dedication of *La Raffaella* to Eufrosia Placida de'Venturi is signed as having been written in Lucignano di Val d'Asso and is dated 22 October 1538. The text was first published in Venice by Curzio Navò e Fratelli in 1539 (Piccolomini 1539). The Italian version was republished an additional 18 times in Italy (nine times between 1539 and 1574) and the text was translated into French in the early 1570s in three different versions, resulting in a further 8 editions. See Cerreta 1960, pp. 16–19 and 175–76; Valeri 1942/1944; Piéjus 1980/2009; Costa 1998; Refini and Tomasi 2012; p. 275 and Robin 2013, p. 209 and 218, n. 11. Despite the parodic nature of the work, numerous 'modern' commentators have judged it to be unacceptably 'immoral', 'obscene' and 'licentious'. For the references, see Piéjus 1980/2009, p. 75, who also draws attention to Valeri's counsel that the work should not be read by anyone under seventeen years of age, and especially not by young married couples (ed. Valeri 1942/1944, p. 21).

in the first stages of Piccolomini's career as the reason why so many earlier scholars had tended to define Piccolomini almost exclusively as a comic poet.²⁹

Yet, in those same years, he also produced several scholarly works which equally seem to show the influence of the intellectual milieu of the *Accademia degli Intronati* by demonstrating his abilities in the translation of Classical texts from both Latin and Greek into the *volgare* and, not coincidentally, by dedicating these works specifically to his young female contemporaries. By 1538, he had contributed his Tuscan translation of Book VI of Virgil's *Aeneid* to a set of translations composed by six different *Intronati* of the first six books *Aeneid*, each volume of which was dedicated to an eminent noblewoman.³⁰ In Piccolomini's case, he dedicated his efforts to the Sienese noblewoman, Frasia (or Eufrasia) Placidi de' Venturi.³¹ At the same time, he translated the discourse between Ajax and Ulysses in Book XIII of Ovid's *Metamorphoses* from Latin into the *volgare*;³² and translated Xenophon's Socratic dialogue, the *Oeconomicus*, from the original Greek, which he also dedicated to Eufrasia Placidi de' Venturi.³³

²⁹See Cerreta's lament regarding the current state of Piccolomini's reputation at the time in which he was writing his biography (Cerreta 1960, pp. ix-x) and the comments by one of Cerreta's reviewers in De Gaetano 1962, esp. p. 73.

³⁰First published in Venice by Comin da Trino in 1540 and reprinted an additional three times in Venice and Florence (Piccolomini 1540b). See also Cerreta 1960, p. 179 and Refini and Tomasi 2012, pp. 276–77. The authors and the dedicatees are as follows: Book I (Alessandro Sansedoni to Aurelia Tolomei); Book II (the Florentine Ippolito de' Medici to the Venetian Giulia Gonzaga); Book III (Bernardino Borghesi to Giulia Petrucci); Book IV (Bartolomeo Carli Piccolomini to Aurelia Petrucci); and Book V (Aldobrando Cerretani to Girolama Carli Piccolomini).

³¹For additional information, see Cerreta 1960, p. 12 and Eisenbichler 2012b, pp. 21–23 and pp. 294–95, nn. 12–14. See also Sect. 2.1.1.

³²First published in Venice by Andrea Arrivabene 'at the sign of the well' (*al segno del Pozzo*) in 1540 and reprinted in Venice in 1545 (Piccolomini 1540c). See Cerreta 1960, p. 183 and Refini, Tomasi 2012, p. 277.

³³Piccolomini claims to have translated Xenophon's *Oeconomicus* directly from the Greek, rather than having resorted to relying on either Cicero's translation or any of the other Latin versions of the text: *Pensai di tradurlo, più in vero, per esercitarmi in tradur di Greco ne la lingua nostra, che perche io pensasse, che tal traduzione dovesse esser vista, la qual veggendo io poi, ch'ella estremamente desiderava di venir a la S.V. (bellissima Madonna FRASIA) io a l'ultimo mi risolvei di concedergliela volentieri* ('More truthfully, I thought of translating it in order to practice translating Greek into our own language; [but] because I thought that this translation should be seen, when I later saw that she [the translation] very much desired to come to your Ladyship (very beautiful Madonna Frasia), in the end, I resolved to concede to her [wishes] willingly'). Piccolomini 1540e, p. 2v. Greek editions of Xenophon would have been available via Giunta's Florentine publications of 1516 and 1527 or the Venetian Aldine edition, printed in 1525. See Robin 2013, pp. 208–09 (who discusses some of the eleven contemporary Latin translations of the text) and 218, n. 7.

Piccolomini's dedication of his translation of Xenophon is dated 8 January 1538 (*os* = January 1539 *ns*) and is signed as having been written in his villa in Lucignano di Val d'Asso (near to Montepulciano in the province of Siena), showing that the work itself had been completed prior to his move to Padua. The text was first printed by Arrivabene ('*al Segno del Pozzo*') in Venice in 1540 (Piccolomini 1540e) and was later reprinted in Venice by Sessa in 1546. See Cerreta 1960, p. 180 and Refini and Tomasi 2012, p. 278. For more on his dedication to the Sienese gentlewoman, Madonna Eufrasia Placidi de' Venturi, see Sect. 2.1.1. See also Cerreta 1960, p. 12 and Robin 2013.

Indeed, it appears that the young Alessandro's interests were so wide-ranging—which, as noted above, his elder *Intronato* colleague, Marcantonio Piccolomini (*il Sodo*) listed as including poetry, rhetoric, history, military strategy, languages, music and mathematics—that *il Sodo* himself became so concerned that the weight of so many different topics might easily overwhelm the young man, such that he and the other elders ventured to advise him to 'finish each kind of study one-by-one, rather than attempting to fight them all at the same time in a single battle'.³⁴

Curiously, none of Piccolomini's early publications convey much, if any, indication of the philosophical and scientific interests that would play such a major role in his later career. Cautiously questioning this assumption, however, Cerreta noted that even though so many of Piccolomini's earliest works were published during his first few years in Padua, many appear to have been devised or written while he still living in Siena. Therefore, it seemed equally plausible that some of the scientific works which had previously been attributed to his Paduan years could also have been planned, if not already started, while he was still living in Siena.³⁵

In support of this view, Cerreta cited a passage from Piccolomini's letter to Pietro Aretino, dated March 1541 (*n.s.*), in which he states:³⁶

Already for many months and maybe years—and now more than ever—I have had in mind to turn into our language, not only some matters concerning astrology and cosmography written by Ptolemy, but also a large part of natural and moral philosophical matters, following the method of the Peripatetics

³⁴See Chap. 1, n. 13 above. The quote continues: . . . *quod occupatione quisque elegantissimas facere solitus est in poetarum, oratorum atque historicorum libris evolvendis ponere sed militaria omnia studia tractare, linguas nobiliores pene omnes addiscere musicae varij generibus erudiri, atrium praeterea magis reconditarum, mathematicarum disciplinarum arcana ingredi, et quicquid tandem ociosorum ingenia solet exercere, magno animo es aggressus. Quae cum omnia te uno tempore prosequentem viderem veritus non ne tot rerum pondere obruta ac debilitata memoria labefacteretur. Quamobrem sum ausus te cum Senis agerem familiariter monere ut minutatim malle potius doctrinarum singula conficere genera, quam cum universis uno quasi proelio simul dimicare.* See Belladonna 1975a, p. 318.

³⁵See Cerreta 1960, pp. 36–37. See also Baldi 2001, pp. 206–07, who seems to lean towards a slightly later date for the genesis of Piccolomini's scientific writings, though see his comments on p. 206, n. 2, especially regarding Piccolomini's having composed *De iride* to satisfy the wishes of 'nobilissimi e miei amicissimi, lo Scacciato e 'l Sodo Intronato (M. Marcantonio Cinuzzi and Marcantonio Piccolomini)'; and the description of Piccolomini's move to Padua by his fellow *Intronato*, *il Moscone* (Giovan Francesco Franceschini), as finally allowing him to leave: *la via degli sciocchi e degli ignoranti, per quale haveva molti anni per l'adietro caminato*. . . ('the ways of the foolish and the ignorant, which he had followed for many years. . .').

³⁶*Lettere scritte a Aretino* (ed. Landoni 1873–75/1968, 2, 1 (1874), pp. 229–33 (no. CIX) and Floris and Mulas 1977, 2, pp. 143–46, no. 114): . . . *Io già più mesi e forse anni sono, ho avuto in animo et ho più che mai, di ridur ne la lingua nostra, non solo alcune cose di astrologia e di cosmografia, scritte da Tolomeo: ma ancora buona parte de le cose filosofiche, così naturali, come morali, secondo la via peripatetici . . .* See also Cerreta 1960, pp. 36–37 and Aretino, *Lettere* (ed. Procaccioli 1997–2002, 1 (1997), pp. 486–88). For the full text of the letter, see Appendix II and the discussion in Sect. 2.1.2.

Admittedly, by the time Piccolomini penned this letter, he had been living in Padua for nearly three years; but, it seems worth remembering his claim that he had been considering such an enterprise 'for many months and maybe years' in light of a much earlier comment that Piccolomini makes in the dedication of his translation of the text of *De la Sfera del Mondo* to Laudomia Forteguerra, written while he was staying at the Villa di Valzanzibio in August 1539. Here, he mentions that:³⁷

E per più presto ispidirmene posi dà parte una Operetta latina, che io havevo quasi guidata à porto; dove io defendo Tolommeo contro Gebro in molte cose, dele quali egli il riprende nel Libro de l'Almagest.

And to dispatch myself [to the task] more quickly, I put aside a small work in Latin which I had almost guided to port, where I defend Ptolemy against Geber in many things that he berates in his book on the *Almagest*.

The fact that Piccolomini made this claim prior to his years of study in Padua suggests that his astronomical studies in Siena, reportedly under Carlo Pini, were significantly more advanced than had been supposed previously—to such an extent that Piccolomini himself felt sufficiently competent in his own mastery of astronomical matters to tackle such a complex subject.

If one accepts that Piccolomini was already enthusiastic about his astronomical studies at such an early date, the fact that he was drawn to such a topic as Geber's *Commentary on the Almagest* is not as unusual as it might seem.³⁸ In contributing his thoughts on the topic, he was responding to an on-going scholarly debate about the relative merits of Ptolemy's teachings versus those of his later Classical and mediaeval commentators and critics (such as Theon, Levi ben Gerson, Tebith and Geber), which had reached its highpoint during the middle years of the previous century, with the heated exchanges amongst Cardinal Bessarion, Georgius Trapezuntius and Regiomontanus on the issue of Theon's *Commentary on the Almagest*, but which continued to spark debate within academic circles during the sixteenth century.³⁹ As such, a defence of Ptolemy against Geber's criticisms would have provided the

³⁷ See Piccolomini *De la Sfera* (Arrivabene 1540) edn., p. ✱ iv v.

³⁸ Geber is the Latinised name for the twelfth-century scholar from Seville, Abū Muḥammad Jābir ibn Aflāḥ. His *Iṣlāḥ al-Majisī* ('*Correction on the Almagest*') was translated into Latin by Gerard of Cremona in around 1175 as the *Astronomia Gebri* or *Liber Geber super Almagesti*. It was first published in Nuremberg in 1534 by Petrus Apianus. See Apianus 1534. See also Lorch 1975; Burnett 2001 and Hasse 2016, pp. 267–68.

³⁹ These discussions had been sparked in the middle years of the previous century by the heated exchanges among Cardinal Bessarion, Georgius Trapezuntius and Regiomontanus on the issue of Theon's *Commentary on the Almagest*. Bessarion had made a Greek copy of Theon's *Commentary on the Almagest* available to Trapezuntius in 1451. His aim was to assist Trapezuntius in fulfilling Pope Nicholas V's request to have the *Almagest* translated into Latin, believing that Theon's *Commentary* was extremely helpful in reaching a better understanding of Ptolemy's text. The resulting series of disagreements between Trapezuntius (who believed that Theon was not only unnecessary, but actually harmful), and Bessarion and, later, with Bessarion's ally, Regiomontanus, is well-documented. See, most recently, Shank 2001; Shank 2007 and Malpangotto 2008, pp. 45–48. For an excellent overview of the on-going controversies concerning the views of the late-Classical and Mediaeval commentators on Classical texts during the Renaissance, see Hasse 2016, pp. 248–92.

perfect opportunity for a young man interested in astronomy not only to enter the academic fray, but to attract the attention of those whom he wished to impress.

The issue of whether or not Piccolomini's self-confidence in being able to rebut Geber's criticisms was justified, however, will never be known on account of his having seemingly abandoned the project in order to write his two early astronomical treatises.⁴⁰ Nonetheless, his willingness to try does begin to shed a slightly different light on the extent of the academic training that he had received in Siena prior to his move to Padua. It also might help to explain why he is neither recorded as having officially enrolled nor having received a degree from the Paduan University.⁴¹

Given this likelihood, it is worth reconsidering the practicalities that must have been involved in the composition of his two early astronomical treatises. Despite the fact his dedications to both works were written near Padua and dated to August 1539,⁴² it is clear that each treatise represents several months of work—in spite of Piccolomini's claim that he had spent only a 'small part of the summer' (*una particella di questa state*) of 1539 writing *De la Sfera*.⁴³ Indeed, the time that it must have taken to carry out the calculations in order to complete the maps and tables of *De le Stelle Fisse* alone suggest that the bulk of this work could not have been accomplished during Piccolomini's first few months in Padua, but—most likely—represents an extended process that was certainly begun (if not virtually completed) while he was still resident in hills outside of Siena.⁴⁴

In the same way that Piccolomini's interests and early accomplishments in the natural sciences should be reconsidered in light of his Sienese training and experiences, it seems prudent to recognise the extent to which his lifelong commitment to translating Greek and Latin texts on these topics into his native Tuscan was also forged in the intellectual milieu of the Sienese academies.⁴⁵ In her study of Piccolomini's formative years, Rita Belladonna draws particular attention to the influences of Claudio Tolomei, 'the most outstanding linguist at the *Accademia Grande*',⁴⁶ Bartolommeo Carli Piccolomini⁴⁷ and Marcantonio Piccolomini (*il Sodo Intronato*),⁴⁸ highlighting the numerous ways in which the writings of these authors

⁴⁰Some concerns regarding the extent of Piccolomini's understanding of certain astronomical matters are raised in Chap. 4 below, and Dekker 2024, Chap. 1.

⁴¹The assumption that Piccolomini matriculated at the university in Padua appears to rest on a rather vague statement made by Bargagli. See. n. 51 below.

⁴²The dedication of *De la Sfera* to Laudomia Forteguerra is dated 10 August 1539 and *De le Stelle Fisse* is dated 29 August 1539. See Chap. 2 for a closer examination of both prefaces.

⁴³Piccolomini *De la Sfera* (Arrivabene 1540), p. ✱ iii^v.

⁴⁴For a discussion of the probable methods that Piccolomini used to arrive at the data presented in *De le Stelle Fisse*, see Dekker 2024, esp. Chap. 2.

⁴⁵Belladonna 1975a, pp. 67–117 and Belladonna 1987, pp. 53–55.

⁴⁶See Sbaragli 1939; Belladonna 1975a, pp. 80–88 (citation from p. 80); Belladonna 1978, pp. 230–32 and Belladonna 1987, pp. 53–55.

⁴⁷See Lisini 1900 *ad cit.*; Belladonna 1974; Belladonna 1975a, pp. 88–110 and *passim* and Belladonna 1978, pp. 232–33.

⁴⁸See Lisini 1900 and Belladonna 1975a, pp. 110–17 and 309–11 and *passim*.

profoundly influenced the ideology behind of Piccolomini's own beliefs concerning the *volgarizzazione* of the Greek and Roman authors and the need to develop the living language of Tuscan in order to facilitate and reinvigorate the promulgation of philosophical and scientific ideas in the modern era.⁴⁹

In sum, it would seem that, by the time that the young Piccolomini had come to write his two early astronomical treatises, he had already received a sufficiently solid preliminary education in astronomical principles to allow him to read, use and, in some cases, comment upon the astronomical texts circulating amongst the Italian academic communities. He also had developed a firm commitment to making the Classics more accessible to 'modern' readers through translating them into Tuscan. The task at hand, then was not only how to translate his received learning into the *volgare* but, more importantly, how to edit and re-style this information to suit a readership that had not benefitted from the same formal education that he had.

1.2 Piccolomini in Padua

Piccolomini seems to have arrived in Padua sometime in early 1539, when he was just over thirty years old.⁵⁰ In his funeral oration of 1579, Bargagli told his audience that Piccolomini had relocated to the university town specifically to 'continue his studies'.⁵¹ The usual interpretation of that phrase has been that Piccolomini had been planning to pursue a course of study at the University of Padua, despite there being no evidence that he ever matriculated at the university. Instead, it seems more likely that any attachment he might have had to the University itself was probably more

⁴⁹For a discussion of Tuscan as a 'living language' during sixteenth century, see Faithfull 1953.

⁵⁰Previous scholars have argued that the exact date of Piccolomini's arrival in Padua is not entirely clear—suggesting sometime late in 1538 or early 1539—though, as mentioned in nn. 28 and 33 above, the dedication to *La Raffaella* records that he was still living outside of Siena in October 1538 and the dedication of his translation of *Xenophon* places him at his Villa at Lucignano di Valdasso on January 1538 *os* (= 1539 *ns*). Given that he is recorded as having left Padua in late 1542, probably sometime after November of that year (see Cerreta 1960, pp. 49 and 51, n.1), he would have lived in Padua for slightly less than four years. The issue is slightly complicated by Piccolomini's own later recollection of his years in Padua, in which he mentions that he was lucky to have witnessed Delfino observe the vernal equinox four times during the five years he was there (see the text in n. 65 below). The claim that Piccolomini spent five years in Padua is repeated by Bargagli in his funeral oration for Piccolomini. See Cerreta 1960, pp. 19 and 22, nn. 1–3, citing Piccolomini 1578, p. 29 and Bargagli 1579, p. 557. Evidence suggests, however, that the length of his stay in Padua was simply mis-remembered—which is completely understandable given the fact that more than forty years had elapsed. In any case, he could have witnessed four vernal equinoxes if he had been in Padua in the springs of 1539, 1540, 1541 and 1542.

⁵¹Bargagli 1579, p. 552. See also Fabiani 1759, pp. 18–19; Baldi (ed. Narducci) 1886/1887, p. 160 and Cerreta 1960, pp. 20 and 22, n. 5. Pantin describes Piccolomini as *s'inscrivit comme un alumnus artium*, but without supporting documentation. See Pantin 2000, p. 17.

informal than many have thought previously, and that it was the larger intellectual community and the ideas that were circulating in Padua that drew him to the city.

From what one can gather about Piccolomini's early intellectual interests, Padua would have provided an attractive environment for three reasons. The first is that it must have seemed the ideal setting in which to develop his burgeoning interest in the natural sciences. The Paduans were pioneers in challenging the received wisdom of the Ancients by means of observation and experimentation—a method that Piccolomini employs in one of his earliest scientific compositions: the short treatise on the rainbow, *De Iride*, based on Aristotle's discussions of the phenomena in Book III of the *Meteorologica*.⁵² The second is his preference for the philosophy of Aristotle and the Peripatetics over Plato and Neoplatonism—the latter of which was most closely associated with scholars working and writing in Florence at the time, but which had developed a certain contentious cachet in his native Siena in the preceding decades.⁵³ Third, Belladonna has suggested that Piccolomini also saw Padua as the milieu that would be the most conducive to the development of his own Tuscan prose style, as the situation in Siena had become rather 'stagnant' due to the outright rejection of Bembo's proposed models for the use of the vernacular.⁵⁴

Although he had yet to temper his love for romantic poetry—witness the extended episode of Piccolomini's pilgrimage to the tomb of Petrarch in August 1540 and the resulting circulation of the poems written by himself and several of his male and female colleagues in a collection now known as '*La Tombiade*'⁵⁵—there does seem to have been a gradual tempering of his romantic spirit over time, as he

⁵²Piccolomini 1540d. For a useful overview of Piccolomini's scientific method and, in particular, his leading role in creating a 'new epistemology—that is, his theory of acquitting and promoting scientific knowledge', see Sgarbi 2020 (citation from pp. 197–98).

⁵³Piccolomini's anti-Neoplatonic stance—which increases as he matures—appears to have had both intellectual and political motives. See, for example, Belladonna 1975a, pp. 58–59, 160–61 and 197. She notes that, prior to 1538, an anti-Florentine Neoplatonism movement had developed in Siena: '... caused by the anti-esoteric bourgeois trend arising from *Accademia degli Intronati* and [...] by opposition of the Valdesians and, perhaps, other heretical groups, to the official identification of Neoplatonism with Catholic Orthodoxy, which occurred in the early years of the century, with Egidio da Viterbo as its major figure' (p. 58). See also, Gilbert 1967.

⁵⁴Belladonna 1975a, p. 117.

⁵⁵The series of poetic exchanges were first referred to collectively as '*La Tombiade*' by Bargagli 1579, p. 556. The poems themselves were distributed to friends in Padua, Florence and Siena and survived in a number of manuscript copies in various forms. For a list of the main sources, see Eisenbichler 2012b, pp. 292–300, nn. 2–63. For the various modern compilations of the poems and further discussion, see Rossi 1910–1911; Cerreta 1958; Cerreta 1960, pp. 32–34, 50–5 and 241–48; Pièjus 1994b/2009; Ley 2004; Refini 2007; Eisenbichler 2012b, esp. pp. 15–57; Bertolio 2016 and Eisenbichler 2021, pp. 224–30.

matured from being a precociously talented young dilettante into a serious scholar.⁵⁶ Or, as Andrea Baldi has recently described it:⁵⁷

... Piccolomini arrived in Padua without the credentials of an authoritative scholar. Instead, his *curriculum* was that of an eclectic man of letters, of a solicitous promoter of cultural initiatives. Certainly, the thirty-year-old leader of the *Intronati* was not lacking in the fundamentals of a philosophical training, but such knowledge had so far remained unexpressed or had found an audience only in the restricted arena of academic exercises, [under] the patrimony of his associates.

The combination of the prestigious Aristotelian tradition of the Venetian centre and the speculative acuity of eminent personalities lent new nourishment to his versatile and aggressive ingenuity, refining its subtlety of analysis, which now turned to previously unexplored fields of investigation.

It would be a mistake to suggest that Piccolomini's Paduan experience transformed him beyond all recognition, but it does seem to have allowed him to harness all his best qualities—a clear and enquiring mind, an innate wit, skill with languages, a tremendous capacity for work and a desire to communicate—while also providing him with a refined set of tools with which he could now structure and present his ideas clearly and persuasively.

When one considers Piccolomini's prodigious productivity during his four years in Padua, it is easy to envision Bargagli's description of his 'spending at least eleven hours every day with his books and with a pen in his hand'.⁵⁸ Prior to 1540, in addition to *De la Sfera* and *De le Stelle Fisse*, he had completed one of his most important works, *De la institutione di tutta la vita de l'homo nato nobile et in città*

⁵⁶For example, Piéjus draws attention to the statement in the dedicatory preface of Piccolomini's *Institutione di tutta la vita de l'homo* (Piccolomini 1542a), where he publicly renounces his earlier 'scandalous' works: ... e insieme con questa occasione, mi son ritratto di molte cose, che per scherzo scrissi già in un Dialogo de la Bella Creanza de le Donne [La Raffaella]; fatto da me più per un certo sollazo, che per altra più grave cagione; come molto miei amici ne pon far fede ('and also on this occasion, I retract many of the things that I had written earlier, which I wrote previously as a jest in [my] *Dialogo de la Bella Creanza de le Donne* [La Raffaella]; which I did rather as a kind of entertainment that for a more serious reason, as many of my friends will testify'). See Piéjus 1980/2009, p. 74 (citing two additional similar examples in Book IX, Chaps. 8 and 9).

⁵⁷Baldi 2001, pp. 205–06 ... il Piccolomini giunge a Padova senza le credenziali di autorevole uomo di dottrina. Il suo curriculum è piuttosto quello di un letterato eclettico, di un sollecito promotore di iniziative culturali. Non mancano certo, al trentenne capofila degli *Intronati*, fondamenti filosofici, ma tali cognizioni sono rimaste finora inesprese o hanno trovato udienza soltanto nell'ambito ristretto dell'esercizio accademico, patrimonio degli affiliati.

L'accostamento alla prestigiosa tradizione aristotelica del centro veneto e all'acutezza speculativa di personalità eminenti presta nuovo alimento a un ingegno versatile e agguerrito, affinandone la sottigliezza di analisi, che si volge adesso a un campo d'indagine prima inesplorato.

⁵⁸Bargagli 1579, p. 553: *Quivi, [. . .] giorno, & notte con profitto, & gloria militava: in maniera, che delle vintiquattro, undici hore consumava sempre co' libri & colla penna in mano* ('There, [. . .] day and night, he served with profit and glory, in a manner such that he consumed eleven hours out of twenty-four, with [his] books and [with his] pen in hand'). Noted by Cerreta 1960, p. 35.

libera,⁵⁹ as well as a Latin translation of the commentary on Aristotle's *Meteorologica* by Alexander of Aphrodisias and, as mentioned above, a short treatise on the rainbow, *De Iride*.⁶⁰

Whereas we have ample documentation concerning Piccolomini's other activities and intellectual interests during his Paduan years—especially concerning his association with the newly-founded *Accademia degli Infiammati*⁶¹—there is scant evidence concerning any specific astronomical training or experience he might have received there. In terms of primary evidence, one must rely on two sets of anecdotes.

The first is Bargagli's recollection from more than thirty years later that Piccolomini had been taught in Padua by the finest scholars—not only in Italy, but in all of Europe—amongst whom he names three masters: the Aristotelian philosopher, Marcantonio Genua (Marco Antonio Passeri); the philosopher and humanist, Vincenzo Maggi; and the mathematician and astronomer, Federico Delfino.⁶² For

⁵⁹Piccolomini 1542a. Baldi somewhat wryly notes that even though the work still shows '*un residuo di ossequio gallante*' in its presentation to the '*immortale Madonna Laudomia Fortiguerra*' on the occasion of her first-born son, Alessandro Colombini, the work itself demonstrates a commendably synthetic and analytical presentation of the '*scientia civile*' of Aristotle and Plato and illustrates the extent to which the Paduan regimen had begun to mould its new recruit. See Baldi 2001, p. 208. The text was completed sometime between 1538 and 1540 and manuscript copies of the work were circulated widely and to great acclaim before the treatise was published without Piccolomini's knowledge in Venice by Ottaviano Scoto in 1542. Piccolomini significantly re-worked the treatise during the mid-1550s and changed the dedication to his brother Giovambattista Piccolomini. The revised edition was published in Venice by Giordano Ziletti in 1560. For a discussion of the nature of the changes, see Sect. 2.3. In all, the *Institutione* was reprinted an additional 13 times in Italy prior to 1600, and there were a further three French editions (1579–85) and one Spanish edition (1577). See Cerreta 1960, pp. 184–8 and Refini, Tomasi 2012, pp. 279–80. See also Belladonna 1975a; Poppi 1988; Cestelli Guidi 1998 and D'Amante 2016.

⁶⁰See n. 52 above. Belladonna points out that his observations in *De Iride* appear to reflect the first instance in which Piccolomini employs the double-method or regress proof in using his own observations and calculations to challenge Aristotle's findings—a method championed by the natural scientists working in Padua at the time. See Belladonna 1975a, pp. 171, 181, 246, citing Randall 1961, Chap. 1 and Gilbert 1963, pp. 90–91.

⁶¹See, for example, Maylender 1926–30, 3 (1929), pp. 266–70; Cerreta 1960, pp. 23–31; Samuels 1976; Vianello 1988; Baldi 1992; Mikkeli 1999 and Tomasi 2012a.

⁶²Bargagli 1579, p. 553: *Quivi dunque sotto l'insegna de piu chiari Filosofi, Astrologi, & Matematici, c'haveasse Italia, et si può dare Europa, di questi tra M.M. ANTONIO GENOVA, M. VINCENZO MAGGIO, M. FEDERIGO DELFINO giorno, & notte con profitto, & gloria militava.* With regard to Maggi, see Baldi's comments on how Piccolomini credits him with having shaped his own understanding of Aristotle, especially the *Poetics*. Baldi 2001, pp. 212–13, also citing Piccolomini's own reminiscences in his *Institutione* (1542a), p. 59v. . . : *E io in questo potrò giovarvi, con farvi parte di alcuni scritti, che sono appresso di me, de l'eccellentissimo filosofo il S.M. Vincenti Maggio, mio precettore, il quale dottissimamente ha tal Poetica d'Aristotele alluminata* ('And I am able to help you in this by sharing with you some writing which I have here with me by the most excellent philosopher S.M. Vincenti Maggio, my tutor, who had illuminated Aristotle's *Poetics* in the most learned manner'); cf. Baldi 2001, p. 212 and n. 24 and Cotugno 2015, p. 168, n.20. Cotugno also notes Piccolomini's dependence upon and numerous references to Maggi's readings of Aristotle in his own *Annotationi . . . nel Libro della Poetica d'Aristotele* (1575). It is worth noting, however, that the term *precettore* may not indicate a formal

the purposes of the current study, the most important of these would have been Delfino, who held the chair of mathematics and astronomy at the university from 1520 until his death in 1547 and seems to have been a popular and much-admired teacher.⁶³

The second set of anecdotes comes from Piccolomini's own later writings, where he twice recalls 'his studies' with Delfino. In particular, he remembers having attended Delfino's observations to determine the length of the solar year—a topic with which Piccolomini himself later became enmeshed owing to his involvement with the series of Papal commissions tasked with reforming the Julian calendar.⁶⁴

In the first of these recollections, Piccolomini recounts how Delfino's own astronomical measurements were so precise that he was able to reject the more-commonly accepted Alphonsine formulations in favour of the solutions that had been calculated by the late ninth-century Arabic astronomer, al-Battānī:⁶⁵

Moreover, it comes to my mind [that] when I was young, some forty years have since elapsed, I spent some years detained by my studies in Padua, when I experienced a great familiarity with Federico Delfino, my *praeceptor* in mathematics, [who was] indeed an excellent astronomer with a great reputation, [and] who for thirty-five years or more was professor at the Gymnasium. I saw him observe, with great diligence and exactitude in his observations, the entrance of the Sun into the beginning of Aries and measure the quantity of the solar year itself, as he was able to carry this out most exquisitely with a certain instrument, which was around a quarter of a circle, constructed similar to a quadrant as large as three cubits or more if it had been the semi-diameter of a complete circle. For this reason, because it was the largest astronomical instrument that ever had been made, it was valued by him for [his] research. And also in this, I was smiled upon by Fortune, as during

teacher-pupil relationship. See, for example, that Benedetto Varchi refers to Maggi as *honoratissimo precettore*. Cited by Samuels 1976, p. 620.

⁶³ See Favaro 1921, pp. 61–63; Rose 1975a, esp. pp. 11, 22, 53, 163, 284–86 and 290; Rose 1975b; Bianca 1988; Carugo 1984, pp. 61–63, Baldi (ed. Nenci) 1998, pp. 524–55 and Cozzoli 2007, p. 18.

⁶⁴ For Piccolomini's involvement with the reform of the calendar, see Piccolomini 1578; Ceretta 1960, pp. 97–98 and 110–15 and *Gregorian Reform of the Calendar* 1983, *ad cit.*, p. 156, 174–77; 215. The recommendations to recalibrate the calendar were finally instituted by Pope Gregory XIII in 1582.

⁶⁵ Piccolomini 1578, p. 29: *Praeterea mihi modo in mente est venit, quod dum iuvenis, 40 iam ferè elapsis annis, Patavij, studij causa commorarer; cum admodum familiariter uterer Friderico Delphino, meo in mathematicis literis praeceptore, Astronomo quidem egregio, & magni nominis, gravi annorum numero penè confecto; quippe qui per 35 annos, & amplius, cum summa eius laude, mathematicas disciplinas in illo celeberrimo Gymnasio professus fuerat; vidi illum summa diligentia, exactisque observationibus, observare conantem ingressum Solis in principium Arietis, & ipsam solaris anni quantitatem. Atque ut exquisitius id exequi posset, instrumentum quoddam, sub figura quarti circuli, quadranti simile, construxerat, adeo amplum, ut trium cubitorum, & amplius, esset completi circuli semidiameter. Propterea quod quò maiora construuntur instrumenta astronomica, eò exquisitiora existimanda sunt. Atque in hoc, adeo mihi Fortuna arrisit, ut ex quinque annis, quos Patavij consumpsi, quatuor miram serenitatem aeris, nitentemque Solem, circa aequinoctium vernum, nacti fuerint. Memoria ergo teneo Fridericum illum non semel asservissee sese invenire quantitatem anni solaris ab Alphonso positam, videlicet 365 dierum, horarum quinque, & min. 49 tribus horae minutis maiorem ab illo positam, quam oportuisset. Atque ex huius summi viri verbus tandem memini me animo concepisse, ipsius sententiam fuisse, anni quantitatem, ab ea Albategni non admodum diversam fuisse.* Cited in part by Cerreta 1960, p. 20.

those five years that I was in Padua, four times when the Sun was near the equinox the sky was marvellously clear. Therefore, I hold in my memory that Federico did not once himself use Alphonso to find the quantity of the solar year (that is 365 days, 5 hours and 49 minutes 3 seconds [or] greater from this position that it needed [to be]). Also, from this, I remember that he eventually conceived the quantity of the [solar] year that was not greatly different from the most famous words from those opinions of Albategni.⁶⁶

Again, and as Cerreta first pointed out, Piccolomini's somewhat vague allusion to his 'studies in Padua' and his description of Delfino as his *praeceptor* ('teacher' or 'instructor') tends to add to one's sense that he was never formally enrolled at the university and that, more likely, he simply sat-in as an informal attendee on a selection of classes that appealed to him, such as Delfino's observing sessions.⁶⁷ As an aside, the description also suggests that students themselves did not make observations, but merely attended and watched the master at work—in a manner that is not dissimilar from the way in which aspiring medical students of the period were expected to learn by witnessing their teacher's operations in a medical theatre specifically constructed to facilitate the process.⁶⁸

The second anecdote provided by Piccolomini is focussed less on Delfino and more on the astronomical quadrant and its maker.⁶⁹

And those who still want to know not only the day, but also the hour in which the Sun arrives at one of the equinoctial points; he can observe it with an instrument that is similar to a quadrant, which must be at least four feet in semi-diameter, or more; as I had observed many years ago, when I was in Padua in the presence of the astrologer, Maestro Federigo Delfino, and of a Maestro Berardino, who very delicately made astronomical instruments out of metal.

⁶⁶The works of Albategni or Albategnius (Abū 'Abd Allāh Muḥammad ibn Jābir ibn Sinān al-Raqqī al-Ḥarrānī aṣ-Ṣābi' al-Battānī) had been translated into Latin in the twelfth century and were widely read throughout the Renaissance. His *De motu stellarum*, for example, was reprinted with annotations by Regiomontanus in Nuremberg in 1534 and 1537. Al-Battānī determined the solar year to be 365 days, 5 hours, 46 minutes and 24 seconds—shorter than the Alphonsine solar year, and with a discrepancy of only 2 minutes and 22 seconds from the actual solar year. See Albategni, *Opus astronomicorum*, XXVII and LIII, ed. Nallino 1899–1907, 1 (1903), pp. 42 and 128–29.

⁶⁷Cerreta 1960, p. 20.

⁶⁸For Piccolomini's own allusions to the importance of the importance of analytical observation as probably witnessed in the anatomical theatres in Padua, see Sgarbi 2020, pp. 198–99. Sgarbi also notes that Piccolomini uses the term *sensate esperienze* ('experience based on diligent observation and sensate experience') more than 100 times in the 1540 edition of *De la Sfera* (p. 199).

⁶⁹Piccolomini 1558b, p. 5r: *Et chi volesse ancor conoscere non solo il giorno, ma l'hora ancora nella quali arrivi il Sole a l'uno de punti equinottiali; lo può osservare con uno istrumento quasi à guisa di quadrante, che sia di semidiametro almeno quattro piedi, ò più: si come io osservai già più anni sono in Padova alla presentia di M. Federigo Delfino Astrologo, & di uno Mastro Berardino, che molto delicatamente fabricava di metallo istrumenti astrologici.* Note that the dimensions of 'at least four feet in semi-diameter' corresponds fairly closely to the description of Delfino's quadrant measuring 'three cubits or more [in] . . . semidiameter' that Piccolomini provides in his *De nova ecclesiastici calendarii*. . . (cited above, n. 65). Measurements used in Italy prior to the nineteenth century tended to vary from state to state, but a Venetian *piede* was roughly equivalent to 348 mm, so four *piedi* would be 1.392 m and three cubits would be 1.37 meters. See Cardarelli 2003, p. 88.

Neither of these reminiscences seem to reflect the image of an eager young student. Instead, they merely record occasions on which Piccolomini witnessed Delfino making observations. Considering the context in which these anecdotes appear, one could argue that both have been cited specifically to help lend weight to Piccolomini's own credentials as understanding the intricacies involved in measuring the length of the solar year and, therefore, showing him to be sufficiently well-qualified to contribute to the on-going discussions concerning the much-needed reforms to the Julian calendar.

Finally, in relation to Piccolomini's having felt fortunate to have been present at four occasions when Delfino was making his measurements of the Sun's entrance into Aries using Maestro Bernardino's quadrant, it might be mentioned that one of the duties of the professors of mathematics and astronomy at many Italian universities was to produce an annual almanac.⁷⁰ These almanacs would have included information about the forthcoming year's calendar, including data about the relative positions of the stars and planets throughout the year that were deemed useful for purely astrological purposes, as well as for astro-medical, meteorological and agrarian needs. By definition, one essential aspect of the almanac consisted in the astronomer either personally observing or calculating the exact moment at which the Sun entered into the first degree of Aries in order to define the starting point of the new year. Piccolomini's recollection of having viewed this procedure four times suggests that there may have been a certain degree of ceremony, if not theatre, involved in the practice of measuring the beginning of the new year, which distinguished colleagues and guests were invited to witness.⁷¹

1.3 Piccolomini's Astronomical Training

It was during his first year in Padua that Piccolomini completed his two treatises on astronomy, *De la Sfera del Mondo* and *De le Stelle Fisse*, although (as has been suggested above) he must have come to the task with his formal education in mathematics and astronomy already well-established. In many ways, however, these two works mark a transitional or bridging period in his intellectual development in that they reveal not only the influence of his formative years with the fellowship of the *Accademia degl'Intronati* and the Sienese intellectual and cultural milieu—especially in its strong advocacy of the Tuscan language as an appropriate

⁷⁰See Grendler 2002, esp. pp. 409–12, where he cites the additional duties of having to prepare a set of prognostications or *iudicia* for the coming year and provide free predictions to student on request.

⁷¹If this was, indeed, the case, it could be seen as the secular version of the practice of 'witnessing' the beginning of the new year, which forms part of several religious traditions, particularly those whose calendars have a strong lunar component. For example, one might cite the Islamic observation the New Moon at the end of the month of Ramadan, thus signalling the beginning of *Eid al-Fitr*, or the sighting of the New Moon in the Jewish ceremony of *Kiddush Levanah*. For additional information about lunar and luni-solar calendars, see Lippincott *et al.* 1999.