

Introduction

This research focuses on an investigation of the fresco scheme of 319 images across three registers of the first floor Salone of the Palazzo della Ragione, or Palace of Reason — the law courts — in Padua, Italy. The Palazzo della Ragione was originally begun in 1172 and finished in 1218–19 as three large halls where the judges held court. In 1306–09 the Commune entrusted friar-architect Fra Giovanni degli Eremitani (active in Padua from 1289 to 1318) to create one large hall and build a new wooden roof that resembled the keel of an upturned ship. In order to do this Fra Giovanni increased the outer walls in height from sixteen to twenty-four metres and constructed walls that curved in towards the top to reduce the span of the wooden vault. The Commune then commissioned Giotto di Bondone (c.1267– 1337) to implement the three-tiered cycle of paintings at the top of these newly heightened bare walls.¹ The scheme was then, and still is, filled with astronomical and astrological imagery, said to be influenced by Pietro d’Abano (1250– 1318), who was teaching medicine, philosophy, and astrology at Padua University at the time. Most scholars still consider this fresco scheme to be an enigma. As Diana Norman pointed out, ‘The 333 (sic) compartments in the Salone scheme contain within them an immense variety of painted imagery, complete explication of which has defeated even the most ingenious of modern iconographers and scholars.’²

This introduction states my position and the skills that I bring to the research. It then considers the primary sources connected with the fresco scheme, followed by the historiography of the Salone, how previous scholars have approached the scheme, how they have interpreted their findings, and why they may have encountered obstruction. I will argue that this obstruction is caused through scholars basing their work almost entirely on a text called the *Astrolabium Planum* which, I contend, has diffused and blurred the scholarly understanding of the images of the Salone. This introduction then establishes my methodology used to focus on all three registers of the fresco scheme of the Salone. I

¹ Colin Cunningham, ‘For the honour and beauty of the city: the design of town halls’, in *Siena, Florence and Padua: Art, Society and Religion 1280-1400*, ed. Diana Norman, 2 vols. Vol. II: Case Studies (New Haven and London: Yale University Press in association with the Open University, 1995), 29-53, p.51. Pier Luigi Fantelli and Franca Pellegrini, eds., *Il Palazzo Della Ragione in Padova* (Verona: Cierre Edizioni, 2000), p.7.

² Diana Norman, ‘Astrology, antiquity and empiricism: art and learning’, in *Siena, Florence and Padua: Art, Society and Religion 1280-1400, Volume I: Interpretive Essays*, ed. Diana Norman, 2 vols. Vol. 1 (New Haven and London: Yale University Press in association with the Open University, 1995), 197-215, p.201.

contend that the frescoes of the top register are descriptive of the medieval view of the sky and moreover, that it is possible to consider the images in this medieval building as exemplifying the way the medieval sky was seen and imbued with meaning. The middle and lower registers contain a rich assembly of Christian saints, labours associated with each month and season, trades and skills exemplified by the Paduan workforce, images that depict the latitude bands, and theological and liturgical themes. In this thesis I will argue that these images of the Salone describe a narrative underpinned by medieval astrology which, through its planetary attributes, qualities, and rulership (planetary places of strength), reflects life on earth in its seasonal and calendrical cycle. This introduction will then give an overview of the chapters contained within the rest of this thesis.

Reflexive Considerations

I approach this study with what Kenneth Pike would call an insider position.³ I am a practising, consulting, teaching, lecturing, book-writing, and academic astrologer who uses medieval astrological techniques together with the knowledge of poetic astronomy⁴ and naked eye astronomy in astrological consultation and research. I have co-convened non-academic conferences where I have lectured and taught individual students the poetic astronomy of the night sky. This enables me to view the entire Salone fresco scheme with something close to medieval astrological eyes. Although one can never fully step back into that Paduan culture that created the scheme, my astrological knowledge provides me with a good practical understanding and implications of the literature of the astrological/cosmological thought of the day.

The First Evidence — The Eyewitness Account

To date, no original commissioning documents for the painting of the fresco scheme c.1306–09 have come to light. As J.K.Hyde has observed, however, Padua is unique in that it is one of only a handful of cities for which a literary description survives from the

³ Kenneth Pike, 'Etic and Emic Standpoints For the Description of Behaviour', in *Language and Thought: An Enduring Problem in Psychology*, ed. Donald C. Hildum (Princeton, NJ: D.Van Norstrand Company, 1967), 32-39, p.28.

⁴ In the tradition of Hyginus (c.64 BCE – 17 CE) and his view of an animated sky: Caius Julius Hyginus, *Poeticon Astronomicon* (Venice: Ratdolt, 1485).

medieval period.⁵ Thus there is an eyewitness account of the Salone fresco scheme from the fourteenth century at the time the fresco scheme was originated and this comes from the work of Giovanni da Nono (c.1275–1346) entitled *Visio Egidij Regis Patavie*.⁶ Da Nono worked as a judge at the Palazzo della Ragione and his acceptance into the College of Judges in 1306 was fortunate for, as Eva Frojmovič has pointed out, it was ‘the very year in which the rebuilding and subsequent redecoration of the palace began.’⁷ Da Nono continued to work as a judge at the Palazzo della Ragione through all the subsequent upheavals and changes of Paduan government until his death in 1346. Hyde has dated the *Visio* ‘with reasonable certainty’ to the years 1314–1318.⁸ Da Nono’s *Visio* was set at the time when Attila the Hun (406-453) had destroyed Patavium (Padova). Its mythical king, Egidius, fled to Rimini for refuge and, in a dream, an angel came to Egidius and offered him a prophecy of how the city would be rebuilt, what it would look like and the importance of its status in time to come.⁹ It is conjecture to suggest that da Nono used this device as a way of establishing a foundation myth for the city of Padova. Nevertheless it permitted da Nono to use the angel as the mouthpiece for a description of Padua as da Nono knew it in the early fourteenth century and thus became an account from someone who was part of the fabric of Paduan life, serving at the very heart of its judicial system.¹⁰

Da Nono was writing in the time that has come to be known as the ‘golden age’ of Paduan history, the communal period that occurred between the years 1256 and 1318 when, writers, as Hyde noted, were at the same time both citizens and intellectuals and thus ‘representatives of the governing class reflecting upon their experience.’¹¹ In the eleventh and twelfth centuries Italy was at the centre of the revival of civil and canon law, taking its

⁵ J.K. Hyde, *Padua in the Age of Dante* (Manchester and New York: Manchester University Press 1966), p.29.

⁶ Giovanni da Nono, ‘Visio Egidij Regis Patavie’, *Bollettino del Museo Civico di Padova* N.S. X-XI [XXVII - XXVIII] and XIII-XVII (1934-39).

⁷ Eva Frojmovič, ‘Giotto’s Allegories of Justice and the Commune in the Palazzo della Ragione in Padua: A Reconstruction’, *Journal of the Warburg and Courtauld Institutes* LIX(1996), 24-47, p.27.

⁸ Hyde, *Padua in the Age of Dante*, p.29.

⁹ Giovanni da Nono, ‘Visio Egidij Regis Patavie’, *Bollettino del Museo Civico di Padova* N.S. X-XI [XXVII - XXVIII] and XIII-XVII(1934-39), 1-20.

¹⁰ The *Visio* was written as the introduction to a longer, unedited and unpublished manuscript by da Nono which described over a hundred families of Padua arranged according to their social position and provided personal knowledge of his contemporary judges and notaries working at the Palazzo della Ragione: Giovanni da Nono, ‘De Generatione aliquorun civium urbis Padue, tam nobilem quam ignobilem’, (Padua: Seminario). Cited in Hyde, p.6, 57-58, 65-68.

¹¹ Hyde, *Padua in the Age of Dante*, p.4.

place as the premier training ground for most of the lawyers of Europe.¹² Law was studied at the newly-emerging universities, in particular at the *studium generale* in Bologna,¹³ and it was from the conflict between masters and students with local authorities in Bologna that the *studium generale* in Padua was established on 29 September 1222 and carried the study of law with it.¹⁴ A century later, lawyers in Padua were ubiquitous and contributed to and dominated the intellectual life of the Paduan commune. Hence it is not surprising that a judge like da Nono could produce works such as the *Visio* and his social chronicle, *De Generatione*.¹⁵ In the *Visio* da Nono described the Palazzo della Ragione:

Alia vero decem palacia circa maius racionis palacium constructa erunt, sub quibus vendentur diversa rerum genera. Nam sub duobus septentrionalibus palaciis vendentur corrigie, cyrothece, sericum et alie res filo autem serico laborate. Sub aliis duobus, quorum unum in occidentali parte et alterum in septentrionali hedificatum erit, vendentur carnes porcine salse, oleum comedibile atque caseus apuliensis et paduanus.¹⁶

The Palazzo della Ragione, Padua's first civic public building,¹⁷ was, and still is today, situated in the main square of Padua (Figs.1 and 2), with its great roof like the inverted keel of a ship reflecting the marshland on which it once stood *in qo* (sic) *piscatores multos pisces piscabantur*¹⁸ ('in which fishermen used to catch many fish'). In the Trecento this building formed the heart of the Paduan state. It contained the judiciary on the first floor and the market life of the city underneath and around it, with stalls to the north and south, in the porticos, under the four staircases, and in the adjacent streets. Both were intertwined in a way that suggests that administration of justice and trade were the two beacons of self-sufficiency upon which this medieval city-state stood. The Palazzo della Ragione fell into the category of the new 'secular architecture' that was the province of the Communes,

¹² Hyde, *Padua in the Age of Dante*, p.121.

¹³ Ian P. Wei, *Intellectual culture in medieval Paris: theologians and the university, c.1100-1330* (Cambridge: Cambridge University Press, 2012), p.89.

¹⁴ Lucia Rossetti, *The University of Padua: An Outline of its History*, trans. Alice W. Maladorno Hargraves (Trieste: Edizioni Lint, 1983), p.7.

¹⁵ da Nono, 'De Generatione aliquorum civium urbis Padue, tam nobilium quam ignobilium'.

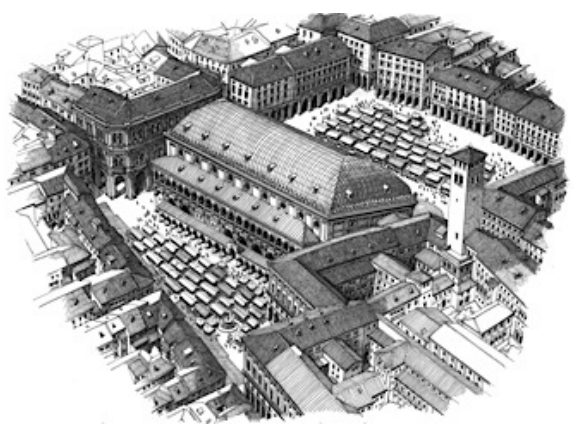
¹⁶ 'Another ten palaces will be built around the great Palace of Reason under which many kinds of things will be sold: under the two northern palaces, silk belts, gloves and things made with silk thread; under two others, to the west and north, salt pork, edible oil, Apulian and Paduan cheese.' da Nono, 'Visio Egidij Regis Patavie', p.12.

¹⁷ G.C. Mor, *Il Palazzo della Ragione* (Venice: Neri Pozza, 1963), pp.1-20.

¹⁸ da Nono, 'Visio Egidij Regis Patavie', p.14.

combining public welfare, life and utility and suggesting ‘the spirit of municipal community which subordinated the strength and the means of the individual to the purposes of the whole.’¹⁹

Da Nono recounted the layout of the first floor of the Palazzo della Ragione in detail.²⁰ It contained a chapel devoted to S.Martino. Next to this was the seat of the podestà, the head of the communal administration. Adjacent were the tribunals of the four judges of the podestà, mainly responsible for criminal cases. Beyond these were the fourteen benches of the ordinary judges. Each judge had a secretariat of five notaries.



(Left) Figure 1. Exterior of the Palazzo della Ragione, south façade. Photo: D.Gunzburg.

(Right) Figure 2. Line drawing of the Palazzo della Ragione, showing the south façade and its location in the main square of Padua. Of note is the offset orientation to the street plan.

Whilst commissioning documents may have been lost, or destroyed in the fire of 1420, a bare and circumspect line of thirty words in the *Visio* was enough to indelibly ink Giotto as the painter of the Salone fresco scheme:

Duodecim celestia signa et septem planete cum suis proprietatibus in hac cohopenura, a **Zotho** [my bold] summo pictorum mirifice laborata, et alia sidera aurea cum speculis et alie figurationes similiter fulgebunt interius.²¹

¹⁹ Helene Wieruszowski, ‘Art and The Commune in the Time of Dante’, *Speculum* 19, no. 1 (1944), 14-33, p.15.

²⁰ da Nono, ‘Visio Egidij Regis Patavie’, pp.14-20.

²¹ ‘The twelve heavenly signs and seven planets with their respective properties/qualities will shine in this complete covering, wonderfully worked by the topmost painter **Giotto**, and further inside with mirrors will

Other Primary Sources

The Fresco Scheme

In my second fieldwork visit to the Salone I photographed the entire 319 images of the fresco scheme in high resolution images. These photographs form part of my primary source materials, more of which will be discussed in my methodology.

The Restoration of the Fresco Scheme

The history of the Palazzo della Ragione and its associated repainting is well documented. On 2 February 1420, the roof of the Salone was destroyed by fire and much of the scheme was badly damaged. Adriano Verdi stated that archival information on the rebuilding of the Palazzo della Ragione, along with the restoration of the internal fresco scheme, was apparently consumed in the fire. All that was left were the minutes of the meeting of the Venetian Senate on 6 February 1420 in which they unanimously agreed that the restoration was to take place. The directive was framed with the vague criterion of returning the Salone to ‘how it was before’ (*ut prius erat*).²² A letter dated 14 February from Tommaso Mocenigo (1343-1423), the Doge of Venice, stipulated only that the roof was to be reconstructed by Bartolomeo Rizzo, together with Pizino, the latter of whom was known to the Paduan rectors.²³ Nicolò Miretto (c.1375-c.1450) and Stefano da Ferrara (active fifteenth century) undertook the extensive repainting of the astrological scheme from 1425 to 1440. Michele Savonarola (1385-1468), in his *Libellus* dated 1446, noted that the artists who repainted the Salone frescoes followed the original iconographical program.²⁴ On 17 August 1756, a hurricane tore off the vault and once more, in 1759, the roof was reconstructed. The fresco scheme was overpainted by Francesco Zannoni da Cittadella (1720–1792) in the period 27 July 1762- 27 September 1770, although Zannoni omitted painting the myriad of stars on the ceiling.²⁵ During this long work Zannoni was assisted by Abbot Antonio Rocchi (1724–1780)²⁶ who helped Zannoni in the interpretation of the

shine other golden constellations and other forms.’ da Nono, ‘Visio Egidij Regis Patavie’, p.20. My thanks to Genevieve Liveley for corroborating this translation.

²² Adriano Verdi, ‘Il Monumento attraverso documenti e disegni storici’, in *Il Palazzo della Ragione di Padova, La storia, l'architettura, il restauro*, ed. Ettore Vio (Padova: Signum Padova Editrice, 2008), p.75.

²³ Verdi, ‘Il Monumento attraverso documenti e disegni storici’, p.75.

²⁴ Michele Savonarola, *Libellus de Magnificis Ornamentis Regie Civitatis Padue Michaelis Savonarole*, ed. Arnaldo Segarizzi, *Rerum Italicarum Scriptores*, Volume XXIV, Part XV (Città di Castello: Coi Tipi Dell'editore S.Lapi, 1902 [1446]), pp.44,47-48.

²⁵ Giulio Bresciani Alvarez, ‘Il Palazzo della Ragione: La Storia di Una Fabbrica Civile’, in *Il Palazzo della Ragione in Padova*, ed. Pier Luigi Fantalli and Franca Pellegrini (Verona: Cierre Edizioni, 2000), p.16.

²⁶ Andrea Moschetti, ‘Gli antichi restauri e il ritrovamento degli affreschi originali nella sala della ragione di Padova’, *Bolletino del Museo Civico di Padova* 13(1911), 3-20, p.9.

more damaged astrological configurations on the basis of a very rare copy of the *Astrolabium Planum* of Pietro d'Abano specifically purchased by the Consiglio.²⁷

In the 1950s, Alessandro Prosdocimi, director of the Museo Civico, instigated the restoration of some of the frescoes on the east and west walls and half of the southern wall and restorers Giovanni Pedrocca and his son Botter were employed to carry out the work after 1963.²⁸ Nearly all of Zannoni's eighteenth-century overpaintings were removed and only when no other paint layer beneath them could be detected were Zannoni's left in place.²⁹



99. Late Gothic Master, detail of the frescos of the Salone; with the repaintings by Francesco Zannoni, 1762 and following. Padua, Palazzo della Ragione.



100. Late Gothic Master, detail of the frescos of the Salone; after the removal of the repaintings by Francesco Zannoni. Padua, Palazzo della Ragione.

Figure 3. A comparison of the image at 2B between the repainting by Francesco Zannoni in 1762 (*left*) and the removal of his work in 1963 by Giovanni Pedrocca and his son Botter (*right*). Image from Conti, Alessandro. *History of the Restoration and Conservation of Works of Art*. Translated by Helen Glanville. Oxford: Butterworth-Heinemann, 2007, p.189.

²⁷ Alvarez, 'La Storia di Una Fabbrica Civile', p.16.

²⁸ Alessandro Prosdocimi, *Restauro agli affreschi del Palazzo della Ragione* (Padova: Società cooperativa tipografica, 1963).

²⁹ Alessandro Prosdocimi, 'Restauro agli affreschi del Palazzo della Ragione', *Bollettino del Museo Civico di Padova* 50, no. 1 (1962), 7-37.

From this known history, it is difficult to ascertain how much damage the fire caused to the original fresco scheme. We do know however, as previously cited, that the restoration work was to reproduce it ‘as it was before’, not to create new. There is also an argument to be made regarding the underlying cosmology that formed and shaped the medieval world and which was still current in 1420. It was this cosmology, I contend, that offers a substantial reason as to why the images that were repainted on the walls 1425–1440 by Nicolò Miretto and Stefano da Ferrara were not simply a reproduction of an *Astrolabium Planum*, as discussed in the Introduction, but were instead reflective of the medieval cosmology of the day, more of which will be written in chapter 1.

The Sky

In addition to the primary source materials of manuscripts, buildings, frescoes, stained glass, mosaics, artefacts, and sculpture (the arts of carving and casting), there is another primary source material in art history that provides us with visual information, often ignored yet universally consistent across the centuries, and that is the sky. Scholars have already utilised the sky as a primary source in other areas of the humanities: Matthew Fox reconstructed the skies of the first century CE and offered a different perspective on Ovid’s (43 BCE–c.17 CE) *Fasti*,³⁰ and Arthur Beer reconstructed the skies of the seventh century to understand the cupola of the Qusayr’ Amra.³¹ Thus sky maps reconstructed for fourteenth-century Padua, linked with naked eye astronomy, and combined with knowledge of medieval astrology and its transmission via the medieval astrological literature of the period, underpins my methodology used to investigate the images of the fresco scheme.

Pietro d’Abano’s alleged *Astrolabium Planum*

Previous scholars working in this area have relied heavily on the *Astrolabium Planum* written by Johannes Engel (c.1453–1512), said to have duplicated an *Astrolabium Planum* written by Pietro d’Abano which had been lost. Without having seen it himself, Lynn Thorndike suggested that Pietro d’Abano’s *Astrolabium Planum* may have been document CLM22048, held in the Bayerische Staatsbibliothek in Munich, catalogued as *De signis*

³⁰ Matthew Fox, ‘Stars in the *Fasti*: Ideler (1825) and Ovid’s Astronomy Revisited’, *American Journal of Philology* 125(2004), 91-133.

³¹ Arthur Beer, ‘Astronomical dating of works of art’, *Vistas in Astronomy* 9(1967), 177-223.

*celestibus eorumque significatione et potestate, cum multis tabulis astronomicis.*³²

Consequently I purchased a copy of CLM22048 in order to understand what it contained so that the written descriptions of the images in d'Abano's document could be put into context. The implications for the *Astrolabium Planum* of Engel and its potential association with the Salone will be discussed when considering previous scholars' work in the field in this chapter.

The translated medieval astrological literature

I am using astrological texts by the Jewish-Spanish astrologer and polymath Avraham Ibn Ezra (born 1089–1092, died after 1160) that were translated and promoted by Pietro d'Abano, one of the key figures behind the scheme and who will be discussed in chapter 1. Ibn Ezra's books included *The Beginning of Wisdom (Reshith Hochma)* (1148), a basic textbook of astrology and considered to be 'the zenith of Ibn Ezra's astrological work',³³ *The Book of Reasons (Sefer Ha'Te'Amim)*, a commentary and additional material for *The Beginning of Wisdom*, and *The Book of Nativities and Revolutions (Sefer Ha'Moladot)*, all three of which created an integrated textbook of basic astrological doctrine whose astrological understanding rested primarily on the astrology of Ptolemy (90–168 CE), Dorotheus of Sidon (c.75 CE), Abū Ma'shar (787–886), and al-Qabīṣī (fl.945–967). As a result of d'Abano's translations and the esteem with which d'Abano was upheld, Ibn Ezra's ideas about astrology gained wide currency in the Latin West and remained popular and influential until the Renaissance.³⁴ Whilst there are other translations of these works by Ibn Ezra,³⁵ I am using the translations by Meira Epstein, who, by being an astrological insider, has an implicit understanding of the astrology in its application.

The Palazzo della Ragione ('*maius racionis palacium*') or Lawcourt was also known as the Palace of Judgement or the Palace of Reason (*rationis*). It was, however, only when I was standing in the midst of the Salone for my second research period beginning in July

³² 'On the heavenly signs or images that have significance and power, with many astronomical tables.' 'Power' here has the meaning the efficacy of a planet to do something. I am indebted to Dorian Greenbaum for this gloss.

³³ Shlomo Sela, *Abraham Ibn Ezra and the Rise of Medieval Hebrew Science*, Brill's Series in Jewish Studies (Leiden: Brill, 2003), p.29.

³⁴ Lynn Thorndike, 'The Latin Translations of the Astrological Tracts of Abraham Avenezra', *Isis* 35, no. 4 (1944), 293-302, pp.293-294.

³⁵ Abraham ibn Ezra, *The Beginning of Wisdom: an astrological treatise by Abraham ibn Ezra*, ed. R. Levy and F. Cantera (Baltimore: Johns Hopkins Press, 1939). Avraham Ibn Ezra, *The Book of Reasons: A Parallel Hebrew-English Critical Edition of the Two Versions of the Text*, trans. Shlomo Sela, vol. 35, *Études Sur Le Judaïsme Médiéval* (Leiden: Brill, 2007).

2010, photographing the complete Salone images and hence looking at every single image, that I saw the scheme from a whole new perspective, that of being informed by Ibn Ezra's works as translated by d'Abano, in particular *The Book of Reasons* underpinning the Palace of Reason, and thus suggesting an Aristotelian foundation.

I am also using Ptolemy's *Tetrabiblos*, his key astrological text, and Ptolemy's *Almagest*, his key astronomical text, as these lie at the heart of the astrological tradition in its Hellenised expression, and which, according to Shlomo Sela, represented works to which Ibn Ezra referred more than any other.³⁶

Finally I am using al-Qabīṣī's *The Introduction to Astrology*, the text that gave al-Qabīṣī his reputation in the Islamic world and which was then ranked amongst the highest astrological works.³⁷ Ibn Ezra valued the precision and astronomical instruments of the Islamic astrologers and their empirical application of astrology,³⁸ and although Ibn Ezra did not specifically mention al-Qabīṣī in either of his texts, Charles Burnett noted that al-Qabīṣī's *Introduction* was 'used without acknowledgement by Ibn Ezra, who is economic in naming his Arabic sources'³⁹ and Sela has argued convincingly that 'in *Reshit Hokhmah I* [*Beginning of Wisdom*] Ibn Ezra drew on al-Qabīṣī's *Introduction to Astrology*.⁴⁰ Furthermore, according to Charles Burnett, Keiji Yamamoto, and Michio Yano, 'In the universities where astrology was taught (often as part of the curriculum in medicine), the *Introduction* was the first, and often the only, set text. Along with "Albumasar" (Abū 'Mašar), "Alcabitius" became a household name as an authority in astrology.'⁴¹

The Building Itself

The distinctive and unique rhomboid shape of the monument, atypical for buildings in Padua, is suggestive of intention through a particular orientation to seasonal phenomena. In the third of three fieldwork visits to the Salone I took measurements of the building in

³⁶ Abraham Ibn Ezra, *The Book of The World*, trans. Shlomo Sela (Leiden: Brill, 2010), p.14.

³⁷ Charles Burnett, Keiji Yamamoto, and Michio Yano, eds. *al-Qabīṣī (Alcabitius). The Introduction to Astrology*, Warburg Institute Studies and Texts. London and Turin: The Warburg Institute and Nino Aragno Editore, 2004, p.1.

³⁸ Ibn Ezra, *The Book of The World*, pp.25-26.

³⁹ C. S. F. Burnett, 'Hebrew and Latin Astrology in the Twelfth Century: the Example of the Location of Pain', *Studies in History and Philosophy of Biological and Biomedical Sciences* 41, no. 2 (2010), 70–75, p.72.

⁴⁰ Abraham ben Meir Ibn Ezra, *Abraham Ibn Ezra on nativities and continuous horoscopy*, trans. Shlomo Sela, vol. 4, *Études Sur Le Judaïsme Médiéval* (Leiden: Brill, 2013), p.253.

⁴¹ Burnett, Yamamoto, and Yano, eds., *al-Qabīṣī (Alcabitius). The Introduction*, p.1.

order to understand this intention. The results will be discussed in chapter 1, with written up fieldwork notes in appendix 4.

Table 1: Schema of timeline and non-exhaustive scholarly citations regarding the Salone images of the Palazzo della Ragione, Padua. (Events occurring to the building itself are in italics).			
1306–09	Fra Giovanni degli Eremitani (architect)	Giotto (painter c.1309)	Pietro d’Abano (advisor c.1309)
1314–1318	Giovanni da Nono.		G
<i>2 February 1420</i>	<i>Roof destroyed by fire. Scheme badly damaged. Roof reconstructed by architect Bartolomeo Rizzo.</i>		
<i>1425–1440</i>	<i>Scheme repainted by Nicolò Miretto and Stefano da Ferrara.</i>		
1445	Michele Savonarola.		G, d’A
1560	Bernardino Scardeone.		G, d’A, AP
1629	Jacques Gaffarel.		G, d’A, AP
1652	Sertorio Orsato.		G, d’A
<i>17 August 1756</i>	<i>Roof torn off by a hurricane.</i>		
<i>1759</i>	<i>Roof reconstructed.</i>		
<i>1762–1770</i>	<i>Scheme repainted by Francesco Zannoni, advised by Abbot Rocchi.</i>		
1795	Pietro Brandolese (Brandolese cited Rocchi.)		G, d’A
<i>1797</i>	<i>Salone and Palazzo della Ragione no longer used as Law Courts for the administration of justice.</i>		
1858-59	W. Burges.		G, AP, iE, O
1924	Antonio Barzon.		G, d’A, AP, O
1925-26	Fritz Saxl.		G, d’A, AP, O
1953	Jean Seznec.		G, d’A, O
1969	Herbert Dellwing.		Considers the keel roof and its possible provenance.
1995	Diana Norman.		G, d’A, AP, O
1986 & 2000	Graziella Federici Vescovini.		G, d’A, AP, O
2000	Pier Luigi Fantelli and Franca Pellegrini.		G, d’A, AP, O
2000	Dieter Blume.		G, d’A, AP, O
2007	Elisabetta Antoniazzi Rossi.		G, d’A, AP
2008	Maria Malvina Borgherini and Emanuele Garbin.		G, d’A, AP, O
2008	M. Beatrice Rigobello Autizi and Francesco Autizi.		G, d’A, AP, O
2008	Anna Maria Spiazzi.		Follows the 1998 and 2002 arguments of Mariani Canova
2011, 2008, 1998	Giordana Mariani Canova.		G, d’A, AP, O
G = acknowledged Giotto as painter of scheme. d’A = acknowledged d’Abano as providing the astrological thinking behind the scheme. AP= suggested that the images in the Salone were informed by d’Abano's <i>Astrolabium Planum</i> . iE = suggested that the images in the Salone were informed by Ibn Ezra’s <i>in Re judicali</i> . O = suggested that the images in the Salone were informed by other sources.			

Previous work in the field

As an aid to engaging with the historiography of the Salone fresco images, a non-exhaustive listing of scholars who have approached these images is contained in Table 1. As noted, the earliest reference to the scheme was by da Nono in his *Visio* (c.1314–1318). In the mid-fifteenth century, Giovanni Michele Savonarola (1385–1468), professor of medicine at Padua University, wrote in his *Libellus* dated 1445 that ‘the author of this group of magnificent and unique pictures is our writer of the *Conciliator*’,⁴² meaning Pietro d’Abano. Being born and educated in Padua, Michele Savonarola’s perspective represented the views of someone who saw the fresco scheme before and after the fire of 1420.

A century later Bernardino Scardeone (1478–1574) in his book *Historiae de urbis Patavii antiquitate* (1560) also ascribed to d’Abano ‘the idea of the numerous astrological pictures illustrating the influence of the planets and signs upon terrestrial life with which the ceiling of the Palazzo della Ragione is adorned.’⁴³ Scardeone affirmed that once the fire destroyed the fresco scheme, they were restored to the same images as the ones painted by Giotto, ‘nunc rursum eadem sere imagines per Zotum insignem pictorum restituae visuntur’.⁴⁴ More importantly perhaps, Scardeone mentioned d’Abano’s skill in mathematics and astrology and praised d’Abano’s *Astrolabium Planum*, stating that the images ‘depicted in the Law Forum, or the palace of Padua’ indicated *ad indicandum nascentium naturam, per gradus & numeros*.⁴⁵ This appears to be the first time that the *Astrolabium Planum* was connected with the Salone images.

The Astrolabium Planum

At this point it may be helpful to explain the nature and use of ‘Astrolabium Planum’ and how it might be related to the Salone. An Astrolabium Planum is a flat astrolabe, a set of tables created by using an astrolabe (Greek: *astrolabos*, ‘star-taker’), also called a

⁴² Savonarola, ‘Libellus de Magnificis Ornamentis Regie Civitatis Padue Michaelis Savonarole’, pp.47-48. Pietro d’Abano, *Conciliator: Conciliator differentiarum philosophorum [et] medicorum in primis doctoris* (Venice: Lucantonio Giunta, 1519).

⁴³ Lynn Thorndike, *A History of Magic and Experimental Sciences. Vols 1-8* (New York and London: Columbia University Press, 1923-1958), Vol.4. p.889. Bernardino Scardeone’s treatise of moral theology in seven books originated during the author’s activity as a confessor in the nunnery of Santo Stefano in Padua.

⁴⁴ Bernardino Scardeone, *De antiquitate urbis Patavii et claris ciuibus Patauinis libri tres, in quindecim classes distincti. Eiusdem appendix de sepulchris insignibus exterorum Patavii iacentium* (Basel: Nicolaum Episcopium iuniorem, 1560), p.201.

⁴⁵ ‘the nature of the newborn, by degrees and numbers.’ Scardeone, *De antiquitate urbis Patavii*, pp.201-202.

planispheric astrolabe, which contains layers of rotating instrumentation, and in various ways projects the celestial equator onto a two dimensional plane. The astrolabe was considered to be the precision tool of the age, the new high-tech computer, a mathematical *tour de force* that ‘placed an image of the heavens in human hands’.⁴⁶ As a two-dimensional version of a celestial globe, the astrolabe was a working model of the heavens, enabling medieval astronomers to calculate the positions of the sun and prominent stars with respect to both the horizon and the meridian, indicating how the sky looked at a specific place at a given time. The front of a European astrolabe is made up of a mater divided into 24 hours, latitude plates (its terrestrial features), a rete that contains the zodiac belt and the fixed stars (its heavenly features), and a ruler. The rete and the rule move so that risings and settings of planets and stars can be easily ascertained. By using the sighting device on the back of the instrument, the altitude of the sun or a given star can be determined. One then either sets the mark for the sun on the ecliptic, the apparent path of the sun through the sky, or the selected star-pointer on the rete over the appropriate altitude mark on the plate to set the sky view for that moment.⁴⁷ Its primary use was for time-finding and thus time-telling, for day and also night, and it was an essential tool for constructing horoscopes. In this way, the astrolabe, a time-finder, was used to construct horoscopes, a time-marker.⁴⁸

The astrolabe was also used to create an *Astrolabium Planum*, which was a table of celestial events in tabular format for ease of access. It is fair to assume that Pietro d’Abano, as a professor at the University of Padua, would have been familiar with and would have used astrolabes to construct horoscopes and thus created a set of tables—the *Astrolabium Planum*—for his own use. In brief, the astrolabe is the instrument; the *Astrolabium Planum* is the set of tables created from the instrument.

⁴⁶ James Evans, *The History and Practice of Ancient Astronomy* (Oxford: Oxford University Press, 1998), p.157.

⁴⁷ David A. King, *Astrolabes from medieval Europe* (Farnham: Ashgate Variorum, 2011), Section I, p.146.

⁴⁸ Silke Ackermann, ‘Astrological Scales on the National Maritime Museum Astrolabes’, in *Astrolabes at Greenwich*, ed. Koenraad van Clempoel (Oxford: Oxford University Press, 2005), 73-89, p.73.

Pietro d'Abano's document

Having explored document CLM22048, *De signis celestibus eorumque significatione et potestate, cum multis tabulis astronomicis*,⁴⁹ which I purchased as cited earlier, I can see that it contains tables of hours correlating time and zodiacal degrees, a hand-calculated yearly ephemeris, a section headed 'Canon Tabule de moris infantum'⁵⁰ (Rule of the table on the period of infants) which was a section devoted to finding the best time for conceiving a child so that a child of the required sex was born at the proper time, calculated horoscopes with each degree of the zodiac rising, other calculated horoscopes, and written descriptions. The palaeography, written in a cursive currens glossularis hand with crossings-out and additions, is difficult to read, suggesting that this text was a copy made to be read and worked with only by the person who wrote or copied it, perhaps the notebook of a working, consulting astrologer.

The final section of CLM22048, from fol.84v to fol.129v, contains calculated horoscopes that depict each of the 360° of the zodiac on the ascendant (the degree of the ecliptic on the eastern horizon at the individual's time of birth — see glossary for an expanded definition) (Fig.3). The section following, from fol.158v to fol.176v, contains text connected to these calculated horoscopes.⁵¹ The first section, then, calculated the degree; the second section described an image connected with that degree. Calculating the degree of a person's ascendant and its associated image was one way of defining a person's profession.

⁴⁹ *On the heavenly signs or images which have significance and power, with many astronomical tables*. The copy I purchased from the Bayerische Staatsbibliothek in 2008, and which is available online digitally, is dated in the BSB catalogue as 1450.

⁵⁰ The word 'mora' means a span of time, or delay and is the word regularly used for length of the gestational period found routinely in connection with the Trutine of Hermes or *Trutina Hermetis*. The Trutine of Hermes, which is attributed to Hermes Trismegistus, forms the 51st aphorism of Ptolemy's *Centiloquium*. This technique was used for finding the best time for conceiving a child so that a child of the required sex was born and born at the proper time. Ptolemy, *Tetrabiblos*, ed. J.M. Ashmand (Mokelumne Hill, California: Health Research, 1969), pp.229-230. See also Robert Zoller, *Tools & Techniques of the Medieval Astrologer* (New York: Robert Zoller, 1981), p.7. My thanks to Rob Hand for applying his astrological eye to the Latin in CLM22048 and offering his valuable academic insights. Thanks also to Dorian Greenbaum for pointing to 'moris' being ablative plural.

⁵¹ CLM22048 fol.158v: *Incipiunt jmagines signorum super triginta gradus quorum quilibet habet suam jmaginem propriam...* (and explicit): *Finiuntur gradus signorum Zodiaci cum vultibus celestibus iuxta mentem Petri de Abano* (fol.176v). Now begins the images of the signs over thirty degrees, each of whom has its own image ... Thus are finished the degrees of the signs of the zodiac with the heavenly faces in the spirit of Pietro d'Abano.

Graziella Federici Vescovini dated document CLM22048 to the fifteenth century.⁵² More importantly she emphasised the necessity to distinguish between d'Abano's works in which he 'develops philosophically his theory of the astrological images, and the works in which he simply describes the individual figures of the images for each of the 360° of the zodiac.'⁵³ Federici Vescovini appears to be the only scholar who is aware of this important difference. A mundane analogy is an individual who has a table of tides versus a mariner who understands tides, sea movements, and all their implications. The former is a simplistic expression of the latter.

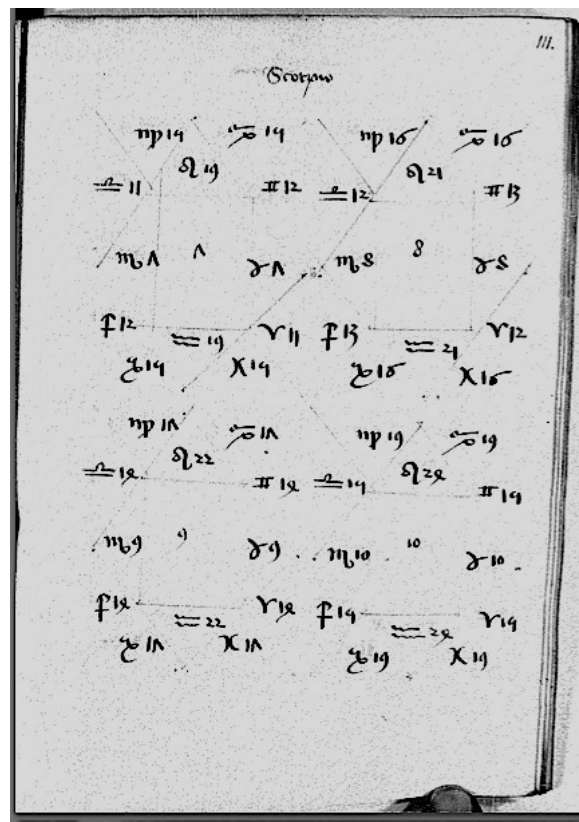


Figure 4. *De signis celestibus eorumque significatione et potestate, cum multis tabulis astronomicis*, CLM22048, fol.111r, showing a page of calculated horoscopes, with 7°, 8°, 9°, and 10° Scorpio on the ascendant, Bayerische Staatsbibliothek, Munich.

⁵² Graziella Federici Vescovini, 'Peter of Abano and Astrology', in *Astrology, Science and Society*, ed. Patrick Curry (Suffolk: The Boydell Press, 1987), 19-39, pp.36-37. Federici Vescovini noted: 'I assume that Peter of Abano composed an *Astrolabium Planum* on the strength of a reference by him in the *Lucidator* (ff.101va and 109rb); the fact that he gives a practical example of the imaginary construction of the ninth and eighth sphere in the initial paragraphs of his treatise *De motu octavae sphaerae*; and an explicit reference in the *Conciliator* (diff.9, propter tertium). However, I have not found any MS which predates the Monaco MS which is fifteenth-century and very late, so some doubt must remain about the authenticity of the work in the Monaco codex, *De imaginibus* or *Astrolabium planum*. According to Bernard Haage there are some fragments of this work in German in a Nuremberg codex and in two Heidelberg codices, but I have not examined them. Peter gives his instructions for the construction of an astrolabe in the *De motu* (MS Venice, Museo Correr, Provenienza Cicogna, sec. XV, ff.111v-1112r).'

⁵³ Federici Vescovini, 'Peter of Abano and Astrology', p.34.

Returning to the Salone, it is apparent that, by 1560, this gap that Federici Vescovini had noted between d'Abano's *Astrolabium Planum* and his philosophy was evident in the work of Scardeone who claimed that the Salone fresco images were a rendition of an *Astrolabium Planum* since the frescos represented 'the nature of the newborn, by degrees and numbers'. Scardeone seemed unperturbed by the fact that an *Astrolabium Planum*, if it contained images, would have 360 of them, representing 360° of the zodiac, whereas the Salone, first, only has 319 images in its scheme⁵⁴ and second, of these, only 288 are potentially astrologically informed, with the rest being of a religious nature.

In the seventeenth century Jacques Gaffarel (1601–1681) continued the suggestion that the images in the Salone were informed by what he believed to be d'Abano's *Astrolabium Planum* in his 1629 book entitled *Curiositez inouyes sur la sculpture talismanique des Persians, horoscope des Patriarches et lecture des estoiles* ('Unheard-of Curiosities concerning Talismanical Sculpture of the Persians, the horoscope of the Patriarchs, and the reading of the Stars'). He wrote that,

...he may be pleased to take notice, that Scaliger hath transcribed them word for word, out of a Second Book of a Worke entitled *Astrolabium Planum*, where they are all represented, by Figures cut in Wood, and are the Invention of *Petrus Aponensis*, otherwise called, the *Conciliator*; being the very same, which he caused to be painted, in the Great Hall of the Palace of Padua, where they are yet to be seen.⁵⁵

Gaffarel was a Kabbalah scholar and although the Sorbonne did not take his work seriously, it was hugely popular and was read by René Descartes (1596–1650) amongst others. Gaffarel became librarian to Cardinal Richelieu (1585–1642), who sent him travelling through the Mediterranean in an effort to recover rare books. By Gaffarel's time Pietro d'Abano was still understood to be connected with the Salone fresco scheme but the

⁵⁴ Scholars erroneously continue to cite the number of images as 333, as there are three registers across 111 columns. The images on some columns, however, cross two registers and two images cross all three registers. Thus 95 columns have 3 images each = 285 images, and 16 columns have two images each = 32 images, giving a subtotal of 317 images. Adding in the the two large images that cross all three registers — the Coronation of the Virgin on the east wall and and St Mark on the west wall — gives 319 images in total.

⁵⁵ Jacques Gaffarel, *Unheard-of curiosities: concerning the talismanical sculpture of the Persians; the horoscope of the patriarkes; and the reading of the stars. Written in French by James Gaffarel. And Englished by Edmund Chilmead* (London: Printed by G.D. for Humphrey Moseley, 1650), pp.297-298.

idea of the scheme being an *Astrolabium Planum* had effectively white-washed over any consideration of d'Abano's astrological-medieval-philosophical theory to which Federici Vescovini referred.

In 1652 Sertorio Orsato (1617–1678), in his *Monumenta patavina studio collecta*, published by Paulus Frambottus in Padua in 1652, mentioned that the fresco scheme displayed the characteristics of men born under the twelve signs of the zodiac and influenced by the seven planets, and was informed by Pietro d'Abano.⁵⁶ Orsato made the link with d'Abano but did not take up Scardeone's assumption concerning the *Astrolabium Planum*.

In 1795, however, the collector/art historian Pietro Brandolese (1754–1809) accepted Scardeone's assumption. In his book *Pitture, sculture, architetture ed altre cose notabili di Padova* Brandolese declared that d'Abano's *Astrolabium planum*, published in Venice in 1502, was connected with the Salone fresco scheme.⁵⁷ In a footnote he cited Abbott Antonio Rocchi as an authority regarding knowledge of the fresco scheme but did not give any further information.

W. Burges, in his work on the fresco scheme in 1858–59, acknowledged Brandolese and Brandolese's source, Abbot Rocchi, and pursued two references in endeavouring to understand the scheme:

Pierre d'Abano a publié plusieurs ouvrages dont les deux suivants nous seront bien utiles pour l'explication des peintures de la grande salle:

« *Astrolabium planum* ». Venetiis, 1502. In–quarto.

« *Avenare, In re judiciali* ». Venetiis, 1572. In–octavo. (footnoted).⁵⁸

⁵⁶ Sertorio Orsato, *Monumenta Patavina* (Padua: Paulus Frambottus, 1652), p.26.

⁵⁷ Pietro Brandolese, *Pitture, sculture, architetture ed altri cose notabili di Padova*, Nabu Public Domain Reprints (Padova: Libraio, 1795), pp.5-7.

⁵⁸ 'Pietro d'Abano published several works of which the following two will be quite useful for us in the explanation of the paintings of the large room: 1. « *Astrolabium planum* ». Venetiis, 1502. Quarto. 2. « *Avenare. In Re judiciali* ». Venetiis, 1572. Octavo. (footnoted). The footnote reads: This second work is a translation of seven books of astrology of Aben Esra, of Toledo. This Aben Esra, Aben Hezra or Abenesdra, was born in Toledo in 1119, and died in Rhodes in 1174.' Brandolese, *Pitture, Sculture, Architetture Ed Altri Cose Notabili di Padova*, p.7.

[The footnote reads:] Ce second ouvrage est une traduction de sept livres d'astrologie de Aben Esra, de Tolède. Cet Aben Esra, Aben Hezra ou Abenesdra, né à Tolède en 1119, est mort à Rhodes en 1174.⁵⁹

This appears to be the first time that Ibn Ezra's work is suggested as being connected with the fresco scheme. In addition Burges thought that Dante may also have been involved with the iconography of the paintings, as (he said) he and Giotto had met each other in Padua c.1306.⁶⁰ Amongst the images Burges identified apostles, signs of the zodiac, occupations of the months, planets, winged figures, sky figures, and constellations along the top register. He noted that much of the imagery was difficult to decipher⁶¹ and he even went so far as to suggest that various panels should be moved to other places in the scheme so they made better sense.⁶² Burges introduced d'Abano's *Astrolabium Planum* in the section he termed 'sky figures' ('Figurae coeli'), being 'symbols or personifications of certain degrees of signs of the zodiac, indicating which will be the character, health, fortune, the fate, finally, of the individual born at that specific time.'⁶³ Burges wrote that he was not able to find a copy of d'Abano's *Astrolabium Planum* in the Imperial Library of Paris, nor in the British Museum of London, nor in Brunet's catalogue, the catalogue of Jacques-Charles Brunet (1780–1867), the great French bookseller-bibliographer. Eventually he found it listed in a 'Universal Biography' as a version published in Venice in 1502 which had been bought for 100 francs by the city library in Padua.⁶⁴ Burges was not able to view this work directly and so he used instead a work written by Johannes Engel (fl.mid-fifteenth century–d.1512), published in Augsburg in 1488 by Erhard Ratdolt (1442–1528). In referring to d'Abano's 'Figurae coeli', Burges said 'these engravings are absolutely the same ones as those of the work of Padua' and he included a facsimile image from Engel's work as proof. Burges did not explain how he found Engel's work but it is

⁵⁹ Rabbi Avraham Ben Meir Ibn Ezra was, in fact, born in Tudela, Spain between 1089 and 1092 and died after 1160. Burnett, 'Hebrew and Latin Astrology in the Twelfth Century', p.71.

⁶⁰ W. Burges, 'La Ragione de Padoue', *Annales Archeologiques* XVIII(1858), 330-343, p.338.

⁶¹ For example, in order to make sense of the constellations along the top register Burges compared the list of engravings of Latin author Gaius Julius Hyginus (c.64 BCE –17 CE) whose *De Astronomia* was first published, with accompanying figures, by Erhard Ratdolt in Venice, 1482, with d'Abano's list of constellations translated from Ibn Ezra. Burges was unable to make an exact fit.

⁶² Burges, 'La Ragione de Padoue', p.339. This was echoed in 1924 by Antonio Barzon who maintained that whilst the initial artistic translation was entrusted to Giotto, in the restoration work that had occurred since then, some images had become misfits, whilst others had not been included. Therefore, while the general design appeared huge, clear and precise, some particulars betrayed the ignorance of the painter. (Barzon, *Gli Affreschi Del Salone in Padova*, p.11).

⁶³ W. Burges, 'La Ragione de Padoue. Suite', *Annales Archeologiques* XIX, no. 31 (1859), 240-252, p.248.

⁶⁴ Thorndike mentioned that two editions of d'Abano's work *On The Astrolabe* were printed in Venice by Luc' Antonio de Giunta in 1488 and 1502. Thorndike, *A History of Magic and Experimental Sciences*, p.920.

worth noting that a copy resides in the Bayerische Staatsbibliothek. Furthermore a contemporary scholar, Anton Grigoryev, has translated Part Three into English. To complicate the misunderstanding for scholars even further, in Engel's introduction to his *Astrolabium Planum* Engel wrote that he had 'taken these symbols from some of the writings of the famous Italian physician and philosopher, Pietro d'Abano'.⁶⁵ Based on this statement by Engel, Burges was willing to use Engel's work to help make sense of the Salone fresco images, even though this was, first, based on Scardeone's assumption, that the *Astrolabium Planum* was the primary source for the implementation of the Salone fresco scheme, and, second, his own speculation that the lost d'Abano *Astrolabium Planum* contained images which were exactly reproduced in Engel's work. Based on this assumption plus speculation, Burges was left with only one conclusion, that Giotto made errors in the order of the scheme. Burges completed his consideration of the top three registers by referring to chapter 4 of Ibn Ezra's *Beginning of Wisdom*, which contained seven parts, each devoted to the (then) seven known planets, however using Ibn Ezra's work almost as an additional source to try to explain the many unresolved images produced by Burges's suppositions. From this point on, in seeking to understand the meaning of the Salone images, scholars appear to have followed Scardeone's assumption and Burges's suppositions.

The *Astrolabium Planum* of Johannes Engel

With its importance in the argument of previous scholars, a consideration of the *Astrolabium Planum* of Johannes Engel (BSB-Ink E-63 - GW 1900. Augsburg 1488, Vigesimo septimo kalendas Nouembris, 4 Inc.ca. 555), held in the Bayerische Staatsbibliothek, is now appropriate. The title page (Fig.4) is as follows:

Astrolabium planum in tabulis Ascendens
continens qualibet hora atque minuto. Equa-
tiones domorum celi. Moram nati in utero
matris cum quodam tractatu nativitatum utili

⁶⁵ Johannes Engel, *The Medieval Symbols of Faces and Degrees. From 'Astrolabium Planum' by Johannes Engel*, trans. Anton Grigoryev (Nizhny Novgorod: Project Faust, 2006).

ac ornato. Necnon horas inequales pro quo
libet climate mundi.⁶⁶

**Astrolabium planū in tabulis Ascendens
cōtinens qualibet hora atqz mīto. Equa-
tiones domorū celi. Morā nati in vtero
matris cūz quodā tractatu natiuitatū vtili
ac ornato. Nec nō horas inequales p quo
libet climate mundi.**

Figure 5. The title of the *Astrolabium Planum* by Johannes Engel, held in the Bayerische Staatsbibliothek.

Plane astrolabe in Tables (or a list) containing the Ascendant in Each Hour and Minute; the Calculated Positions for the Houses of Heaven; the Length of Time⁶⁷ of the Native in the Mother's Womb along with a Certain Useful and Splendid Treatise on Nativities; and also the unequal hours for Each Clime of the World.

As this title notes, the *Astrolabium Planum* consists of four parts. Part 1 — ‘the Calculated Positions for the Houses of Heaven’ — is a table of houses. A table of houses allows an astrologer to mathematically construct part of a horoscope. Part 2 — ‘the Ascendant in Each Hour and Minute’ — contains images. In this part of the book Engel connected each ascending degree of the possible 360⁰ with an image that denoted the nature and quality of a person who was born with that particular degree of the ecliptic rising in their horoscope, which was an aid to considering a person's profession. Part 3 — *Moram nati in utero matris*, ‘the Length of Time of the Native/Unborn Child in the Mother's Womb along with a Certain Useful and Splendid Treatise on Nativities’ — is devoted to finding the best time for conceiving a child so that a child of the required sex was born at the proper time. Part 4 — ‘and also the unequal hours for Each Clime of the World’ — includes a table defining the length of an hour depending on the season and latitude. In the medieval period in Europe not all hours were equal, as they were seasonally based on the length of day and night.

⁶⁶ Thorndike, *A History of Magic and Experimental Sciences*, p.920. Thorndike cites two editions: Venice, 1488; and 1502 (Luc' Antonio de Giunta), neither of which he has seen.

⁶⁷ ‘Moram’ is the accusative of the word ‘mora’ which means a span of time, or delay and, as noted in footnote 50, is the word regularly used for length of the gestational period found routinely in connection with the Trutine of Hermes or *Trutina Hermetis*.

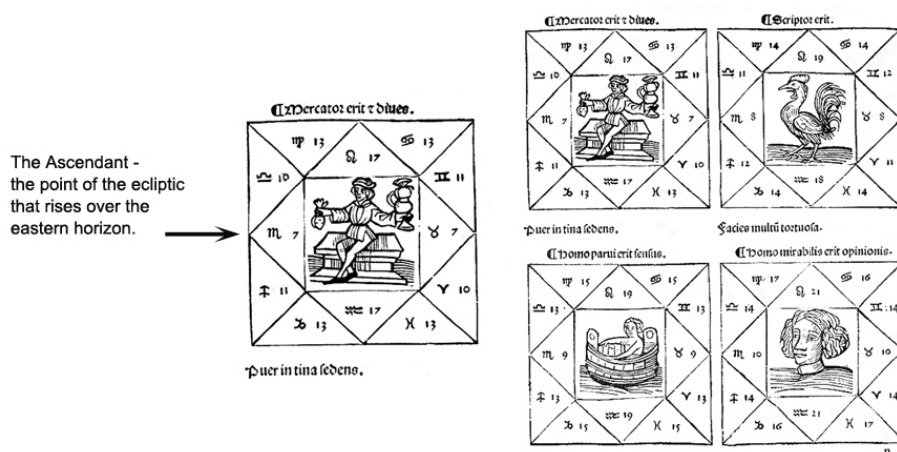


Figure 6. Four of thirty different images associated with the degrees of the zodiac that are rising whilst the Sun is in the sign of Scorpio. From *Astrolabium Planum* by Johannes Engel. BSB-Ink E-63 - GW 1900. Augsburg 1488, Vigesimo septimo kalendas Nouembris, 4 Inc.ca. 555. Image: Bayerische Staatsbibliothek.



Figure 7. North wall, Salone, Palazzo della Ragione. The sign of Scorpio, ringed in white, is visible along the middle register to the left of the window on the right. Photo: D. Gunzburg.

Just like the final section in CLM22048, here in Part 2 of Engel's *Astrolabium Planum* each ascending degree was connected with an image that denoted the nature and quality of a person. Thus if the zodiac sign that was rising in the east was 7^0 of Scorpio, then the image that was associated with this degree, described as 'A man sits with purse in his right hand and a golden bowl in his left hand. This man will be a rich merchant', was placed in the centre of the square horoscope (Fig.6). Since the fresco scheme of the Salone contains zodiac signs (Fig.7), the methodology of these scholars was to look at the images surrounding each zodiac sign on the Salone wall and then seek a correlation with any of the 30 images for that sign in Part Two of Engel's *Astrolabium Planum*, assuming that Engel's *Astrolabium Planum* reflected the *Astrolabium Planum* of Pietro d'Abano.

Based on Scardeone's assumption and Burges's suppositions, scholars relied on the Engel version as a replacement for d'Abano's images that were no longer available, and attempted to draw direct correspondences with the Salone images.

Antonio Barzon, in his 1924 work entitled *Gli affreschi del Salone in Padova*, catalogued, photographed, and described each and every image in the Salone fresco scheme. This was the first time such an endeavour had been undertaken so systematically since its inception. Like those before him, Barzon acknowledged that the inspiration behind the fresco scheme was Pietro d'Abano. Barzon thought that d'Abano had set the general design, fixed the division of the months, the disposition of the months, the disposition of the subjects and the groupings and then entrusted the artistic translation of this huge conception to Giotto. Barzon argued, however, that since he could not fully correlate the fresco scheme with the *Astrolabium Planum*, he followed Burges's suppositions that there were errors in the scheme.⁶⁸ Although relying heavily on the '*Astrolabio di Pietro d'Abano*', Barzon contributed to the body of knowledge regarding the fresco scheme through documenting the images, and although his photographs are in black and white, they allow us to recover some of the history of the scheme before the restorations of the images in the 1950s, and to see by comparison with the images on the walls today that, as has been maintained throughout the literature since the 1420 fire, visually there has been a consistency in maintaining the same imagery.

As Burges had done in 1858–59, so scholars in the twentieth and twenty-first centuries considered a broader range of texts along with the *Astrolabium Planum* in searching for a correspondence with the Salone images. Jean Seznec, citing Fritz Saxl's work of the mid-twentieth century, wrote that,

Interpretation of the frescoes as a whole was first given by Dr .Saxl (Sitzungsberichte der Heidelberger Akademie der Wissenschaften [1925-1926], pp.49-68) who found the key to them (1) in the miniatures illustrating the *Anima astrologiae* of Guido Bonatti (cod. Vindob, 2359, fourteenth century), and (2) in an intensive analysis of the *Astrolabium planum* of Pietro d'Abano, published in

⁶⁸ Antonio Barzon, *Gli Affreschi del Salone in Padova* (Padova: Libreria Gregoriana, 1924), p.11.

Augsburg by Johann Engel in 1488, the illustrations of which are in turn derived from a manuscript of Albumazar (cod. Vat. Reg. 1283).⁶⁹

In his own work of 1953 Seznec added that ‘although later restorations make it difficult to judge, the orientation of the building was such that each month the beams of the rising sun would strike the zodiacal sign which the sun was actually traversing in the sky.’⁷⁰ Seznec did not cite a reference for this statement and although I agree that the orientation of the building does suggest intention, and I discuss my findings regarding this point in chapter 1, Seznec’s statement indicates a lack of understanding of the building itself, for there is only a limited number of apertures through which the sun can shine and this actual sunlight bears no relationship to the layout of the scheme. Furthermore it does not take into account the way the sun moves through the sky in the course of a year.

Seznec continued that

the uppermost zone holds a row of mysterious figures which have only recently been identified: they are the decans and paranatellons of the “barbaric sphere.” A complete world system is thus presented in the Salone: the zones correspond to the concentric spheres enveloping the earth, within which reign the ordering forces of the cosmos.⁷¹

From such a statement it seems that Seznec’s understanding of decans, parans (paranatellonta) and the medieval understanding of Ptolemy’s spheres was questionable and his knowledge of medieval astrology appears to be negligible.

⁶⁹ Jean Seznec, *The Survival of the Pagan Gods: The Mythological Tradition and its Place in Renaissance Humanism and Art*, trans. Barbara F. Sessions, Bollingen Series 38 (New York: Pantheon Books, 1953), p.74, n.119. In a personal email dated 29 March 2014, Charles Burnett referred to this reference made by Seznec regarding Bonatti’s *Anima astrologiae* as follows: ‘I think the *Anima astrologiae* is the title of a selection of texts taken by Lilly from Bonatti’s *Libri Decem (Liber astronomicus)*, and translated into English, rather than the title of a work by Bonatti himself.’

⁷⁰ Seznec, *The Survival of the Pagan Gods*, pp.73-74.

⁷¹ Seznec, *The Survival of the Pagan Gods*, p.74.

Herbert Dellwing's 1969 research⁷² focused on identifying the origins of the *Salone* vault and did not offer an approach to the Salone fresco scheme. Dellwing's work on the vault and the architect who designed it, Fra Giovanni degli Eremitani, is important to my research in terms of architectural innovation and will be discussed in chapter 1.

Diana Norman referred to the fresco scheme of the Salone in her 1995 two volume edited surveys of Siena, Padua and Florence.⁷³ She avoided citing the *Astrolabium Planum*, although she moved towards it when she noted that some of the iconography was connected with individual horoscopes.⁷⁴ Nevertheless Norman's statements, such as 'a number of the planetary deities appear twice, thus alluding to astrological lore whereby it was believed that at certain times of the year the planets appear in a significant conjunction with a zodiacal sign, and that this, in turn, changes their character or nature,'⁷⁵ highlight the fact that she was not familiar with the language of medieval astrology, as this statement needed to be written as 'each planet has night and day rulerships' to make sense. Furthermore, her term of 'significant conjunction with a zodiacal sign' is confusing as to its actual meaning. Norman, however, intuitively concluded that the Salone fresco scheme presented 'a pictorial equivalent of the encyclopaedic scholastic works of ... thirteenth-century scholars.'⁷⁶

In 1988 Federici Vescovini published a critical edition of Pietro d'Abano's *Lucidator* and contributed towards a small volume on the Palazzo della Ragione and the Salone fresco scheme edited by Pier Luigi Fantelli and Franca Pellegrini and published in 2000. Of the Salone fresco scheme Federici Vescovini wrote,

The astrological images are those of the zodiac sign, those of the planet, the lord of the sign (Dominus); they are the symbols of the nature or the characters of man, they represent the professions to which they are inclined, according to the influence

⁷² Herbert Dellwing, 'Zur Wölbung des Paduaner "Salone"', *Mitteilungen des Kunsthistorischen Institutes in Florenz* 14, no. 2 (1969), 145-160. I am indebted to Amy Kilby for her translations of this article and much of Blume's book from German into English.

⁷³ Diana Norman, ed. *Siena, Florence and Padua, Art, Society and Religion 1280-1400, Volume I, Interpretive Essays*. New Haven and London: Yale University Press in association with the Open University, 1995. Diana Norman, ed. *Siena, Florence and Padua, Art, Society and Religion 1280-1400, Volume 2, Case Studies*. New Haven and London: Yale University Press in association with the Open University, 1995.

⁷⁴ Norman, 'The Three Cities Compared: patrons, politics and art', p.202.

⁷⁵ Norman, 'The Three Cities Compared: patrons, politics and art', p.201.

⁷⁶ Norman, 'The Three Cities Compared: patrons, politics and art', p.202.

derived from the ‘nativity’ of everyone or from the ‘ascendant’, that is from the horoscope of birth.

This suggested that Federici Vescovini used the *Astrolabium Planum* to make sense of the Salone fresco images and her identification of each image in this volume followed Barzon’s work almost completely. Her assessment of the Salone fresco scheme was that it ‘constitutes one of those symbolic cycles which seem to ease the cognitive anxiety of the Middle Ages.’⁷⁷ Both Norman and Federici Vescovini indicated in their work that there was a medieval philosophical theme that eluded their understanding and lay beyond the natal horoscopic imagery of the *Astrolabium Planum*.

Dieter Blume introduced the work of Zothorus Zaparus Fendulus (Paris Bibliothèque Nationale, Ms.Lat. 7330) and the *Liber introductorius ad universam astrologiam* of Michael Scotus, Frederick II’s astrologer at the court of Naples (Bayerische Staatsbibliothek, Ms. CLM10268), as well as the fresco scheme painted by Guariento di Arpo (1310–1370) in the Eremitani Church in Padua, and a manuscript from Chantilly, Musée Condé Ms.754 *Historia Troianorum* (1425), in order to find meaning in the Salone fresco scheme. Blume looked in detail only at the seven planets in the Salone fresco scheme, comparing and contrasting them with images from these manuscripts, and finally arguing that,

Numerous pieces of evidence prove that Pietro d’Abano used Michael Scott’s planetary depictions in his conception of the painting of the Palazzo della Ragione. There is a whole row of iconographic references and both times we come across the same process of using elements of familiar image concepts to characterise the planets. Added to this is the fact that, as the Munich manuscript [of Scotus] shows, a few years later the text was copied and thus available. From Pietro d’Abano himself we do not possess any actual descriptions of planets. So for him, the detailed depiction in *Liber Introductorius* evidently forms the starting point for the planet iconography developed here.⁷⁸

⁷⁷ Graziella Federici Vescovini, ‘Gli Affreschi Astrologici del Salone’, in *Il Palazzo della Ragione in Padova*, ed. Pier Luigi Fantelli and Franca Pellegrini (Verona: Cierre Edizioni, 2000), 35-37.

⁷⁸ Dieter Blume, *Regenten des Himmels: Astrologische Bilder in Mittelalter und Renaissance*, Studien aus dem Warburg-Haus (Berlin: Akademie-Verlag, 2000), p.84. Translation from German: Amy Kilby.

There are many difficulties with Blume's statement. He avoided sharing his 'numerous pieces of evidence'. He made an assumption that d'Abano relied on Michael Scotus' astrological thinking and therefore ignored the wealth of d'Abano's own written astrological material, let alone d'Abano's translations. He has also speculated that Giotto and d'Abano had access to Scotus' manuscript and furthermore, being devoid of their own imagery, decided to reproduce Scotus' manuscript. He also showed great assurity in dismissing the top constellational fresco images as 'having no pictorial tradition',⁷⁹ thus effectively rejecting a long history of constellational imagery from the Mesopotamian period through to Aratus of the third century BCE and Ptolemy of the second century CE with such a statement.

While Blume did conclude that the fresco scheme represented,

an astrological manual in pictures. Therefore the political decisions that can be seen in these frescoes are fitted in with, in a fashion, the cosmological order. The political system of the independent city-state corresponds, the picture program suggests, to the laws of the universe and therefore also to God's plan of creation.⁸⁰

he made no attempt to reveal how or why the fresco scheme was resolved in this way.

With the persistent failure of the *Astrolabium Planum* to offer an explanation of the fresco scheme in the Salone, scholars continued to look for other primary sources. In 2008 Maria Malvina Borgherini and Emanuele Garbin turned to three medieval treatises: 'the *Introductio in Astrologiam*, in the fourteenth-century transcription of a manuscript derived from Albumasar and attributed to Zaparo Fendulo; a thirteenth-century manuscript coming from the court of Alfonso X; and the edition, printed in 1488, of the *Astrolabium Planum* of Pietro d'Abano.'⁸¹ Based on these documents, Borgherini and Garbin argued that the intention behind the Salone fresco scheme was 'a treatise on astrology, where the

⁷⁹ Blume, *Regenten des Himmels*, p.74. Translation from German: Amy Kilby.

⁸⁰ Blume, *Regenten des Himmels*, p.85. Translation from German: Amy Kilby.

⁸¹ Malvina Borgherini et al., 'The temple of astrology - The Palazzo della Ragione in Padua', (2009). Online at: <http://brunelleschi.imss.fi.it/galileopalazzostrozzi/multimedia/TheTempleOfAstrologyThePalazzoRagionePadova.html> - accessed 2 December 2010. See also Maria Malvina Borgherini and Emanuele Garbin, 'Il monumento analogo. Rappresentazione e comunicazione di un grande manufatto urbano: il Palazzo della Ragione a Padova', in *L'architettura e le sue declinazioni*, ed. Fabio Labelli and Sara Marini (Verona: Iper testo Edizioni, 2008).

constellations of the zodiac explicitly evoke the image of the ecliptic.⁸² However, their thoughts on the ecliptic are unclear in the rest of their argument, and statements such as:

In examining some of the analogies, we see that the position of Cassiopeia, as it appears in the cycle, is the same in the first decade of the treatise by Zapari Fenduli, and at the seventh degree in both the *rota* of Alfonso X and the *Astrolabium Planum* of Pietro d'Abano. Moreover, the position of the image representing a fight between two dogs is the same at the twentieth degree of the Alfonsine *rota* and in the *Astrolabium Planum* of Pietro d'Abano.⁸³

suggest that Borgherini and Garbin are uncertain about the workings of the celestial sphere, the relationship of constellations to the ecliptic, Ptolemy's projection of degrees onto the ecliptic, and the co-rising and setting of constellations/planets that constitute the parans that are not confined to the ecliptic.

M. Beatrice Rigobello and Francesco Autizi repeated the arguments of Barzon in their book published in 2008 and Anna Maria Spiazzi cited Giordana Mariani Canova's work and approach in her assessment of the images in 2008. In her work from 1998, 2008, and 2011 Mariani Canova attempted to link the portraits found in the Salone fresco faces with d'Abano's *Compilatio Physiognomia* (1295),⁸⁴ asserting that the *Compilatio* indicated d'Abano's 'deeper and more intellectual thought, than the usual mechanical scheme used in the horoscope of the *Astrolabium*'.⁸⁵ Like Blume, she also sought a connection between the frescoes and the work of Zothorus Zaparus Fendulus, the *Liber introductorius ad universam astrologiam* of Michael Scotus, and the fresco scheme painted by Guariento (1310–1370) in the Eremitani Church in Padua.⁸⁶ She reached for an elementary form of medieval astrology by observing

⁸² Borgherini et al., 'The temple of astrology - The Palazzo della Ragione in Padua'.

⁸³ Borgherini et al., 'The temple of astrology - The Palazzo della Ragione in Padua'.

⁸⁴ Giordana Mariani Canova, 'Duodecim celestia signa et septem planete cum suis proprietatibus: l'immagine astrologica nella cultura figurativa e nell'illustrazione libraria a Padova tra Trecento e Quattrocento', in *Il Palazzo della Ragione di Padova: indagini preliminari per il restauro - Studi e ricerche* (Treviso: Canova, 1998), 23-61, p.45.

⁸⁵ Mariani Canova, 'Duodecim celestia', p.47.

⁸⁶ Giordana Mariani Canova, 'Padua and the Stars: Medieval Painting and Illuminated Manuscripts', in *ASP Conference Series (Proceedings of a conference held October 18-23, 2009 in Venezia, Italy)*, ed. Enrico Maria Corsini. Vol. 441 (San Francisco: Astronomical Society of the Pacific, 2011), 111-129, pp.117 and 124.

After Sagittarius we meet Capricorn that depends from Saturn, the coldest and farthest planet. Therefore around it the characters look ill, sad and work hard. The same happens in Aquarius, the second house of Saturn. In Pisces, Jupiter is again a king and a *Pontifex* seated on his throne and surrounded by all the noble activities depending from him, the noblest being astrology expressed by an astronomer looking at the stars. However these images are mixed with *paranatellonta*, human activities, and other enigmatic figures in a creative confusion.⁸⁷

With her apparently limited understanding of the astrology of the day, however, Mariani Canova admitted to the Salone being filled with ‘enigmatic figures in a creative confusion’. Along with Federici Vescovini and Borgherini and Garbin, Mariani Canova recognised that the *Astrolabium Planum* was insufficient to give meaning to the Salone fresco scheme. Although Mariani Canova’s assessment that,

the Palazzo della Ragione paintings, from Giotto to the frescoes of the fifteenth century, really constituted a ‘manifesto’ of the astrological knowledge in the late Middle Ages making Padua the capital of the astrological painting in Europe and attesting the great interest of the *studium patavinum* toward the astrological science⁸⁸

such a statement indicated her understanding that, like Federici Vescovini, the images hinted at a larger philosophical intent, nevertheless she failed to reveal what this philosophy was, and the fresco scheme’s purpose.

Scardeone’s Assumption

As has been shown, Scardeone’s assumption, that the *Astrolabium Planum* is the key to understanding the Salone, did not produce a satisfactory understanding of the scheme. As it has been central to the previous arguments in the field, however, one needs to ask what are the implications of the *Astrolabium Planum* being used as the organising and defining document behind the Salone fresco scheme?

⁸⁷ Mariani Canova, ‘Padua and the Stars’, p.127.

⁸⁸ Mariani Canova, ‘Padua and the Stars’, p.129.

To recap briefly, the *Astrolabium Planum*, with its 360⁰ listing, was used to focus on a particular horoscope for a particular date and time as a ready reference. If the images on the walls of the Salone were to be a direct correlation of each of the images of the *Astrolabium Planum* with each reflecting one of the degrees, then, as has already been noted, there would need to be 360 images. There are, however, only 319 images (only 288 of astrological themes). This means that Giotto would have had to abandon some zodiac degrees and present a restructured/cut down version of the *Astrolabium Planum*. It also implies that the Commune wanted only specific individuals commemorated on the walls by their specific rising degrees on a specific date and time.⁸⁹ Da Nono, however, the eyewitness account of the time, referred to ‘the twelve heavenly signs and seven planets with their respective properties/qualities’⁹⁰ and not to particular individuals active in his community. A number of extant/surviving horoscopic ceilings reveal how a horoscope was depicted in fresco when the intention by artists and commissioners was to create an image that *did* depict a precise moment in time: the Old Sacristy of San Lorenzo, whose fresco represents a horoscope dated to 6 July 1439 at about 12 noon (Fig.8);⁹¹ the decoration of the vault of the Camera dello Zodiaco of Federico II Gonzaga;⁹² and the horoscope tile in the Sala Bologna, Vatican Palace 1575.⁹³ Scholars have recreated these ceilings astronomically and astrologically and understand that they reflect the skies at particular times and dates. Other ceilings, such as that in the Villa Farnese at Caprarola (Fig.9),⁹⁴ and that in the Sala Bologna, Vatican Palace, depict a sky map frescoed within a large central oval projecting the complete celestial sphere. This does not, however, seem to be how the images of the Salone are being deployed.

⁸⁹ For example, Barzon wrote the following in explaining image 8A (his numbering) in the Salone scheme which he described as ‘Topolino in a solaio’ (‘Little mouse in an attic’): ‘A small astrological treatise of the title ‘Astrolabium planum’ brings together 360 celestial images from astrology, one for every degree, divided into 12 months of 30 degrees each. Each of these images expresses a natural inclination with which each person who is born on that day becomes endowed. This natural inclination comes from the influence of the Sign or the Planet, if the applied influence from it is of the same kind; sometimes, however, it is contrasted, when the influence of the Sign or the Planet is opposed to it. Amongst the ‘images’ this one can be summarised as follows: ‘The king of the rats who lies under the roof in its nest’. It means: ‘He who wishes to remain in his house.’ The person who is therefore born on that day in which in the sky is marked with the image of the mouse in the attic is born with natural and calm inclinations: but being a man of the month of Mars, the god of the war, the man’s calm inclination will be driven towards conflict against his will.’

⁹⁰ da Nono, ‘Visio Egidij Regis Patavie’, p.20.

⁹¹ Patricia Fortini Brown, ‘Laetentur Caeli: The Council of Florence and the Astronomical Fresco in the Old Sacristy’, *Journal of the Warburg and Courtauld Institutes* 44(1981), 176-180, p.177. James Beck, ‘Leon Battista Alberti and the “Night Sky” at San Lorenzo’, *Artibus et Historiae* 10, no. 19 (1989), 9-35, pp.13-14.

⁹² Kristen Lippincott and Rodolfo Signorini, ‘The Camera dello Zodiaco of Federico II Gonzaga’, *Journal of the Warburg and Courtauld Institutes* 54(1991), 244-247.

⁹³ Emily Urban. ‘*The Sala Bologna in the Vatican Palace: Art and Astronomy in Counter Reformation Rome.*’ Unpublished PhD dissertation, Rutgers University, 2013.

⁹⁴ Loren Partridge, ‘The Room of Maps at Caprarola, 1573-75’, *The Art Bulletin* 77, no. 3 (1995), 413-444.

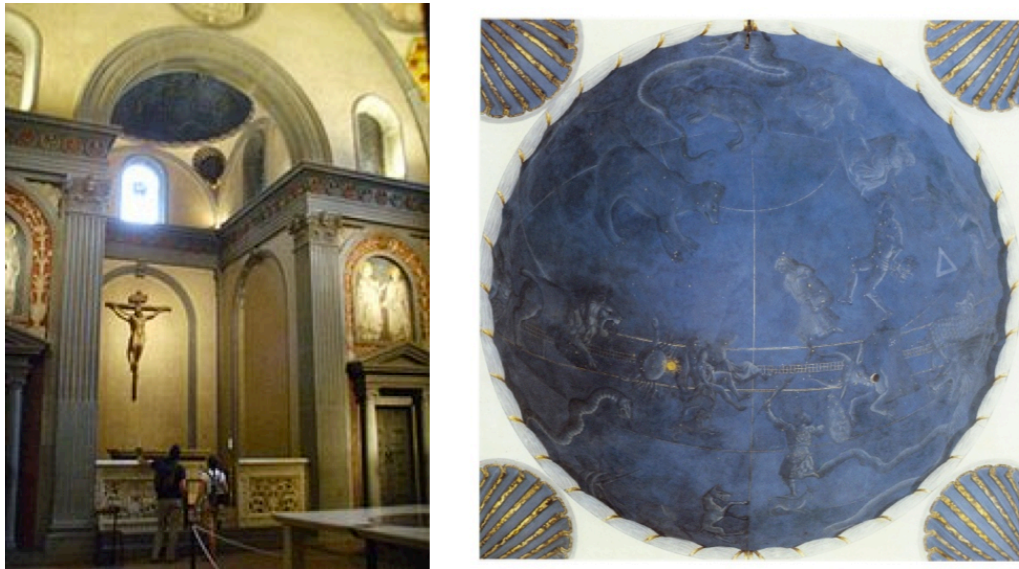


Figure 8. The altar area (*scarsella*) of the Sacristia Vecchia in Florence's San Lorenzo (*left*) and the painted sky in the dome above *scarsella* (*right*). Beck attributes this to Leon Battista Alberti sometime between 1435 and 1439. Heilbron dates this to 6 July 1439 around 12 noon (Council of Florence).



Figure 9. The ceiling of the Room of Maps (Sala del Mappamondo) Villa Farnese at Caprarola showing a sky map frescoed within a large central oval projecting the complete celestial sphere, Giovanni de' Vecchi, late 1560s. *Image*: ARTstor.

Additionally, using the *Astrolabium Planum* did not offer an explanation for the religious images. Putting this historical argument to one side, and rather than falling back on the well-ploughed field of using the *Astrolabium Planum*, my approach is to return to the instrument of the day, the astrolabe, and its ability to produce a skymap, along with the awareness of the medieval worldview which was astrologically underpinned.

My methodology of research

After my initial visit to the Salone in November 2007 I obtained most of the images of the fresco scheme in low-resolution colour from Alinari in Florence, Italy. I joined as many of the images as I could electronically using software and then printed out the images and combined them on paper to form the four walls of the Salone to a scale of approximately 1:30. I then labelled each image according to Barzon,⁹⁵ Fantelli and Pellegrini,⁹⁶ and Rigobello and Autizi⁹⁷ in order to understand their logic for the scheme and each of the images. Barzon distinguished the scheme by numbering the top register A, the middle register B, and the lower register C. He then numbered each column beginning with 1 in the south-east corner and moving in a clockwise direction. Thus each image has a column number and a register notation. I am using this same labelling system.

For my second research period in Padua in July 2010 I spent a week photographing the complete Salone fresco scheme image by image in high resolution so that I could work with them individually in close-up on my computer. The images were shot on a Canon 30D using a zoom lens in RAW resolution.⁹⁸ I have maintained the upward perspective in the reproduction of the photographs within this thesis rather than correcting them as, I contend, that would have been the view of the first spectators in the Salone.

I used library and archive searches for secondary supporting art historical materials, and sought the astrological works that were said to have informed Pietro d'Abano's thinking. More will be written of d'Abano in chapter 1 when considering the people involved in creating the fresco scheme.

I reviewed previous scholars' work on the scheme, and decided to take a fresh approach starting from the work of da Nono and his statement that the Salone images contained 'the twelve heavenly signs and seven planets with their qualities'.⁹⁹ (These relate to the 12

⁹⁵ Barzon, *Gli Affreschi del Salone in Padova*.

⁹⁶ Pier Luigi Fantelli and Franca Pellegrini, eds. *Il Palazzo della Ragione in Padova*. Verona: Cierre Edizioni, 2000.

⁹⁷ M. Beatrice Rigobello and Francesco Autizi, *Palazzo della Ragione di Padova. Simbologie degli astri e rappresentazioni del governo* (Padova: Il Poligrafo, 2008).

⁹⁸ Fieldwork was conducted by myself and assisted by Bernadette Brady in Padua 27–29 July 2010. Thanks to Nick Williams for advice on the photographic technical requirements. Grateful thanks also to Davide Banzato, Direttore Musei e Biblioteche del Comune di Padova, for permission to photograph the Salone images.

⁹⁹ da Nono, 'Visio Egidij Regis Patavie', p.20.

horoscope signs with which most of us are familiar in everyday culture now). Having located these zodiac signs and planets clearly identifiable in the middle register of the scheme, using the sky as a primary document and with the help of astronomical software,¹⁰⁰ I recreated the night sky for the latitude of Padua in 1309 for each month of the year, generating sky maps and celestial cartography, as would have been done using an astrolabe. The actual position of the sun amongst the stars can be determined by observing the stars (i) rising or setting before the sun rises, (ii) rising or setting after the sun sets, or (iii) culminating at midnight when the sun is on the nadir.¹⁰¹ Thus I constructed the night sky for these three different views for each of the twelve months using as my sky reference point the moment when the sun ingressed (entered into – see glossary for expanded definition) each zodiac sign, as would have been done using an astrolabe. Returning to the fresco scheme and working with the reference points of the zodiac signs and the constellation images, I then looked for a fit between the images of the top register of the scheme and the celestial cartography of the night sky for each month of the year. My next step was to find a consistent sequencing amongst the fresco images of the middle and lower registers of the scheme and that process is discussed in chapter 1. I then considered each image in terms of its planetary qualities as informed by the astrology of Ibn Ezra, as well as that of al-Qabīṣī.

As my research progressed I became interested in the unique and distinctive orientation of the building, and whether the corners of the building were oriented to any particular seasonal phenomena, such as sunrise or sunset positions on the horizon for either solstice or equinox. My third research period in Padua in July 2012 focused on taking measurements of the building and the results are contained in chapter 1, with full archaeoastronomical field notes written up in Appendix 4.

As scholars moved further away in time from the cosmology that shaped the images of the Salone fresco scheme, so they understood its meaning less and less. In the nineteenth and

¹⁰⁰ Starlight is a virtuoso astronomical software program created by Bernadette Brady with mathematician Sarah Ashton. It contains a planetarium especially designed for astrologers so they can learn about, find and name the stars in the sky through images, myths and constellations. It contains a full catalogue of every star visible to the naked eye. Based on the Yale Bright Star Catalogue, it includes all of Ptolemy's 1100 stars, and also includes substantial additions from Richard Hinckley Allen's masterwork on star names. Starlight contains every named star (over 350) as well as every other star that can be seen in the night sky, over 9000 stars in all. Starlight takes into account precession (see glossary).

¹⁰¹ Ptolemy's *Almagest*, Book VIII, Chap. IV.

twentieth centuries there was a willingness to point to the scheme and consider that some images may have been changed, moved, or simply missed out. This line of reasoning has not helped scholars to gain an understanding of the scheme's intention. We draw closer perhaps to Giotto's world if we step back from this limitation and take as a foundation stone the idea that the images do hold intent as they are located now on the walls and can reveal that intent if we focus on them and not try to find a counterpart in a book that has no relevance to the scheme. This is also part of my methodology.

Overview of the chapters

In addition to this introductory chapter, this thesis consists of:

Chapter 1 - The Fresco Scheme Itself and the People who Brought It into Manifestation

This chapter introduces the three people whose input shaped the Salone scheme — Fra Giovanni degli Eremitani—the architect; Pietro d'Abano—the astrological advisor; and Giotto di Bondone—the painter. Various scholars, unable to make sense of the pattern of the images, have suggested that the scheme has been altered over time, through restoration by a culture that no longer understood the original intention. These scholars offered their own version of how the scheme could make sense. This thesis suggests that what is seen on the walls now has meaning and intention in its own right without alteration and that meaning and intention can be traced back to its originators c.1309 via the design of the scheme, its layout in terms of the astrological year, the pattern of Labour of the Month—zodiac sign—planet—saint within each section of the scheme, and finally ascertaining where physically in the Salone the scheme begins.

Chapter 2 – The Sun and the Moon - The Two Lights

This chapter considers the images that make up the area of the Salone fresco scheme connected with the Sun and the Moon. These are deliberately grouped together since the contiguity of the two luminaries at the southwest corner of the Salone, I suggest, anchors the layout of the rest of the scheme. This chapter also determines the pattern for my investigation of the scheme, first considering the seasonal calendrical sky cartography of each section of the wall, followed by the astrology reflected in the daily lives of the Paduan community.

Chapter 3 – Mercury rules Gemini and Mercury rules Virgo

This chapter considers the images that make up the area of the Salone fresco scheme connected with Mercury.

Chapter 4 – Venus rules Taurus and Venus rules Libra

This chapter considers the images that make up the area of the Salone fresco scheme connected with Venus.

Chapter 5 – Mars rules Aries and Mars rules Scorpio

This chapter considers the images that make up the area of the Salone fresco scheme connected with Mars.

Chapter 6 – Jupiter rules Sagittarius and Jupiter rules Pisces

This chapter considers the images that make up the area of the Salone fresco scheme connected with Jupiter.

Chapter 7 – Saturn rules Capricorn and Saturn rules Aquarius

This chapter considers the images that make up the area of the Salone fresco scheme connected with Saturn.

Chapter 8 - ‘Corpus Christi’ and St Thomas Aquinas.

This chapter investigates the set of images along the south wall that contains a religious theme. Close examination of the images suggests that they may be connected with the Feast of Corpus Christi. This, I contend, offers a reason as to why the images may have been placed in this area of the Salone seasonally and opens a discussion regarding the connection of the Salone fresco scheme with Saint Thomas Aquinas and his Aristotelian-theological philosophy.

Chapter 9 - Conclusion

This chapter draws together the project’s arguments, and presents a discussion of the results and conclusion of the research project.

Chapter summary

This chapter focused on defining my research project, the investigation of the fresco scheme of 319 images across three registers of the first floor Salone of the Palazzo della Ragione in Padua, Italy. The chapter placed my experience as insider knowledge. It then considered the primary sources being used in the research and examined the previous work in the field. The chapter then introduced my methodology of research, and completed with an overview of the chapters included in this thesis.

Chapter 1 introduces the three men involved in bringing the Salone fresco scheme to fruition, the history of the Palazzo della Ragione and its associated repainting and the underlying cosmology that contributed to the imagery on the wall. It then examines the layout, design and astrological patterns on the walls. It looks in particular at why the planets are depicted with rays, considers whether there has been any precedence for the scheme, and finally, where the scheme sits in terms of Giotto studies.

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