

# Simplicity of Faith, Intuition and Giordano Bruno

Nicolas Steno's Florentine Diary and his Philosophy Lessons with Ferdinando III de' Medici. New Insights from BNCF, Gal. 291\*

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## I. Introduction

Regarding sources, the anatomist and father of modern geology Nicolas Steno (1638-1686) is one of the best well-documented scientists of the Scientific Revolution. Since 1687, his tomb has been situated in the Florentine Basilica of *San Lorenzo*, the burial place of the Medici.<sup>1</sup> Steno's unpublished scientific papers form part of the *Biblioteca Nazionale Centrale di Firenze* with the call number *Gal. 291*.<sup>2</sup> This considerable material can shed more light on Steno as philosopher and scientist. The present paper has a threefold aim: 1) an introduction into Steno's hitherto unknown diaries, covering the December week of his Confirmation after his conversion from Lutheranism to the Roman Catholic faith on November 7, 1667, 2) an evaluation of Steno's

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1 Steno died in Schwerin on November 25, 1686 st.v. = December 5, 1686 st.n. If not indicated otherwise, the Gregorian calendar (st.n.) is used in the following. Concerning the tomb's history and its present state cf. F. Sobiech, »The 'Capella Stenoniana' in Florence: The tomb of Blessed Niels Stensen (1638-1686),« in *Archivos de Cardiología de México* 85:1 (2015), p. 73-76; F. Sobiech, »Science, Ethos, and Transcendence in the Anatomy of Nicolaus Steno,« in *The National Catholic Bioethics Quarterly* 15:1 (2015), p. 107-126, here 110-112.

2 Biblioteca Nazionale Centrale di Firenze (BNCF), Gal. 291: »Scritti di Niccolò Stenone«.

reading habits regarding two philosophical books, 3) his philosophical stance and method as preceptor, i.e. teacher of the Florentine heir to the throne of the Grand Duchy of Tuscany, Crown Prince Ferdinando III de' Medici (1663-1713)<sup>3</sup>.

Steno's papers are written on received letters, sheets of note paper and scraps. They were catalogued in the 19<sup>th</sup> century under the *Collezione galileiana*, the manuscripts of Galileo Galilei (1564-1642), with the *Posteriori di Galileo, Accademia del Cimento*, i.e. the scholars in the time after Galilei who were not his direct pupils. Though the Steno scholar Gustav Scherz CSsR (1895-1971) came across them in 1946 and went through them for his edition of Steno's correspondence *Nicolai Stenonis epistolae et epistolae ad eum datae*, they remained unnoticed until now.<sup>4</sup> In contrast to a copy of Steno's geological *Prodromus* (Florence 1669) and his Copenhagen diary *Chaos* (1659) they remain, with some exceptions, unedited from folio 76 onwards.<sup>5</sup> Without any

3 Born on August 9, 1663. On him, but without analyzing his childhood, youth and education, see R. Spinelli, »Ferdinando di Cosimo III de' Medici, Gran Principe di Toscana 'di tutte le Scienze amatissimo, e di tutte le nobili Arti il Promotore': spunti e riflessioni per una biografia,« in R. Spinelli et al. (ed.), *Il Gran Principe Ferdinando de' Medici (1663-1713). Collezionista e mecenate*, Firenze: Giunti 2013, p. 34-71.

4 BNCF, Gal. 291, fol. 76<sup>r</sup>-245<sup>v</sup> (missing: fol. 125-135, 137-141). Some brief notices regarding the papers in G. Scherz (ed.), *Nicolai Stenonis epistolae et epistolae ad eum datae [...] cum prooemio ac notis Germanice scriptis. Tomus posterior*, Copenhagen: Nyt Nordisk Forlag 1952, p. 907; G. Scherz (ed.), *Johann von Rosen. Erinnerungen an Msgr. Niels Stensen. Einleitung und Übersetzung*, Hildesheim: Lax 1962, p. 14-15, 56<sup>16, 22, 23</sup>; F. Sobiech, *Herz, Gott, Kreuz. Die Spiritualität des Anatomen, Geologen und Bischofs Dr. med. Niels Stensen (1638-86)*, Münster: Aschendorff 2004, p. 11<sup>50</sup>.

5 Cf. G. Scherz's posthumous biography on Steno in English translation by T. Kardel and P. Maquet (eds.), *Nicolaus Steno: Biography and Original Papers of a 17th Century Scientist*, Berlin: Springer 2013, p. 46 (fig.), 222 (fig.). In the following mistakes in G. Scherz's references are corrected; furthermore he mostly left out erased passages: BNCF, Gal. 291, fol. 79<sup>r</sup>, 80<sup>r</sup> (= partially T. Kardel, *Steno. Life, Science, Philosophy with Niels Stensen's Prooemium or Preface to a Demonstration in the Copenhagen Anatomical Theater in the Year 1673 and Holger Jacobaeus, Niels Stensen's Anatomical Demonstration no. XVI and other texts translated from the Latin [...]*, Copenhagen: The Danish National Library of Science and Medicine 1994, p. 87<sup>221</sup>), 88<sup>r</sup>-90<sup>v</sup> (= Scherz, *N. Stenonis epistolae*, vol. 2, Add. 24 [1684? Hamburg?], p. 949-951), 112<sup>v</sup> (= G. Scherz [ed.], *Nicolai Stenonis epistolae et epistolae ad eum datae [...] cum prooemio ac notis Germanice scriptis. Tomus prior*, Copenhagen: Nyt Nordisk Forlag 1952, E 148, p. 374-375), 122<sup>r</sup> (= *ibid.*, E 53, p. 220), 145<sup>r</sup> (= *ibid.*, E 52, p. 219-220), 155<sup>r</sup>, 156<sup>v</sup> (= *ibid.*, E 47, p. 214-215), 157<sup>r</sup> (= partially Scherz, *Erinnerungen*, p. 56<sup>23</sup>), 192<sup>r</sup>-203<sup>v</sup> (= G. Scherz [ed.], *Steno. Geological Papers*, trans. A. J. Pollock, Odense: Odense University Press 1969, p. 249-267), 205<sup>r</sup> (= Scherz, *N. Stenonis epistolae*, vol. 1, E 109, p. 311), 208 (= partially *ibid.*, E 120, p. 322-323), 208<sup>v</sup>, 209<sup>r</sup> (= *ibid.*, E 25, p. 192-193), 212<sup>r</sup>, 194<sup>v</sup> (wrong pagination: a second page 194 after 212) (= *ibid.*, E

chronological or topical order, they approximately span the months after Steno's Paris *Discours* on the anatomy of the brain (ca. February 1665) up to his last years in Hamburg and Schwerin. They also contain hitherto unknown Florentine captions concerning a dissection of a fish with its ovaries (ca. 1666/67), anatomical and optical figures both appearing occasionally in the notes and concentrated on some pages.<sup>6</sup> Apart from exact dates, it is possible to date the papers with the help of e.g. scattered envelopes, coats of arms and one previously unpublished letter of Steno's hand.<sup>7</sup> Containing titles and excerpts of books, they deal with science and the relationship between science and faith.

The papers also contain some dated autobiographical passages: 1) two pages, the first of which was written in Paris from March to May 1665, and the second of which, with an interruption of four months, in France from October/November 1665,<sup>8</sup> 2) one page written in Tuscany from December 6-13, 1667,<sup>9</sup> and 3) another Tuscan page of October

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115, p. 318), 213<sup>r</sup>, 197<sup>v</sup> (*wrong pagination: a second page 197 after 215*) (= *ibid.*, E 28, p. 194-195), 224<sup>r</sup> (= Scherz, *Geological Papers*, p. 47<sup>159</sup>), 224<sup>v</sup> (= Scherz, *N. Stenonis epistolae*, vol. 1, E 49, p. 216), 225<sup>r</sup> (= *ibid.*, E 31, p. 197).

6 BNCF, Gal. 291, fol. 76<sup>v</sup>, 77a<sup>v</sup>, 85<sup>r</sup>-86<sup>v</sup>, 87, 98<sup>r</sup> (on muscles), 101<sup>r</sup>-102<sup>v</sup>, 112<sup>r</sup>, 136, 157, 159<sup>r</sup> (captions, anatomical dissection of a fish), 165<sup>v</sup>, 172<sup>r</sup>, 190<sup>r</sup>.

7 It might be possible to ascribe them to still existing letters: BNCF, Gal. 291, fol. 77a<sup>r</sup> (to Mr. Steno in Florence, in Italian), 87<sup>v</sup> (to bishop Steno in Hamburg, in Italian, ca. mid-September 1683-December 11, 1685, coat of arms removed), 90<sup>v</sup> (to bishop Steno in Hamburg, in Italian), 108<sup>v</sup> (to bishop Steno in Hamburg, in Italian, with coat of arms), 117<sup>r</sup> (draft of a letter to an unknown »Vir Clarus«, a review of the latter's writings by Steno in terms of the Christian faith), 117<sup>v</sup> (to Mr. Steno in Florence, in Italian, before 1672, coat of arms fallen off), 119<sup>r</sup> (Florence, before 1672; Steno's note regarding the Florentine librarian Antonio Magliabechi as owner of books which Steno had borrowed for his own theological publications, cf. *ibid.*, fol. 119<sup>v</sup>), 121<sup>v</sup> (fictive address of a letter; calligraphical try of Steno's hand), 167<sup>v</sup> (prefabricated envelope, to Mr. Steno in Florence, in French, with coat of arms), 168<sup>r</sup> (partially preserved, to Mr. Steno [?] in Florence, in French), 169<sup>r</sup> (to bishop Steno in Hamburg, in Latin, with coat of arms), 172<sup>v</sup> (to bishop Steno in Hamburg, in Italian, with coat of arms), 191<sup>v</sup> (letter paper, without address or recipient, with coat of arms), 214<sup>v</sup> (»copy« [copia] of a letter of December 29, 1675, concerning »Giuseppe Almerigo dello Stato di Venetia«, not from Steno's hand), 228<sup>v</sup> (to bishop Steno in Hamburg, in Italian, with coat of arms), 239<sup>v</sup> (beginning of a letter of Steno's hand with a cross and the address »Mademoiselle P«, not finished, ca. after 1677, Germany), 240<sup>v</sup> (to bishop Steno in Münster, in Italian, with coat of arms), 242<sup>v</sup> (to bishop Steno in Münster, in Italian, with coat of arms).

8 BNCF, Gal. 291, fol. 80 (March to May 1665, cf. »Anno 1665 Martis« in 80<sup>r</sup>, »Aprilis« and »Maij« in 80<sup>v</sup>), 79 (November 1665, cf. »Novembre« in 79<sup>v</sup>). Concerning Steno's stay in Paris and his subsequent travels through France in the autumn of 1665 cf. Kardel and Maquet, *Steno*, p. 121-133, 136-140.

9 BNCF, Gal. 291, fol. 136.

1668.<sup>10</sup> In No. 2) astrological signs signify the days of the week, just as in the *Chaos* diary.<sup>11</sup> The pages are clear evidence that Steno proceeded after 1659 with making daily notes, probably even before having done his M.D. in Leiden and his leaving Denmark in the autumn of 1664 to commence his postdoctoral research. These pages are part of the »diaries«, which he mentions in his papers from the 1670s as having at hand.<sup>12</sup>

## II. A fragment of Steno's Florentine diary (December 6–13, 1667)

The page written in December 1667 – year, month and week can be precisely deduced from its course of events – is especially instructive. It gains importance in view of the fact that direct sources from Steno's research expedition through France in 1664/65 until the end of his second Italian year 1667 are very scarce.<sup>13</sup> It is part of a diary the most pages of which seem to be lost, and it offers an insight into a microcosm in Florence, from Monday, December 6, 1667 – two days before Steno's Confirmation on December 8, 1667 – to Monday, December 13, 1667: names, places, thoughts which he wrote down after personal encounters, all interspersed with spiritual and scientific notes. Its languages are Latin, Italian and French. The page begins on Monday, December 6, 1667, with Steno's spiritual father, Carlo Filippo Sfondrati CRSP (1636–1680)<sup>14</sup>, with whom he had conversations »in the morning« culminating in the aphorism »whoever once has experienced true virtue despises all other things«.<sup>15</sup> On Tuesday, December 7, Steno was on a scientific excursion in Leghorn in quest of oysters. It is very likely that Steno in the course of that day travelled back to

<sup>10</sup> *Ibid.*, fol. 76.

<sup>11</sup> A. Ziggelaar (ed.), *Chaos. Niels Stensen's Chaos-manuscript Copenhagen, 1659. Complete edition with Introduction, Notes and Commentary*, Copenhagen: The Danish National Library of Science and Medicine 1997, p. 16-17.

<sup>12</sup> BNCF, Gal. 291, fol. 150<sup>v</sup>: »diaria«.

<sup>13</sup> Concerning Steno's inner conversion to the Roman Catholic faith in Florence on November 2, 1667 cf. in detail Sobiech, *Herz, Gott, Kreuz*, p. 39-68.

<sup>14</sup> Bishop of Volterra since 1677; on him, see S.M. De Ruggiero and V.M. Colciago (eds.), *Menologio dei Barnabiti dal 1539 al 1976. Compendio*, Roma: Edizioni dei padri barnabiti <sup>2</sup>1977, p. 55-61, 165.

<sup>15</sup> BNCF, Gal. 291, fol. 136<sup>r</sup>, left column: »Mane [...] chiunque una volta ha saggiato la virtù vera, ogni altra cosa sprezza.« – Steno uses the preposition »cum« (with) to indicate that he had met personally with somebody.« – All translations are by the author.

Florence due to his appointment with the Florentine nuncio Lorenzo Trotti († 1700)<sup>16</sup> on Wednesday, December 8, Feast of the Immaculate Conception of the Blessed Virgin Mary. On only December 8 is the astrological sign missing. Back in Florence, Steno occasionally met Grand Duke Ferdinando II de' Medici (1610–1670). They greeted, and Ferdinando asked in French, apparently alluding to Steno's date: »Do you have news? This here is not the appropriate place to speak with each other, nevertheless come at another time«. <sup>17</sup> On December 8 Steno confirmed his conversion and received the sacrament of Confirmation by Trotti. In the evening Steno met the grand duke again, and they spoke »on various things, and on the simplicity [of faith] in the presence of which, against my will, I will praise myself« (cf. Rom 5:3), and finally he told Steno that »to preserve me in the Catholic faith other persons will not be necessary, but the consideration of the blessings of God«. <sup>18</sup> A comparison of the term »simplicity [of faith]« – opposed to heresy – with contemporary theological authors like the Utrecht Remonstrant physician Timan van Gessel (1591–after 1666) and his *Simplicitas fidei Christianae* (Utrecht: Zylius <sup>2</sup>1666 [1667]) would be worthwhile. <sup>19</sup> Still on the same day Steno met Lavinia Arnolfini, *née* Cenami (1631–1710), and her husband Silvestro Arnolfini di Attilio (1604–1685), ambassador of the Republic of Lucca in Florence. Their house, a societal meeting point, was frequented by Steno, and Mrs. Arnolfini had been one of Steno's dialogue partners before his inner, spiritual conversion on November 2, 1667. Finally Steno met with the chamberlain Bruto degl'Anibaldi de' Signori della Molara († 1685). <sup>20</sup>

16 Kardel and Maquet, *Steno*, p. 200–201. On Trotti, see C. Weber (ed.), *Legati e governatori dello Stato Pontificio (1550–1809)*, Rome: Istituto Poligrafico e Zecca dello Stato – Libreria dello Stato 1994, p. 954.

17 BNCF, Gal. 291, fol. 136<sup>r</sup>, right column: »Vous faites des nouvelles[?] Ce n'est pas icy le lieu de vous en parler, vous venez bien un autre fois«.

18 *Ibid.*: »de variis[.] de simplicitate [sc. fidei] ad quem me invitum gloriabor, non opus aliis ad conservandum me in fide catholica quam consideratio beneficiorum Dei«.

19 Timan Gessel, M.D. published his irenic *Simplicitas fidei Christianae, sive synopsis locorum S. Scripturae, patrum & recentiorum theologorum, quibus demonstratur, quatenam sint ad salutem creditu necessaria & sufficientia* (Utrecht: Zylius <sup>2</sup>1666 [1667]; a copy of that edition at the *Biblioteca Angelica*, Rome) laying emphasis on the Bible and the Church Fathers. Steno before his conversion studied the Bible in its original languages and the Church Fathers in the *Biblioteca Medicea Laurenziana*, Florence, cf. Kardel and Maquet, *Steno*, p. 191. On van Gessel, see G.A. Lindeboom, *Dutch medical biography. A biographical dictionary of Dutch physicians and surgeons 1475–1975*, Amsterdam: Rodopi 1984, col. 665–666.

20 BNCF, Gal. 291, fol. 136<sup>r</sup>, right column: »Tunc cum Lavinia, e marito ejus, cum Molara«. On the Arnolfinis, see G. De Caro, »Cenami, Lavinia Felice,« in *Dizionario*

Geological notes on the surface of the Earth – the sea and the formation of new land masses – follow.<sup>21</sup> On Thursday, December 9, in the morning Steno met again with Sfondrati, and he noted: »vivid act of faith, of hope, and charity; examining all the actions of one's life, and where, abiding, one finds more contentment; the conformity of one's will with the will of God, and the devotion to the most Blessed Virgin [Mary]«. <sup>22</sup>

On Friday Steno seemed to be exhausted; blank space without entry follows the astrological sign. Then, on Saturday, December 11, he mentions his letters to the Danish king Frederick III (1609-1670), his then cabinet secretary Peter Schumacher Griffenfeld (1635-1699) and his own sister Anne Steensdatter Kitzerow (ca. 1635-1703).<sup>23</sup> Steno wrote these – probably lost – letters in reply to Frederick III's order to return to Denmark, which had already reached him on December 8, 1667.<sup>24</sup> On Sunday, December 12 – Leopoldo de' Medici (1617-1675) was created cardinal –, Steno from midday on was with the Arnolfinis; their topic was »the way of living piously and of living in conversation«. <sup>25</sup>

On Monday, December 13, Steno was »at lunch with [Francesco] Redi« (1626-1698) – who appreciated Steno as philosopher, anatomist and mathematician – <sup>26</sup>, and in the evening he was in company with the Bologna astronomer Giovanni Domenico Cassini (1625-1712) – who on June 6, 1667 had finished observing the spots of Venus –, Bruto degl'Anibali de' Signori della Molara, and Valerio Chimentelli (1620-1669), professor of the Greek language in Pisa and preceptor of the young Cosimo III de' Medici (1642-1723), and again Redi.<sup>27</sup> There-

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*Biografico degli Italiani* 23 (1979), p. 498-499. On Molara, see W. Bernardi, *Il paggio e l'anatomista. Scienza, sangue e sesso alla corte del Granduca di Toscana*, Florence: Lettere 2008, p. 67-68, 79<sup>3</sup>, 120.

21. BNCF, Gal. 291, fol. 136<sup>r</sup>, right column and *ibid.*, fol. 136<sup>v</sup>, left column.

22 *Ibid.*, fol. 136<sup>v</sup>, left column: »vivo atto di fede, cred[*discontinued*] di speranza, di carita[:] esaminare tutti gli atti di vita, e dove piu si trova contentezza fermatasi. la conformità alla volontà di Dio e divozione alla beatissima virgine.«

23 *Ibid.* Steno indeed suffered from headaches in the wake of his conversion, see Kardel and Maquet, *Steno*, p. 203-204.

24 Maquet and Kardel, *Steno*, p. 203.

25 BNCF, Gal. 291, fol. 136<sup>r</sup>, left column: »a meridiis cum legato et uxore ejus. de modo pie vivendi et vivendi in conversazione«. On Leopoldo, see A. Mirto, »Medici, Leopoldo de',« in *Dizionario Biografico degli Italiani* 73 (2009), p. 106-112, here 109.

26 In a letter of March 30, 1667 to Valerio Inghirami, see F. Redi, *Lettere*, vol. 3, Florence 1795, p. 5-6.

27 BNCF, Gal. 291, fol. 136<sup>r</sup>, left column; the complete passage reads: »Cum Redi ad prandium. vesperi cum Cassini, Molara, Chimentelli[,] Redi[?] p[?]Jellegrini: de patre ejus etc.« The name »Redi« and the first letter of »pellegrini« are damaged by water, and it is not quite clear what Steno meant with the Italian noun »pilgrims«

fore Steno did not follow Molara's suggestion to leave for the winter residence in Pisa already on December 9, 1667 to undertake his – not specified – »visit of the conches«<sup>28</sup> the purpose of which is clear now: the continuation of his stay in Livorno from Tuesday.

### III. Steno's philosophical method as preceptor of Ferdinando III de' Medici

Steno, who, some years later (1672-1674), on royal order had worked as anatomist in Copenhagen, arrived in Florence at the turn of the years 1674/75.<sup>29</sup> Already at the end of 1671 Cosimo III de' Medici, since 1670 successor of Ferdinando II, had asked him to become one of the teachers of his eldest son, Ferdinando III.<sup>30</sup> On July 5, 1674, still in Copenhagen, Steno had written to Griffenfeld, now Danish Lord Chancellor – the animating spirit behind his appointment to Copenhagen – that he was assigned by Cosimo III to teach »la philosophie naturelle« (natural philosophy) to the crown prince.<sup>31</sup> But Cosimo made it clear from the start that Steno should teach the crown prince »Christian philosophy« (philosophia Christiana) and specified that Steno should remind Ferdinando III »that there was another first ruler to whose authority all princes are subject«.<sup>32</sup> Due to the difficult confessional situation for Catholics in Lutheran Denmark, Steno in the wording of his letter to Griffenfeld perhaps intended taking up again the non-denominational

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and the Latin words »on his father etc.« Redi had called Steno a »pilgrim of the world« (pellegrino del mondo), see Redi's letter of April 11, 1667 to Mrs. Arnolfini: F. Redi, *Opere*, vol. 8, Milan: Società Tipografica de' Classici Italiani 1811, p. 321-322, here 322. On Cassini, see U. Feist, *Sonne, Mond und Venus. Visualisierungen astronomischen Wissens im frühneuzeitlichen Rom*, Berlin: Akademie 2013, p. 203. Chimentelli probably told Steno about *San Piero in Grado* in Pisa and its inscription of the milecolumn, because Steno mentions »S. Piero in grado« on December 7, 1667: BNCF, Gal. 291, fol. 136<sup>v</sup>, right column. On Chimentelli and *San Piero in Grado*, see M.A. Giua, »Valerio Chimentelli (1620-1669), antiquario fiorentino, professore di Greco all'Università di Pisa sotto Ferdinando II de' Medici,« in Concetta Bianca et al. (eds.), *Studi di antiquaria ed epigrafia*, Rome: Edizioni di storia e letteratura 2009, p. 191-222, here 207.

28 Letter of December 8, 1667: Scherz, *N. Stenonis epistolae*, vol. 1, E 28, p. 194-195, here 195, l. 1-2: »visita de' nicchi«.

29 Kardel and Maquet, *Steno*, p. 290-291, 325. – The New Year 1677 in Florence began on March 25, 1677 (Annunciation style).

30 Scherz, *N. Stenonis epistolae*, vol. 1, E 70, p. 254-255, l. 12-16.

31 *Ibid.*, E 95, p. 293-294, here 293.

32 *Ibid.*, E 120, p. 322, l. 32-38, here 34-35, 37-38: »la philosophia Christiana [...] che v'era un altro principe superiore alla di cui autorità stanno sottoposti tutti principi«.



natural-philosophical content of his public Copenhagen inaugural address as anatomist of January 29, 1673 st.v.<sup>33</sup>

One day in early 1675 Steno began his duty as preceptor at 6 o'clock in the evening.<sup>34</sup> He shared his task with other chosen men, e.g. Francesco Redi, Vincenzo Viviani (1622-1703) and the court theologian Giacomo Antonio Morigia CRSP (1633-1708). Steno's duties as preceptor were probably reduced after his ordination to the priesthood in the Florentine cathedral *Santa Maria del Fiore*, which took place with certainty on Holy Saturday, April 13, 1675.<sup>35</sup> Nothing is known concerning the other priest at the Florentine court Filizio Pizzichi (or Filippo Pizzighi) (1637-1705), whom Steno already had mentioned in a letter to Redi of February 4, 1667.<sup>36</sup> In his sermon on the virtues of a Christian prince – probably delivered at court in April 1677 before leaving for Rome on May 1, 1677 – , Steno explicitly stated: »I had spent all my efforts and all my time except for my spiritual duties [e.g. being a father confessor in the Florentine Theatine church of *San Gaetano*] on that duty alone.«<sup>37</sup>

33 Cf. F. Sobiech, *Radius in manu Dei. Ethos und Bioethik in Werk und Rezeption des Anatomen Niels Stensen (1638-1686)*, Münster: Aschendorff 2<sup>nd</sup> ed. 2014, p. 72-73.

34 In his letter (without date) to Vincenzo Viviani: Scherz, *N. Stenonis epistolae*, vol. 1, E 100, p. 300.

35 Archivio della Curia Arcivescovile di Firenze (ACAF), LC 16, fol. 109<sup>v</sup> (dimissorial letter, April 12, 1675). Steno's first mass was on April 14, 1675, cf. Scherz, *N. Stenonis epistolae*, vol. 1, p. 39-40; Sobiech, *Herz, Gott, Kreuz*, p. 75<sup>255</sup>; Kardel and Maquet, *Steno*, p. 326, 330; G.M. Cagni, »I Barnabiti a San Carlino,« in G. Trotta (ed.), *San Carlo dei Barnabiti a Firenze. Una chiesa ed un collegio all'ombra dei Granduchi e dell'Impero*, Florence: Comune di Firenze, Circoscrizione Uno (Centro Storico), and Collegio alla Querce dei padri barnabiti 1995, p. 1-14, here 11-12.

36 Scherz, *N. Stenonis epistolae*, vol. 1, E 22, p. 188-190, here 189, l. 8. On Pizzichi, see L. Tongiorgi Tomasi and P. Tongiorgi, »Il naturalista e il cappellano. Osservazione della natura e immagini 'dal naturale' in Francesco Redi,« in W. Bernardi et al., *Natura e immagine. Il manoscritto di Francesco Redi sugli insetti delle galle*, Pisa: ETS 1997, p. 29-47, here 32.

37 K. Larsen and G. Scherz (eds.), *Nicolai Stenonis opera theologica cum prooemiis ac notis Germanice scriptis. Tomus posterior*, Copenhagen: Nyt Nordisk Forlag 1947, Sermo 43, p. 360-364, here 364, l. 30-32: »omnem operam [...] omne tempus praeter spiritualia illi soli occupationi impenderim«. It is not possible to date this sermon, because as for time Steno only stated: »when the concern for the prince had been entrusted to me« (cum mihi principis cura demandata esset). That is valid both for Florence, ca. April 1677, and for Hanover, from ca. November 19, 1677, cf. Sobiech, *Herz, Gott, Kreuz*, p. 76, 79-80. – Paolo Carminati CRSP conveys an impression of the arduous task as preceptor at the Florentine court in 1680: M.P. Paoli, »Le strade del sapere: scuole di comunità, collegi, università, accademie,« in E. Fasano Guarini (ed.), *Il principato mediceo*, Firenze: Le Monnier 2003, p. 277-310, here 295.



### 1. The teacher of »*philosophia naturalis*«

In his sermon on the virtues of a Christian prince, Steno explicates in retrospect that during the last two years he had chosen for the prince the best study material.<sup>38</sup> When Steno began to teach, Ferdinando III was eleven years; when he ended his task, the prince was ca. 13 and a half years. Steno had to break his knowledge and his subject down into a number of steps considering the mental capacities of a child and, later, of an adolescent. Cosimo wished Steno to teach »a philosophical and a political subject«,<sup>39</sup> intending the complexity of natural science to be limited to a minimum necessary for the duties as a grand duke. Steno explained Cosimo's requests to the 13-year-old Ferdinando in retrospect at the end of his time in Florence in 1677.<sup>40</sup> As anatomist and natural researcher, Steno read and evaluated many books, made excerpts and added his own thoughts, unsolved problems and desiderata for the future, a method which he developed as early as in his Copenhagen *Chaos* diary. In this diary Steno decided to follow the methods of Francis Bacon (1561-1626) and René Descartes (1596-1650).<sup>41</sup> But Steno, in contrast to Bacon, did not so much center nature on mankind's needs, but rather stressed mankind's ability to mentally appropriate his environment in order to conduct research and to come to decisions.<sup>42</sup> Steno was an independent thinker relying on his own observations and advocating a plurality of methods in science. He instructed his students that way in Copenhagen in 1672-1674.<sup>43</sup> In a paper on science and faith of the 1670s, Steno wrote that »nature« is a »teacher« to man.<sup>44</sup>

### 2. The teacher of »*philosophia christiana*«

In the years 1677 to 1678, Lorenzo Magalotti (1637-1712), the Florentine natural scientist and former secretary of the *Accademia del Ci-*

38 Larsen and Scherz, *N. Stenonis opera theologica*, vol. 2, Sermo 43, p. 364, l. 30-32.

39 Scherz, *N. Stenonis epistolae*, vol. 1, E 120, p. 323, l. 8: »questi due capi filosofico e politico [...] l'uno, che io le insegnassi la philosophia Christiana, l'altro che io le facesse capire, che c'era un altro principe«.

40 *Ibid.*, l. 17-19.

41 Ziggelaar, *Chaos*, p. 124. Steno read the translation *De dignitate & augmentis scientiarum* [...] (Leiden 1645) of Bacon's *Of the proficience and advancement of Learning, divine and humane* (London 1605), cf. Sobiech, *Radius in manu Dei*, p. 34-35.

42 Exemplified with Bacon's *De sapientia veterum liber* (1609) in Sobiech, *Radius in manu Dei*, p. 58-60.

43 Concerning Steno's student Johann Valentin Wille (1651-1677) cf. Sobiech, *Radius in manu Dei*, p. 159-160.

44 BNCF, Gal. 291, fol. 99<sup>r</sup>-100<sup>v</sup> (without title), here 99<sup>v</sup>: »natura magistra«.

mento, had begun to write a treatise called *Concordia della Religione, e del Principato*, today preserved in the *Biblioteca Medicea Laurenziana* in Florence.<sup>45</sup> Magalotti's name occurs – though he was absent at that time – on the preserved page of Steno's 1667 diary.<sup>46</sup> Magalotti could meet with Steno again in the first months of the year 1675; from May 1675 until the end of 1677, he was Cosimo's ambassador in Vienna. However, Magalotti left his manuscript unfinished, since, as Eric W. Cochrane (1928-1985) judged from its chapter on the education of the prince, Magalotti would have realized that political philosophy »could never affect the real course of affairs«. <sup>47</sup> Furthermore, Magalotti's manuscript does not seem to be reminiscent of natural science.<sup>48</sup>

Steno prepared for his new task: He read a contemporary book on »Christian philosophy« by the Oratorian André Martin (1621-1695)<sup>49</sup>, until 1671 professor at *Notre-Dame-des-Ardilliers* in Saumur. Under the pseudonym »Ambrosius Victor« Martin published his *Philosophia christiana Ambrosio Victore theologo collectore, seu S. Augustinus de philosophia universim* (5 vol. Paris: P. Promé 1667, Paris: Frédéric Léonard <sup>2</sup>1671, 6<sup>th</sup> vol. Saumur: F. Ernou [1671] 1671), which is a compilation in 43 chapters of citations from Augustine of Hippo (354-430) in a Cartesian perspective. It is very probable that Steno read the volume during his time in Copenhagen (1672-1674), perhaps in the last months of the year 1674 with a view to his new task as preceptor in Florence.<sup>50</sup> In 1674 Martin was denounced for defending Jansenism by an unknown critic and subsequently was excluded from teaching by royal secret order.<sup>51</sup>

45 Biblioteca Medicea Laurenziana di Firenze (BMLF), Ms. Ashburn 1207. In the context of the late Tuscan Catholic »political science« see M. Fantoni, »Il »principe santo«. Clero regolare e modelli di sovranità nella Toscana tardo medicea,« in F. Rurale (ed.), *I religiosi a corte. Teologia, politica e diplomazia in antico regime. Atti del seminario di studi Georgetown University a Villa »Le Balze«*. Fiesole, 20 ottobre 1995, Rome: Bulzoni 1998, p. 229–248, here 241–242. On Magalotti, see C. Preti and L. Matt, »Magalotti, Lorenzo,« in *Dizionario Biografico degli Italiani* 67 (2006), p. 300-305.

46 BNCF, Gal. 291, fol. 136<sup>r</sup>, right column.

47 E.W. Cochrane, »The Failure of Political Philosophy in Seventeenth-Century Florence: Lorenzo Magalotti's 'Concordia della Religione e del Principato',« in A. Molho and J.A. Tedeschi (eds.), *Renaissance Studies in Honor of Hans Baron*, Florence: G.C. Sansoni 1971, p. 557-576, here 569-570.

48 I have looked through the whole manuscript BMLF, Ms. Ashburn 1207.

49 On him, see J. Lesaulnier, »Martin, André,« in J. Lesaulnier and A. McKenna (eds.), *Dictionnaire de Port-Royal*, Paris: Champion 2004, p. 722-724.

50 The page BNCF, Gal. 291, fol. 180 does not exhibit any signs concerning previous use.

51 F. Girbal, *L'affaire du P. André Martin a Saumur 1669-1675. Un Augustinien de l'Oratoire*, Paris: Librairie philosophique J. Vrin 1988, p. 24-30.

The sixth volume – separately published and added to the second edition of Martin's opus – bears the title *De anima bestiarum*, which Steno cites at the end of a densely-written page dedicated to the problem of the soul of animals.<sup>52</sup> Martin's opus is a blend of Augustine, trying to evince animals as »machines« which do not suffer by stating that Augustinian principles support the rejection of animal souls.<sup>53</sup> As to his methods, Martin stated that he would outline »not what he [i.e. Augustine] explicitly stated, but what necessarily results from nearly all his principles.«<sup>54</sup> Concerning the soul of animals, Steno on his page refers both to the authority of the Bible and to »human experience«.<sup>55</sup> On the basis of his experience in vivisections, Steno was convinced that animals do have – mortal – souls; he reflects upon the problem and finally mentions the »generation in human beings and animals« enabled by the soul.<sup>56</sup> By that, he obviously alludes to chapter 41 of Martin's opus dealing with the heart rate and generation;<sup>57</sup> especially since Steno had done research on that. Steno concludes, citing Martin's volume title: »Notabene, [decisive is] what in that field is proved necessary by the peculiar fundamentals of the doctrine itself, not what he defined without perhaps any more rigorous examination from the prejudices of human convention alone.«<sup>58</sup> Steno obviously was superior to mere theological speculation in the field of natural science.

### 3. Steno's philosophical learning programme for the young prince

In Scherz's edition of Steno's correspondence one finds conceptual notes for a cover letter, with which Steno intended to hand over his *Trattato di morale per un principe* to Ferdinando III at the end of his

52 BNCF, Gal. 291, fol. 180<sup>v</sup>: »Philosophiae Christianae Ambrosio Victore Theologo Collectore seu Sanctus Augustinus De anima bestiarum«.

53 Concerning the term »machine« (machina) see [A. Martin,] *Philosophiae Christianae Ambrosio Victore theologo collectore volumen sextum seu Sanctus Augustinus de anima bestiarum*, Saumur: François Ernou [1671], p. 219-227 (chapter 38), 228-237 (chapter 39). Cf. Girbal, *L'affaire*, p. 18-19.

54 [A. Martin,] *Sanctus Augustinus de anima bestiarum*, p. ã2<sup>v</sup>– 6<sup>r</sup> (Praefatio), here ã2<sup>v</sup>: »non quod expresse asseruit, sed quod ex omnibus fere ipsius principiis necessario consequitur.«

55 BNCF, Gal. 291, fol. 180<sup>v</sup>: »humana experientia«. Concerning Steno's vivisections see Sobiech, *Radius in manu Dei*, p. 56-57.

56 BNCF, Gal. 291, fol. 180<sup>v</sup>: »generatio in hominibus et bestiis«.

57 [A. Martin,] *Sanctus Augustinus de anima bestiarum*, p. 242-244.

58 BNCF, Gal. 291, fol. 180<sup>v</sup>: »NB. Scilicet quod ex praecipuis in hac materia ipsius doctrinae [erased: materiis] fundamentis necessarium eruitur, non quod ipse sine ullo fortassis severiori examine ex solis consuetudinis humanae praejudicii definivit.«

task as preceptor, in ca. April 1677. It contained, according to Steno's own words, »the most worthy things and those of higher utility in written form«.<sup>59</sup> The Italian version does not seem to be preserved, but in Steno's papers a fragment of a Latin preliminary draft with deleted and added passages has been preserved.<sup>60</sup> That this preliminary draft is indeed a precursor to the Italian treatise can – independent of its contents – be substantiated by the fact that the three theological catchphrases of the beginning – »immeasurability of God« ([Dei] immensitas), »power of God« ([Dei] potentia) and »God's perpetual concourse« ([Dei] concursus perpetuus) – are the same as those of the beginning of another page the notes of which are directly connected with Steno's teaching.<sup>61</sup> These catchphrases have to do with the ongoing relation between God and his creation.

In his sermon on the virtues of the Christian prince, Steno on the one hand follows the doctrine of divine right: He calls the prince the »vicar in temporal things«.<sup>62</sup> But Steno was on the other hand an anatomist, having a sure feeling for the dignity of the human body: The prince shall be aware »that he rules over human beings of the same species«.<sup>63</sup> The »truly Christian prince«<sup>64</sup>, so Steno in the Latin draft of his *Trattato di morale per un principe*, considers his littleness in the eyes of God, just as a water drop with respect to divine immensity, and looks at his subordinates as »his family of citizens«.<sup>65</sup>

For Steno the Fall of man is important for the theological description of man's state.<sup>66</sup> One could ask, so Steno in his treatise *Monumenta, Signa, Argumenta* (Monuments, Signs, Arguments) on the symbolic meaning of gemstones – delivered as a lecture or sermon during his time as preceptor – , whether before the Fall of man a more perfect, intuitive kind of communication and cognition had existed. Steno explains his thought with the art of reading, consisting not of deciphering single letters, but of grasping with one look the sense of whole words.

59 Scherz, *N. Stenonis epistolae*, vol. 1, E 120, p. 323, l. 6-7: »le piu digne cose e di major utilità in iscritto«. –Angelo Fabroni (1732-1803) still knew this treatise as a manuscript, Kardel and Maquet, *Steno*, p. 326.

60 BNCF, Gal. 291, fol. 194<sup>r</sup> (after 212<sup>v</sup>).

61 *Ibid.*, fol. 211<sup>r</sup> (on the ruler and justice) and *ibid.*, fol. 194<sup>r</sup> (after 212<sup>v</sup>).

62 Larsen and Scherz, *N. Stenonis opera theologica*, vol. 2, Sermo 43, p. 361, l. 5: »vicarius in temporalibus«.

63 *Ibid.*, l. 23-4: »se dominari hominibus ejusdem speciei«.

64 BNCF, Gal. 291, fol. 194<sup>r</sup> (after 212<sup>v</sup>): »Principis vere Christiani«.

65 *Ibid.*: »familiam [...] civilium«.

66 Cf. on this P. Harrison, *The Fall of Man and the Foundations of Science*, Cambridge: Cambridge University Press 2007.

Since the Fall man has to communicate laboriously with the help of his tongue, his eyes, his fingers, writings and figures; nobody would know how many possibilities of communicating – submerged after the Fall – lie hidden »in the abyss of possibilities«, in the »vast ocean of possibilities«. <sup>67</sup> This reasoning about human deficiencies after the Fall was also the basis of Steno's lessons with the prince. Steno, who as an anatomist was aware of the subtle fabric of the human body and its potentials, mused upon whether man before the Fall was not more integrated within himself as well as with nature and thus God.

Steno, whose language of instruction was Italian, presented his subject didactically well. All pages with questions seem to be related with his teaching. <sup>68</sup> He seems to have posed many of them, always in dialogue with the prince utilizing the latter's experience as a child. This was a method which he employed himself as scientist, and it fits his four research principles *intuition, reflexion, empathy* and *caution*. <sup>69</sup> Steno's notes resemble blackboard content and also the widespread early modern bracketed tables introduced by the French humanist and logician Peter Ramus (1515-1572), a proponent of a non-Aristotelian 'dialectical' logic. <sup>70</sup> That method seemed to be advantageous for Steno's style of recording and presentation of ideas to others. It is possible that he learned about it during his early study years in Denmark until 1659. <sup>71</sup> Apart from that, Steno seemed to have used his diaries as an idea generator. On an autobiographical page that deals with his being caught up in the philosophy of Baruch de Spinoza (1632-1677) during his Leiden years and his final embrace of the Roman Catholic

67 Scherz, *Geological Papers*, p. 249-267 (Monumenta, Signa, Argumenta), here 258, l. 35-p. 260, l. 5, 30-33, and here p. 348, l. 5: »in possibilitium abyssu«; *ibid.*, p. 262, l. 5-15, here 13: »in vasto possibilitium oceano«. Concerning this version and the version of ca. 1675 cf. F. Sobiech, »Nicholas Steno's way from experience to faith: Geological evolution and the original sin of mankind,« in G.D. Rosenberg (ed.), *The Revolution in Geology from the Renaissance to the Enlightenment*, Boulder: Geological Society of America 2009, p. 179-186, here 181.

68 Cf. e.g. BNCF, Gal. 291, fol. 207<sup>r</sup>, 210<sup>v</sup>.

69 *Ibid.*, fol. 87<sup>r</sup>, third column, bottom. Concerning Steno's research principles, which can be deduced from his biography and his writings, see Sobiech, *Herz, Gott, Kreuz*, especially p. 54-58.

70 Cf. BNCF, Gal. 291, fol. 181<sup>r</sup>, 197<sup>r</sup> (after 215<sup>v</sup>), 227<sup>r</sup>; W.J. Ong, *Ramus. Method and the decay of dialogue. From the art of discourse to the art of reason*, Cambridge: Harvard University Press 1958, p. 199-201, 305. On Bacon's appreciation of Ramus in his book *Of the proficience and advancement of Learning, divine and humane* (London 1605) cf. above annotation 40 and P. Rossi, *Francis Bacon. From Magic to Science*, trans. S. Rabinovitch, London: Routledge & Kegan Paul 1968, p. 66-67.

71 Cf. in this context Ziggelaar, *Chaos*, p. 171<sup>38</sup>.

faith it reads: »about [my] being drawn from [Spinozist] philosophy comparing the diaries with the books published until now«. <sup>72</sup> It seems that Steno had continued his diary already in the Netherlands after finishing *Chaos* and used the single folders for drafting his publications.

Steno's notes are also evocative of »programmed instruction«. One can indeed imagine Steno standing in a room of the Florentine *Palazzo Pitti*, location of his tuition, and giving lessons, posing the question to the prince: »How many things in this room serve at the time to Your Serene Highness and how great a series of things have to be considered in these?« Then Steno divides into »things perceptible by the senses« and »invisible things« and gives examples. <sup>73</sup> The »programme« continues with subsequent information and instructions.

A second example can be found on another page that perfectly joins to Steno's classification into »things perceptible by the senses« and »invisible things«. It is a guide towards a decision-making process consisting of four stages. It begins: »I can stick to the things which are merely perceptible to the senses, be it the exterior senses [the five corporeal senses] or the interior senses, ascending from the sensible to the insensible«. <sup>74</sup> Then Steno draws up an inductive programme which consists of four numerically distinguished stages in four columns furnished with brackets, to be read from left to right: <sup>75</sup>

The last note on that page is »with freedom« (*cum libertate*), i.e. God has given freedom to man: a recurrent theme in Steno's papers. Concerning man's freedom, on another page it reads: »Two species of ar-

72 BNCF, Gal. 291, fol. 150<sup>v</sup>: »De reductione a philosophia conferendo diaria cum libris inde editis«. The title of the page *ibid.*, fol. 150<sup>r</sup>: »Ad amicos Spinosanos Cartesianae philosophiae amatores [...]«. This page is a draft for Steno's Florentine theological publications of the 1670s in defence of his conversion. On the Amsterdam Calvinist preacher Johannes Sylvius (1634-1699), Steno's correspondence partner, cf. *ibid.*, fol. 150<sup>r</sup>. On those years see Kardel and Maquet, *Steno*, p. 249-251, 257-273. On Steno's Celle lecture of May 6, 1680 and his affirmation that he had nearly been caught up in »atheism« see Sobiech, *Herz, Gott, Kreuz*, p. 61-62.

73 BNCF, Gal. 291, fol. 217<sup>r</sup>: »Quante cose in questa stanza servono attualmente a Vostra Altezza Serenissima [*i.e.* Ferdinando III] e quanta serie di cose sono da considerarsi in ciaschedun di esse? le cose sensibili [...] invisibili«. A similar phrase *ibid.*, fol. 215<sup>r</sup>: »Quante cose stanno ora attualmente impiegate per il bisogno, per il comodo e per il diletto di Vostra Altezza Serenissima[?]«

74 *Ibid.*, fol. 181<sup>r</sup>: »Possum haerere in solis sensibilibus vel externis vel internis, ascendere a sensibilibus ad insensibilia«. It would be instructive to examine which concept of the interior senses is meant here, cf. G. Baker and K.J. Morris, *Descartes' Dualism*, London: Routledge 1996, p. 124-138.

75 BNCF, Gal. 291, fol. 181<sup>r</sup>:

1. I am able to do that	{ in thought in word in deed }	{ pleasant/ onerous things }	2. Who has given me that?
What have I done so far?			3. To what end has he given me that?
What would I have prevented doing?			Is it left to my own judgment[?]
What shall I do from now on?			In order to learn or to instruct?
I pursue that from morning to night, how do I conduct myself in it? How can I take care of it?			4. wishing what He wishes (to love Him [i.e. God] solely)
			I learn and speak, I perceive and manifest, with freedom

guments man wins by self-recognition so as to rise to be able to recognize a real freedom grounded in his Creator; the first [argument] is won by means of the fabric of the body, the second by means of the notions of the soul.<sup>76</sup> By that, Steno instructed the crown prince on the free will of man and the faculty of making decisions. In his cover letter for his *Trattato di morale per un principe*, Steno spoke of the »dangers of philosophers and politicians« which a ruler should pay attention to.<sup>77</sup> He was well aware that his instruction could fail: In his

1. haec possum agere	{ cogitatione verbo opere }	{ suavia molesta }	2. quis mihi haec dedit?
quid hactenus egi?			3. quo fine haec mihi dedit?
quid vetuissem agere?			an sit meo arbitrio
quid agam imposterum?			an ut discerem et docerem?
haec ago a mane usque ad vesperum, quomodo in iis me gero?			[erased: cum amore]
quomodo ea possum gerere?			(illum solum amare)
			4. velle quod ille vult.
			disco et dico, percipio et manifesto, cum libertate

76 *Ibid.*, fol. 185<sup>r</sup>: »Due sorti di argomenti cava l'huomo dalla notizia in se stesso per inalzarsi a riconoscere nel suo Autore una vera libertà, l'uno cavato dalla fabbrica del corpo, l'altro dalle operazioni dell'anima«.

77 *Ibid.*, fol. 208<sup>r</sup>: »Li pericoli [...] de' filosofi e de' politici«. – Not published by Scherz, *N. Stenonis epistolae*, vol. 1, E 120, p. 322-323, see above annotation 5.



treatise on gemstones, Steno outlines a parallel between 1) the *prima facie* »senseless« works of nature, e.g. veins of gold and silver the original purpose of which due to the Fall and original sin – affecting animate and inanimate nature – remains hidden and unknown to man, and which are used for secondary purposes now, and 2), also due to original sin, faculties of man used for purposes contrary to God's purposes in creation, e.g. vices.<sup>78</sup>

On another page written during his time as preceptor, Steno takes up his special concern, the spiritual value of the prayer and holy way of life of ordinary people: »Everything serves one person, and one person serves everything. So the prince serves everything, and everything serves the prince. An old Christian woman serves everything more than a body politic and all the more worthy, since the spiritual dimension vanquishes the temporal dimension.«<sup>79</sup> The first part of Steno's aphorism might allude to a reprehensible striving for power and thus might be based on *De Civitate Dei* 19.12 where Augustine with a similar phrase unfolds his ideas on natural law and on secular and eternal peace within a human community.<sup>80</sup> It would be insightful to examine Steno's thoughts more thoroughly, also with regard to the »simplicitas« which Ferdinando II mentioned in December 1667.

Steno not only taught political ethics, he also practiced it: Due to Cardinal Leopoldo's death, from 1675 he advised Cosimo in secular civil cases such as reform of legal procedures and taxes, the training of legal civil servants, and secular criminal cases, even later as bishop.<sup>81</sup> In Steno's papers the terms »justice«, »good laws« and »dubious laws« occur.<sup>82</sup> In his treatise on gemstones, he reveals sensibility concerning the working conditions in mines. In his role as teacher, he acquainted Ferdinando III about these, speaking about the few »lazy rich men« for

78 Scherz, *Geological Papers*, p. 256, l. 35–p. 257, l. 9; *ibid.*, p. 260, l. 9–16; F. Sobiech, *Herz, Gott, Kreuz*, p. 146–147.

79 BNCF, Gal. 291, fol. 214<sup>r</sup>: »omnia serviunt uni, unus servit omnibus. Sic Princeps omnibus servit, Principi serviunt omnia. Christiana vetula servit omnibus magis quam Respublica et tanto dignius quanto spiritualia superant temporalia«. Cf. Sobiech, *Herz, Gott, Kreuz*, p. 274–275.

80 P. Cary, »United Inwardly by Love: Augustine's Social Ontology,« in J. Doody et al. (eds.), *Augustine and Politics*, Lanham, MD: Lexington 2005, p. 3–33, here 20.

81 Sobiech, *Herz, Gott, Kreuz*, p. 140<sup>83</sup>; Kardel and Maquet, *Steno*, p. 339–340; S. Miniati, *Nicholas Steno's challenge for truth. Reconciling science and faith*, Milan: Angeli 2009, p. 253–257. Another trace of that activity in BNCF, Gal. 291, fol. 214<sup>r</sup>, cf. above annotation 7.

82 BNCF, Gal. 291, fol. 211<sup>v</sup>: »justitia [...] justitia«; *ibid.*, fol. 219<sup>f</sup>: »bonas leges [...] dubias leges«.

whom the poor gave up their lives in excessive struggle.<sup>83</sup> From February 17 to March 6, 1677, Steno attended presentations of dissected fish held before the crown prince each evening in Pisa,<sup>84</sup> and on May 1, 1677, Steno departed for Rome where his episcopal ordination followed. He stayed in touch with Ferdinando III. So in a letter of March 19, 1683 to Cosimo, he enclosed a letter for him.<sup>85</sup>

Eginhard Fabian presumed that Steno had realized that his theory that Earth has a history recorded in strata came close to »heretical ideas« like those of the apostate Dominican friar Giordano Bruno (1548–1600). To substantiate his presumption, Fabian refers to Giordano Bruno's first philosophical dialogue *La cena de le ceneri* (London 1584) in general.<sup>86</sup> Indeed Steno calls his theory a »novelty«<sup>87</sup> and Bruno's dialogue stresses »the constant change of the earth«.<sup>88</sup> But what was hitherto unknown is that Steno as bishop and Vicar Apostolic of the Northern Missions read Giordano Bruno's lampoon *Idiota triumphans seu de Mordentio inter geometras deo dialogus* published June 1586 in Paris, a dialogue between the characters Philotheus (Mordente) and Savolinus (Bruno himself).<sup>89</sup> Steno took notes on an envelope which had been sent to him as bishop in Hamburg.<sup>90</sup> He seemed to have taken down his notes at the same time that he undertook his muscle studies, ca. 1684, in which he mentioned Spinoza.<sup>91</sup> It is difficult to ascertain

83 Scherz, *Geological Papers*, p. 250, l. 6-13, 20-21; in detail see Sobiech, *Radius in manu Dei*, p. 187-188.

84 V. Maar, *Holger Jacobæus' Rejsebog (1671–1692)*, Copenhagen: Gyldendal 1910, p. 137.

85 Scherz, *N. Stenonis epistolae*, vol. 2, E 291, p. 576-578, here 578, l. 10-13.

86 E. Fabian (ed.), *Nicolaus Stenonis. Versuch einer Annäherung [...]*, Berlin: Akademie 1988, 161-162.

87 Scherz, *Geological papers*, p. 204, l. 9: »novitate«.

88 Cf. the introduction in E.A. Gosselin and Lawrence S. Lerner (eds.), *La cena de le ceneri. The Ash Wednesday Supper. Giordano Bruno*, Toronto: University of Toronto Press 1995 (Reprint 2001), p. 33, 43.

89 G. Aquilecchia (ed.), *Giordano Bruno. Due dialogi sconosciuti e due dialoghi noti. Idiota triumphans. De somnii interpretatione. Mordentius. De Mordentii circino*, Rome: Edizioni di storia e letteratura 1957, p. XXI, 5. An Italian translation of *Idiota triumphans* in G. del Giudice (ed.), *Giordano Bruno. Il Dio dei geometri. Quattro dialoghi. Mordente. Il compasso di Mordente con Il sogno. L'idiota trionfante. L'interpretazione del sogno. Introduzione e traduzione*, Roma: Di Renzo 2009, p. 82-116.

90 BNCF, Gal. 291, fol. 87<sup>v</sup>; the address reads: »All' Illustriss<sup>mo</sup> e Reverendiss<sup>mo</sup> Signor<sup>re</sup> Signor<sup>re</sup> e Padrone Colendiss<sup>mo</sup> / il Signor<sup>re</sup> Niccolò Stenone Vescovo di Titiopoli / Amburgo«. Cf. above annotation 7.

91 Scherz, *N. Stenonis epistolae*, vol. 2, Add. 24, p. 949-951, here 950, l. 42. Cf. above annotation 5.

when exactly Steno became acquainted with Bruno. His interest in that dialogue can also be seen against the backdrop of the fact that, having finished his task as preceptor in Florence, he handed over a manuscript of Spinoza's *Ethica* to the Holy Office in Rome in 1677.<sup>92</sup>

The page with Steno's notes and figures, which deal with an experiment with candles,<sup>93</sup> is on its front page divided into three columns; the second of which comprises the following lines: »Philosophy of an Idiot: Philotheus, the idiot, philomath [= lover of knowledge]«,<sup>94</sup> and some lines below: »Analysis of the burning wax candle by means of philosophy without philosophy from [the answers] of an idiot alone, without [erased: a teacher<sup>95</sup>] prescriptions«. <sup>96</sup> The word »mathesis« is one of Bruno's »guides in religion« and important in his dialogue, which deals with »inspired ignorance« of people (like Philotheus) who speak in an inspired way without fully grasping their own speech.<sup>97</sup> Steno's notes are to be seen in the context of his earlier thoughts about intuitive communication and cognition before and after the Fall,<sup>98</sup> and by that they are like a mirror of his continuing interest in the question of science and faith.

#### IV. Conclusions and outlook

Starting from an introduction to Nicolas Steno's unedited papers in the BNCF, the article offers an overview and first interpretations of some significant pages concerning Steno's biography and his philosophical stance, with special emphasis on his task as philosophy preceptor of the Florentine Crown Prince Ferdinando III de' Medici.

A fragment of Steno's Tuscan diary (December 6-13, 1667) provides an insight into the microcosm of Steno's encounters, of science and faith in the context of his conversion. Especially the term »simplicity [of faith]« used by Ferdinando II de' Medici to describe Steno's

92 L. Spruit and P. Totaro, *The Vatican Manuscript of Spinoza's Ethica*, Leiden: Brill 2011, p. 6-17, 25-26, 55-56.

93 BNCF, Gal. 291, fol. 87<sup>v</sup>.

94 *Ibid.*, fol. 87<sup>r</sup>: »Philosophia idiotae. Philotheus, idiotae philomathes«.

95 Concerning Steno's emphasis on the necessity of a teacher in matters of faith cf. Sobiech, *Herz, Gott, Kreuz*, p. 138-139.

96 BNCF, Gal. 291, fol. 87<sup>r</sup>: »Analysis cerei ardentis per philosophiam sine philosophia ab idiotae [erased: responsis] sine [erased: magistro] praeceptis sola«.

97 F.A. Yates, *Giordano Bruno and the Hermetic Tradition*, London: Routledge and Kegan Paul 1964, p. 296-297.

98 Concerning intuition and simplicity in science cf. S. Fitzpatrick, »Simplicity in the philosophy of science,« in *Internet Encyclopedia of Philosophy*, <http://www.iep.utm.edu/simplici> [last retrieval: October 24, 2015].

spiritual development towards Catholicism deserves to be examined further. Related to that topic is Steno's appreciation of the prayer and holy way of life of ordinary people deployed during his task as preceptor. Probably in preparation for this task, Steno critically read the sixth volume *De anima bestiarum* (1671) of the *Philosophia christiana* by the French Cartesian theologian André Martin opposing it from his experience as anatomist.

Whereas the manuscript *Concordia della Religione* (1677/78) by the former secretary of the *Accademia del Cimento* Lorenzo Magalotti was not informed by natural scientific thinking, Steno's philosophy lessons with the crown prince were influenced by his experience as natural researcher. The main difference between Steno, the teacher, and Magalotti, the writer, is that the latter's treatise is not inductive, not focused on the human senses. Steno seemed to appreciate Peter Ramus's tables and instructed Ferdinando III also with the help of charts. Therefore Gustav Scherz's depiction of Steno's task, solely based on Steno's treatise on gemstones, has to be amended, because it does not consider the shaping of Steno's lessons.<sup>99</sup> Steno endeavoured to impart a sense of justice to the prince. His *Trattato di morale per un principe* seems to have been preserved at least in a fragment of a preliminary draft.

Likewise important are Steno's thoughts about intuitive communication and comprehension before the Fall of man. His thoughts about intuition correlate to his reading of Giordano Bruno's lampoon *Idiota triumphans* (1586) in ca. 1684 trying to utilize it for natural science.

It would be worthwhile disentangling Steno's papers, for they are the key to a more precise understanding of his stance as scientist, philosopher and theologian. It clearly arises from them that Steno did not stop thinking about the laws of nature, human freedom and the relationship between body and soul when ordained in Florence (1675) and sent as bishop to Germany (1677). With the help of these papers, one gets the unique possibility of looking over Steno's shoulder, of tracking his thinking processes, exemplified on real occasions.

#### *Archive material*

Archivio della Curia Arcivescovile di Firenze (ACAF), LC 16

Biblioteca Medicea Laurenziana di Firenze (BMLF), Ms. Ashburn 1207

Biblioteca Nazionale Centrale di Firenze (BNCF), Gal. 291

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<sup>99</sup> This concerns Kardel and Maquet, *Steno*, p. 326-328.