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**The image of knowledge.  
Art and science at the time of Bruegel**



# Bruegel and Cartography

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Fritz Grossmann when writing on the connection between Jan Cornelisz Vermeyen's cartoons designed for the tapestries commemorating Charles' V Tunis Campaign and Bruegel's *View of the bay of Naples* states that

"[...] it has to be considered whether the map-like character of both artists' views may not in fact owe something to cartography, which in the case of Bruegel would be easily explained by his friendship with the geographer and designer of maps Abraham Ortelius"<sup>1</sup>.

Historical geographers on the other hand have tried, since the 1980s, to explain more in depth Bruegel's relationship with cartography. One study in particular is often cited in this respect: Ronald Rees' 1980 article on *Historical links between cartography and art*, published in the *Geographical Review*<sup>2</sup>. Ronald Rees was a professor of historical geography at the university of Saskatchewan in Canada for more than 20 years, before becoming a full-time writer on mainly history linked subjects. It is of some interest, I think, as a way of introducing my topic, to have a closer look at this article.

In his contribution, which Rees himself defines as a "tentative introduction to a complex subject", he addresses in a general way the relationship between Renaissance cartography and art. The first part of his article stresses the artistic character of Renaissance (but also later) maps and their makers, the latter often being artisans, painters, woodcutters or engravers. Loss in

<sup>1</sup> F. GROSSMANN, *Bruegel, Complete edition of the paintings*, revised edition, London, 1966, p. 13 and again in his essay for the exhibition catalogue of 1980: *Pieter Bruegel de Oude. Het leven van Bruegel, in Bruegel, Een dynastie van schilders*, Brussel, 1980, p. 27. See also S. ALPERS, "The Mapping Impulse in Dutch Art", in D. WOODWARD (ed.), *Art and Cartography, Six Historical Essays*, Chicago-London, 1987, p. 51-96, 76. The latter contribution, but in slightly different form, can be read in chapter 4 of the author's *The Art of Describing: Dutch Art in the Seventeenth Century*, Chicago, 1983. Her study has been very much inspiring for what follows. On Bruegel's friendship with Ortelius, see in particular J. MUYLLE, "Pieter Bruegel en Abraham Ortelius. Bijdrage tot de literaire receptie van Pieter Bruegels werk", in *Archivum artis lovaniense. Bijdragen tot de geschiedenis van de kunst der Nederlanden opgedragen aan Prof. Em. Dr. J.K. Steppe*, Leuven, 1981, p. 319-337.

<sup>2</sup> *Geographical Review*, 70, 1, 1980, p. 60-78. See for instance D.E. COSGROVE, *Social formation and symbolic landscape*, London, 1984, p. 147: "[...] we can observe an immediate connection between map-making and landscape art, as well as a broader cosmological resonance in the great panoramas by Bruegel (Rees, 1980)"; Recent publications on art and cartography do not mention Bruegel: for instance, F. FIORANI, *The Marvel of Maps. Art, Cartography and Politics in Renaissance Italy*, New Haven-London, 2005; W. CARTWRIGHT, G. GARTNER, A. LEHN (eds.), *Cartography and Art*, Berlin, 2009.

artistry came with the introduction of new reproduction and survey techniques, favouring the use of conventional signs and focusing on preciseness in representation rather than on aesthetics. One can indeed cite many artists who drew maps and mapmakers who were at the same time painters. David Buisseret, in his book *The Mapmakers' Quest*, discusses several of them amongst whom Pieter Bruegel: the Limbourg brothers and their book of hours for the Duke de Berry, Jan van Eyck, Leonardo da Vinci, Leon Battista Alberti, Jean Fouquet, Raphael Sanzio, Michelangelo, Albrecht Dürer, Augustin Hirschvogel, Cornelis Anthonisz, Pieter Pourbus, the Dieppe School, Hans Holbein, Paul Pfinzing, Jacques Le Moyne, John White, Jacques Callot, Johannes Vingboons, El Greco, Jan Vermeer, Diego Velasquez and Pieter Snayers<sup>3</sup>. As far as Bruegel is concerned, we know thanks to van Mander that he was asked by the city of Brussels to make some 'pieces' of the digging of the Brussels canal to Antwerp<sup>4</sup>.

In the article's second part, Rees focuses on the similarities between maps and landscape paintings, which both represent the earth or conceptions of it. Fundamental to both disciplines in the Renaissance is the idea of proportion, the systematic organization of space, new to art but as far as cartography is concerned going back to Ptolemy's Geography. Although Rees admits 'there is no known connection between the discovery of the laws of linear perspective and Ptolemy's projections', he underlines the similarities between a painting constructed by these laws and the projection of the world (or part of it) on a flat surface through the use of a grid based on calculated latitudes and longitudes. Although this is true, one could object that Alberti, who for painting had recommended the *velo*, a transparent grid used to copy square by square the image viewed through it to a smaller grid on paper, proposed a different method for the delineation of a city, *i.e.* to take sightings in degrees of various landmarks from a central elevated position, and, having paced the distances, transfer these figures onto a map.<sup>5</sup> In its final part, the article addresses the change in attitude towards the cosmos in the Renaissance thanks to Copernicus' *De revolutionibus Orbium celestium*. By 'dismantling' the hierarchic medieval cosmos, the distant view of a rotating, revolving earth, caused, according to Rees, a shift from a vertical to a horizontal world view, which resulted in the creating of fantastic panoramas such as in Bruegel's *Fall of Icarus*. The fact that the observer, be it the geographer or the landscape painter, looks at the earth from a distance,

<sup>3</sup> D. BUISSERET, *The Mapmakers' Quest. Depicting New Worlds in Renaissance Europe*, Oxford, 2003.

<sup>4</sup> "De Heeren van Brussel hadden hem een weynigh voor zijn doot aenbesteedt te maken eenighe stucken van het delven van de Brusselsche vaert nae Antwerpen, dan is door zijn sterven achterweghe bleven" (K. VAN MANDER, *Het Schilder-Boeck waer in Voor eerst de leerlustighe lueght den grondt der Edel Vry Schilderconst in Verscheyden deelen Wort Voorghedraghen. Daer nae in dry deelen t'Leuen der vermaerde doorluchtighe Schilders des ouden, en nieuwen tyds Eyntlyck d'wtlegghinghe op den Metamorphoseon pub. Ouidij Nasonis. Oock daerbeneffens wtbeeldinghe der figuren Alles dienstich en nut den schilders Constbeminers en dichters, oock allen Staten van menschen*, Haarlem, Paschier van Wesbusch, 1604, fol. 233v; see also online [https://www.dbnl.org/tekst/mand001schi01\\_01/index.php](https://www.dbnl.org/tekst/mand001schi01_01/index.php)).

<sup>5</sup> BUISSERET, *The Mapmakers' Quest*, p. 34.

from a great height, led to the production of world maps and atlases on the geographical side, by Gerard Mercator and Abraham Ortelius specifically, and the convex view of space as expressed in Bruegel's landscapes, in which Rees identified a conception of the earth as an integrated whole. For the latter identification Rees quotes from Charles de Tolnay's *The Drawings of Pieter Bruegel the elder*, London, 1952:

"In Bruegel's work for the first time the lofty post of observation acquires the meaning of a liberation from terrestrial limitation, of free breathing in purer air, of the ability to survey a wondrous order which remains forever concealed to those who live below"; and

"All the riches of the world are spread out... The artist's gaze masters the whole, sees the homogeneity and the interdependence of all the forms. It catches the totality of the world, opens an insight into the structure of the cosmic system itself, as it would not be recognizable from below, and makes it possible for the beholder to relive the creative joy of the Architect of the World".

With this in mind, I would like to elaborate on the following aspects: the idea of proportion; landscape and, more general, nature; the relationship between Ortelius' and Bruegel's work.

Let us start with Bruegel's print of *Temperantia*, in English Temperance, or, even better in this context, Measure (**fig. 1**). It is well known that the print represents the seven liberal arts: the *trivium* being grammar, logic and rhetoric, and the *quadrivium* comprising music, astronomy, arithmetic, geometry. Traditionally, the general idea here, in accordance with a specific interpretation of the Latin text beneath the print based on pseudo-Seneca's *De modo temperantiae*, would be that the (study of) liberal arts, and thus learning in general, should be reasonable, remain within certain limits.

Measure is indeed the key to the interpretation of the image here; measure in its most literal sense is also exemplified by the central position of the representation of geometry and astronomy, in the image's centre just above *Temperantia*'s head, where two men are measuring resp. the earth and the distance between the earth and the moon. The image recalls Van Heemskerck's picture, discussed by Ilja Veldman in 1986, entitled *De dwaasheid van te veel wereldse kennis*, or to use the title of the work given in the 1983 Phillips auction catalogue, *The Geometry* (**fig. 2**)<sup>6</sup>. The picture, as Veldman indicates, is clearly linked with the iconographic tradition of Brant's *Ship of Fools* and criticizes those who study (through measuring) the world and its distance to the stars, but forget themselves or even God. In this sense, according to Veldman, the print is a warning, not to take the study of the liberal arts too far.

<sup>6</sup> "Leerzame dwaasheid. De invloed van het 'Sotten schip' (1548) op zottenvoorstellingen van Maarten van Heemskerck en Willem Thibaut", *Nederlands Kunsthistorisch Jaarboek / Netherlands Yearbook for History of Art*, vol. 37, *Renaissance en reformatie en de kunst in de Noordelijke Nederlanden*, Leiden, 1986, p. 195-224.

But, as the print belongs to the series of virtues, wouldn't it want to convey a more positive message? Isn't there a way to look at this print as a positive image of the liberal arts and wouldn't that be a more coherent interpretation, when one knows of Bruegel's connections with the leading intellectuals of his time, an interpretation more in tune with the image of a painter which Bruegel added in the print? This addition has been interpreted within the framework of the 16th c. strife for recognition of painting as belonging to the liberal arts, stressing, amongst other things, its strong connection with rhetoric, represented here by the theatrical scene just above the painter's head<sup>7</sup>. If the print is a warning against the study of the liberal arts without limits, forgetting oneself and God, what would it actually mean not to take the study of music or grammar too far? And even if in the case of geometry and astronomy this warning seems more pertinent, does this mean then that Bruegel is criticizing the works of Copernicus, or even more so of his friend Ortelius and of Mercator? That doesn't seem likely.

The image of Temperantia with her attributes (the clock on her head, the horse bit in her mouth, the pince-nez in her hands, the rowel spurs and her foot on the wing of a mill) is not innovative but follows a century-old, rather Gothic, tradition: reference has been made in the past to several manuscripts. I add one not yet mentioned in this framework from Dresden, Staats- und Universitätsbibliothek, Co. 79, fol. 68, where Temperantia is represented with exactly the same attributes (**fig. 3**)<sup>8</sup>. The attributes (except for the bit) are in fact recent inventions or developments in technology. What is more, the illumination in the Dresden MS, but also in those of the Bibliothèque nationale de France and the Bodleian library, illustrates Pseudo-Seneca's *De quattuor virtutibus cardinalibus*, actually Martin de Braga's *Formula honestae vitae*, because this is the original text we are talking about, but in a French translation. This text is also, indirectly, the source for the text beneath Bruegel's print. The link between text and image, contrary to what is generally believed in the case of Bruegel's prints, is fundamental here. The lines of Bruegel's print do not come from de Braga's chapter on the virtue itself, here called Continentia, but from the paragraph *De modo temperantiae* which is about the limits of Temperance, where it is said one should not

<sup>7</sup> Cf. Jacopo de' Barbari's letter to Frederick III of Saxony (1463-1525) in L. SERVOLINI, *Jacopo de' Barbari*, Padova, 1944, p. 105-107. Horace in his *De arte poetica* had already underlined the more stimulating character of theatre in matters of rhetoric compared to written texts: "Less vividly is the mind stirred by what finds entrance through the ears than by what is brought before the trusty eyes" (180f.: *Segnius irritant animos demissa per aures, Quam quae sunt oculis subiecta fidelibus*, HORACE, *Satires, Epistles, Ars poetica*, transl. by H. RUSTON FAIRCLOUGH, London, 1955). In the same way, painting, because it appeals to the eye, is considered more effective than words.

<sup>8</sup> On Temperantia, see L. WHITE, jr. "The iconography of Temperantia and the virtuousness of technology", in Th. K. RABB and J. E. SEIGEL, *Action and conviction in Early Modern Europe*, Princeton, 1969, p. 197-219. See also Y. MORI, "The Iconography of Pieter Bruegel's Temperantia", *Bijutsushi*, 21, 1971, p. 4-6. More generally on the presence of this iconography on funerary monuments, see J. BAUDOIN, *La sculpture flamboyante en Normandie et Ile-de-France*, Nonette, 1989, p. 140-141. On the French translation of Braga's text by Jean Courtecuisse, see H. HASELBACH, *Sénèque des III vertus: la "Formula Honestae Vitae" de Martin de Braga (pseudo-Sénèque) traduite et glosée par Jean Courtecuisse (1403)*, Francfort/M., 1975.

exaggerate the temperance principle! Finally, when we look at the provenance of the manuscripts that transmit the image of Temperantia, we must conclude the image must have been quite common in Burgundian circles where the chivalric concept of measure remained strong.

When we now have a closer look at the image of geometry and astronomy in the print, focussing on the details beneath and at the right hand side of the globe, we see representations of sculpture, architecture, warfare and perhaps, in the far distance, surveying. All arts just mentioned have to do with geometry, with arithmetic. Not so much speculative geometry and arithmetic, but rather practical geometry and arithmetic. Practical geometry and arithmetic are expressions of sixteenth-century practicalism and empiricism which in the first half of the 16th c. led to the publication of several technical treatises on the subject<sup>9</sup>. Albrecht Dürer's *Underweysung der Messung* (Instruction in Measurement), addressing in the first place young painters but also other artists and artisans ("allen den so sich des mass gebrauchen dienstlich sein mag"), published in 1525 is well known; a second edition followed in 1538<sup>10</sup>. A year before, Nicolò Tartaglia had published his *La nova scientia*, a text on mathematical arts and more specifically artillery and ballistics. A new edition came out in 1550 with an addition to the third book and was republished many times. Its frontispiece shows Euclid opening the gate to a circular enclosure<sup>11</sup> (fig. 4). In this space, a group of figures who symbolise the sciences dependent upon geometry and arithmetic are gathered behind Tartaglia himself. Geometry and arithmetic are standing next to Tartaglia, they are accompanied by astronomy, perspective, music, astrology, geography, chorography and architecture. The banner in Plato's hand at the entrance of the smaller circle above gives geometry priority over arithmetic; it reads *Nemo huc geometriae expers ingrediatur*. The picture's meaning is made explicit in Tartaglia's dedication to Gabriele Tadino (in 1532 general of the imperial artillery in Vienna) of the 1543 Italian translation of Euclid's Works: both the liberal and the mathematical arts depend on arithmetic and geometry which are 'revered [...] for through them not only are earthly things necessary to us mortals brought to our notice[...] but equally [...] we

<sup>9</sup> On geometry and the importance of practical mathematics for the study of nature in the 16th (and 17th) century, see L.B. CORMACK, S. A. WALTON, J. A. SCHUSTE, *Mathematical Practitioners and the Transformation of Natural Knowledge in Early Modern Europe*, Berlin, 2017 and S. KUSUKAWA and I. MACLEAN, *Transmitting knowledge. Words, images, and instruments in early modern Europe*, Oxford, 2006.

<sup>10</sup> *Underweysung der Messung, mit dem Zirckel und richtscheyt in Linien, Eben und gantzen Corporen durch ALBRECHT DÜRER zusammen gezogen [...]* 1538, letter to Willibald Pirckheimer (1470-1530). See also the recent contribution by R. YOON, "Dürer's Underweysung der Messung and the Geometric Construction of Alphabets", in I. ALEXANDER-SKIPNES (ed.), *Visual Culture and Mathematics in the Early Modern Period*, New-York-London, 2017, p. 71-83.

<sup>11</sup> For a detailed discussion of the frontispiece, see D. COSGROVE, "The geometry of landscape: practical and speculative arts in sixteenth-century Venetian land territories", in D. COSGROVE, St. DANIELS, *The Iconography of Landscape*, Cambridge, 1988 (repr. 1959), p. 254-276, 262. In the 1583 edition a book on the building of fortresses is added.

come to understand things divine'<sup>12</sup>. Both are necessary to geography and cosmography, as Ptolemy has demonstrated. And further on, he underlines the importance of geometry used by mortals as well as by God himself, measure of all, who created man. Artists – he talks about image composers and painters – imitate God's creation of man by using dividers.

The last treatise I would like to mention here is Hirschvogel's on geometry, of 1543. Augustin Hirschvogel (1503-1553), pupil of Albrecht Altdorfer (c. 1480-1538), and thus linked to the Danube school, is known for his many landscape etchings. The treatise's title echoes Tartaglia's treatise mentioned earlier: 'The Book of Geometry is my name. / All liberal Arts were originally derived from me. / I reunite Architecture and Perspective' (**fig. 5**). Hirschvogel was also a cartographer; Ortelius used his work in his atlas, namely for his maps of Illyria (41). He created etched views of Vienna, and produced a plan for the city following the Siege of Vienna, a circular city plan rea-

<sup>12</sup> *Euclide Megarense* [...], *diligentemente reassetato et alla integrità ridotto per* [...] NICOLÒ TARTALEO BRISCIANO, Vinegia, per Venturino Roffinelli, 1543, fol. 3r: "[...] Pero che queste due scientie, ouero discipline [arithmetic and geometria], non hanno dibisogno di alcuna altra scientia, inquanto alla lei essentia, ma ben tutte le altre hanno bisogno di loro, come nel processo a quella lo farò conoscer, et vedere: et non solamente le liberali, ma etiam tutte le mecanice [...] ne quella tenga tal due scientie a vile, però che [...] antiquamente furono reuerite, cercate, et celebrate da tutti li perspicacissimi ingegni, mediante lequali non solo son pervenuti alla notitia e cognitione delle cose terrene, a noi mortali necessarie, ma etiam per mezzo di quelle son venuti in cognitione delle divine [...] Nientedimeno tanta è la virtù di queste due scientie, over discipline, cioè, arithmetica, e geometria, insieme con la sua figliola prospettiva, che mediante quelle noi conosciamo per virtù del compasso, e delle proportioni quanta sia la rotondità di tutta la terra, et quanto sia il diametro suo, et similente delli al[fol. 3v]tri elementi", and fol. 4r: "Che diremo della cosmographia, et geographia? Non ci dimostra Ptholomeo, et tutti li altri eccellentissimi cosmographi, et geographi, quanto gli siano necessarie queste due scientie, over discipline. Quando de tutto l'universo debitamente proportionando li lor gradi delle longitudine, et latitudine, rendano in una piccol carta tutte le famose provincie, città, castelli, monti, fiumi, isole, et altri siti maritimi, et mediterranei (come più volte insieme con V.R. sopra la sua carta navigatoria, habbiamo discorso, et visto, et similente sopra il suo globo alemanico) [...] Ma più, egli è di tanta necessità questa geometrica disciplina, et scientia, che non solamente li huomini mortali nelle sue cose commensurabile usano quella (come di sopra più volte è detto) ma anchora il magno Iddio, il qual è misura di tutte le cose. In formar le parti del corpo humano non si governa senza quella, con laqual anchora questi compositori de imagini, et pittori eccellenti si conformano, ad ogni membro usando il suo compasso; perichè etiam li peritissimi architetti [...] cercano con ogni diligentia di proportionare la aede [...]"; fol. 4v: "Anchora inanzi che più oltre procediamo bisogna notar qualmente la scientia di Geometria et di Arithmetica se divide in due specie, una delle qual (come fu detto in principio) è detta Theorica, cioè, speculativa, over contemplativa: l'altra è detta pratica, cioè, attiva, over operativa. La theorica, cioè, la speculativa (come afferma Ptolomeo nell'Almagesto) è per aumento della scientia, perché per mezzo della speculativa possiamo ritrovar continuamente cose nuove, et ampliar la scientia. Ma la pratica, cioè, la operativa è per operar, cioè, per designare, construir, et fabricar manualmente tutte le cose occorrente. Euclide adunque per darci il fondamento d'una e dell'altra specie, ci ha descritto nell'opra sua di due specie propositioni, l'una delle qual ce introduce nella theorica, cioè, nella parte speculativa, et l'altra, ci conduce alla pratica, cioè, nella parte operativa. Le propositioni adunque che ci conducono nella speculativa grecamente si dicono Theoreme: et quelle che ci guidano alla operativa si dicono Probleme: et da dette Probleme si apprende il modo et la via di disegnar, discrivere, inscrivere, circonscrivere, divider, e formar non solamente ogni qualità di figura superficiale con tutte quelle accidental conditioni che occorrer possano in pittura, prospettiva, ichnographia, corographia, scenographia, geographia, et cosmographia, ma anchora ogni vari qualità di corpo solido con tutte quelle sottil et accidental conditioni che occorrer possano, non solamente nella orthographia, scultura, et architettura, ma in ogni altra ingeniosa operatione da queste dependente, come procedendo manifestamente si potrà vedere".

lized by triangulation. His views were the first ever rendered according to scale. Hirshvogel's self-portrait shows him with globe and dividers, with the legend *circulus mensurat omnia* suggesting that everything can be measured (fig. 6)<sup>13</sup>.

The idea of measure as a more positive message of the *Temperantia* print could introduce the notion that measure, or proportion, is the basis of all liberal arts: grammar, music, arithmetic... even rhetoric and painting. Bruegel's portrait by Egidius Sadeler (1570-1629) of 1606, is very symbolic in this sense. The medallion with the painter's portrait is surrounded by Fame, Mercury and Artemis<sup>14</sup>. In the lower right hand corner we find painting pallet and pencils, in the opposite corner dividers and triangle ruler.

Bruegel in his print of *Temperantia* illustrates and defends what can be called the technical or practical side of the liberal arts, empiricism. As Tartaglia's *Nova Scientia* is a defence of practical geometry, of measuring, an appeal for the study of nature as expressed through empiric phenomena, so does Bruegel in this print seem to advocate practice in the case of liberal arts in general.

Bruegel's Landscapes bring us to another, albeit very much related, aspect of Bruegel's possible interest in cartography: the study of nature, or more generally the representation of reality. Observation, realism are the keywords here. Many scholars have tried to identify (parts of) the landscapes that may have inspired the artist: may it suffice to refer to Louis Lebeer's identifications of the mountains of *S. Hieronymus in deserto* and *Sollicitudo rustica* with, amongst others, de Dent d'Oche, the city view of the *Insidiosus auceps*, with that of Grammont, a village between Villeneuve and Aigle, or recall Katrien Lichtert's suggestion about Bruegel's journey to Italy through France based on the identification of the convent's architectural style in the drawing *Southern cloister in a valley* as being French<sup>15</sup>. Ortelius' and van Mander's praise of Bruegel's art have been interpreted as relating to Bruegel's compositional way of representing nature in his landscapes<sup>16</sup>. Drawing

<sup>13</sup> BUISSERET, *The Mapmakers' Quest*, p. 39 (with his self-portrait on p. 38).

<sup>14</sup> For a detailed, and excellent, interpretation of the allegory, see J.B. BEDAUX and A. VAN GOOL, "Bruegel's birth-year, motive of an ars/natura transmutation", *Simiolus* 7, 1974, p. 133-156.

<sup>15</sup> L. LEBEER, "De prenten van Pieter Bruegel de Oude", in *Bruegel, Een dynastie van schilders*, 1980, p. 102-136, 108; K. LICHTERT, "New perspectives on Pieter Bruegel the Elder's journey to Italy (c. 1552-1554/1555)", *Oud Holland*, 128, 1, 2015, p. 39-54.

<sup>16</sup> Abraham ORTELIUS, *Album Amicorum. Édition facsimile avec notes et traduction* par J. PURAYE, Amsterdam, 1969, fol. 12v: "Eupompus Pictor interrogatur quem sequeretur antecedentium, demonstrate hominum multitudine, dixisse fertur, naturam ipsam imitandam esse, non artificem. Congruit nostro Brugelio hoc, cuius picturas ego minime artificiosas, at naturales appellare soleam, neque eum optimus pictorum at natura pictorum vero dixerim" ('[...] This fits our Bruegel, whose works I would not call man-made, but rather natural. Indeed, I would not call him the best of painters, but rather nature among painters [...].') and "[...] Pictores qui totam depravant representatam effigiem sic ut et ab exemplari proposito pariter et a vera forma aberrant. Ab hac labe purus noster Brugelius" ('Painters [...] completely destroy the image present to them, and stray both from the exemplar set before them and from true form. Our Bruegel is free of this error'; after T. MEGANCK, *Erudite Eyes. Friendship, Art and Erudition in the Network of Abraham Ortelius (1527-1598)*, Londen-Leiden, 2017,

on the expression *nae t'leven gheconterfeyt* I would like to take this idea of nature a bit further, as van Mander uses the expression *nae t'leven* again after having talked about Bruegel's peasant and other scenes<sup>17</sup>. In one print, in a later state, the engraver (Joannes Galle) himself, using the expression's Latin translation, states Bruegel made the drawing *ad vivum*<sup>18</sup>.

Van Mander uses the expression *nae t'leven gheconterfeyt* in opposition to the art of copying: this is made clear by the passage in the appendix to his *Schilder-Boeck* where he corrects his statement that Pieter Bruegel II "nae 'tleven conterfeyt", saying he was wrongly informed and that the artist "zijns vaders dinghen seer aerdigh copieert en nadoet"<sup>19</sup>. In his life of Pieter Pourbus, another artist cartographer, he makes a distinction between inventions and "conterfeyten nae t'leven"<sup>20</sup>. In the sixteenth century 'counterfeits' most often indicate portraits showing the individual's particulars, but, more generally, they can refer to images claiming to "a truth based upon the testimony of direct witness"<sup>21</sup>. In science, they indicate illustrations of individual objects, depicted as they were encountered, with all their imperfections, in clear opposition to images of a species as a whole<sup>22</sup>.

The Latin expressions for *nae t'leven*, *Ad vivum* and *Ad naturam*, in art as well as in sciences are much debated. Only just recently a collection of papers on the subject was published<sup>23</sup>. Pieter Martens discusses in his contribution to the volume the use of this expression in the framework of 16th c. news and siege prints and comes to the conclusion the expression can refer to 1. the picture's lifelines, 2. the faithful likeness of topography and events represented in the print thanks to personal, first-hand observation, or 3. to an image used by the author which is considered to be credible and accurate enough to merit the label. The expression is also used for other kinds

p. 172-173, 223-224); VAN MANDER, *Het Schilder-Boeck*, fol. 233r: "In zijn reysen heeft hy veel ghesichten nae t'leven gheconterfeyt, soo datter gheseyt wort, dat hy in d'Alpes wesende, al die berghen en rotsen had in gheswolghen, en t'huys ghecomen op doecken en Penneelen uytghespogen hadde, soo eyghentlijck con hy te desen en ander deelen de Natuere nae volghen [...]". On both passages, and especially on the reconciliation of the Aristotelian antithesis of *ars* against nature in Bruegel, see chapter 12 of W.S. MELION, *Shaping the Netherlandish Canon. Karel van Mander's Schilder-Boeck*, Chicago-London, 1991, p. 173-182.

<sup>17</sup> VAN MANDER, *Het Schilder-Boeck*, fol. 233r: "Hy was wonder vast in zijn stellingen, en handelde seer suyer en aerdigh met de Pen, makende veel ghesichtkens nae t'leven".

<sup>18</sup> The second state of *Schaatsenrijden voor de Sint-Jorispoort/ice skating before the Gate of Saint George*.

<sup>19</sup> VAN MANDER, *Het Schilder-Boeck*, fol. 300b and BEDAUX – VAN GOOL, "Bruegel's birthyear", p. 155.

<sup>20</sup> VAN MANDER, *Het Schilder-Boeck*, fol. 257v: "Hy is gheweest een goet Meester van beelden, inventien, en conterfeyten nae t'leven [...] Hy was oock goet Cosmographus, oft Landt-meter, en maeckte voor de Heeren van den Vryen te Brugge, eenen grooten Oly-verwe doeck, van t'Landt van de Vryen, met alle de Dorpen en plaetsen daer onder begrepen [...] Het leste dat ick van zijn werck heb ghesien, was een Conterfeytsel van den Duc d'Alençon, dat hy t'Antwerpen nae t'leven had gedaen, en was een besonder en uytnemende werck".

<sup>21</sup> P. PARSHALL, "Imago contrafacta: Images and Facts in the Northern Renaissance", *Art History*, 16, 4, 1993, p. 554-579, 564.

<sup>22</sup> Cfr. S. KUSUKAWA, "The Uses of Pictures in the Formation of Learned Knowledge: The Cases of Leonhard Fuchs and Andreas Vesalius", in KUSUKAWA and MACLEAN, *Transmitting Knowledge*, p. 73-96, 80-81.

<sup>23</sup> Th. BALFE, J. WOODALL, C. ZITTEL, *Visual Materials and the Vocabulary of Life-Likeness in Europe before 1800*, London-Leiden, 2019.

of cartographic representation. Lodovico Guicciardini (1521-1589), Bruegel's contemporary and author of a *Descrittione di tutti i Paesi Bassi altrimenti detti Germania inferiore*, opposes the expression 'al naturale' to 'forma in prospettiva'<sup>24</sup>. The first is used to refer to a perspective plan based on measuring and on proportion, the second indicates a city view.

The expression 'al naturale' could well contribute to nuance existing interpretations of what both Ortelius and van Mander have written about Bruegel's relation to nature: his paintings and drawings show things as they are, without artifice<sup>25</sup>; they are truthful, without being real (*i.e.* corresponding to reality). As Sachiko Kusakawa observes in her very interesting discussion of the use of pictures in Leonhard Fuchs's *De historia stirpium* and Andreas Vesalius' *De humani corporis fabrica*: "Naturalistic depiction does not necessarily guarantee direct observation by the draughtsman of the object depicted, nor does it prove the actual existence of the object"<sup>26</sup>.

The expression *Ad vivum* and its relation to reality was addressed at some length by Lucia Nuti with respect to the perspective plan<sup>27</sup>. To Nuti, the Renaissance invented the perspective plan as an artificial image of a view taken from a notable height, capable of showing the whole and the particular at the same time, transcending the physical limits of the eye<sup>28</sup>. Truth here is not expressed by the exact copy of what the eye has seen, it is the result of composition, and thus of a selection of phenomena from the physical world, guaranteed by the fact that all the information in the image is the result of the author's or a trustworthy source's personal contact with what is represented. *Ad vivum*, like *Ad naturam*, refers to this truth, or better truthfulness, to that subjective reality. It is based on observation and experience<sup>29</sup>. But the images are naturalistic without constituting proof that

<sup>24</sup> 1581 edition, p. 73 and 87. The 1582 French edition uses the expressions "plant [...] selon le naturel et non en perspective" (p. 97). For the French expression see also Jean Bourdichon's *Description des douze cesars abregees avecques leurs figures faictes et portraictes selon le naturel* of 1520ca in which the emperors' portraits, far from traditional representations, have an air of verisimilitude.

<sup>25</sup> For Dürer nature meant the physical world, the master curbing "the artist's impulse to invent and embellish, to pursue private tastes and inclinations" (Ch. S. Wood, *Albrecht Altdorfer and the Origins of Landscape*, London, 2014, p. 14).

<sup>26</sup> KUSUKAWA, "The Uses of Pictures in the Formation of Learned Knowledge", p. 74. On description as central concern of the Renaissance, both as process and result, see B.W. OGILVIE, *The Science of Describing: Natural History in Renaissance Europe*, Chicago, 2008.

<sup>27</sup> *Ritratti di città. Visione e memoria tra Medioevo e Settecento*, Venezia, 1996, e *Cartografie senza carte. Lo spazio urbano descritto dal Medioevo al Rinascimento*, Milano, 2008.

<sup>28</sup> *Cartografie senza carte*, p. 129: "Se consideriamo il campo dei ritratti di città, la vera invenzione del rinascimento e cioè la pianta prospettiva è un'immagine artificiale che simula una veduta dall'alto, capace di superare i limiti dell'occhio umano e svelare il tutto e ogni sua singola parte".

<sup>29</sup> Cf. Ortelius' epitaph for Bruegel where he calls his friend *purus*, because he does not, like so many other painters do in their paintings, deviate from his example, from the *vera forma* ("Ab hac labe purus noster Brugelius"; after MEGANCK, *Erudite Eyes*, p. 172, 223-224). In this respect one can also refer to Hoefnagel's view of Messina "repertum inter studia autographa Petri Bruegelii pictoris nostri seculi eximii" (*Civitates orbis terrarum*, vol. VI), or the *Amor and psyche* and *The fall of Icarus* prints, originating in nature studies made by Bruegel during his trip to Italy in the first half of the 1550s. Hoefnagel continuously stresses the importance of personal observation in his/Bruegel's views. His view of the bay of Pozzuoli, and even more so its tribute

the depicted exists as such. Nuti gives the example of Hoefnagel's view of Tivoli, showing Ortelius and Hoefnagel descending the mountains towards the water falls, accompanied by a local guide, that has in the right hand corner, a copy of Bruegel's *Prospectus Tiburtinus*, part of the so-called Large Landscapes by Bruegel (**fig. 7**)<sup>30</sup>. This is of course a citation, and not the result of Hoefnagel's personal experience; but it is an image based on a trustworthy source, a print by Bruegel who had been there 20 years before Hoefnagel and Ortelius. In this print, Hoefnagel confronts his own experience of the waterfalls in Tivoli, acquired by personal inspection, to Bruegel's perception of the same site as observed in the print<sup>31</sup>.

I want to turn briefly to Bruegel's *View of the bay of Naples*, which was already mentioned at the very beginning of this article (**fig. 8**). The painting has been studied by Marco Iuliano in the framework of his research on the city of Naples yet to be published<sup>32</sup>. His painstaking identification of the 20 or so major buildings in the view and his fine knowledge of Naples' history allow the author to date the information which is possibly represented in the painting to November 5, 1550, the day on which the Spanish fleet under the command of Andrea Doria (member of the family that still owns the painting today) entered the port of Naples after its (short) victory over the Turk Dragut before Djerba<sup>33</sup>. He furthermore links the image of Castel Nuovo to the castle painted at the port in one of the Tower of Babel paintings and finally, but most interestingly, quotes the following passage from the dialogues by the historian Tarcagnola of 1566. The dialogue is situated

to Abraham Ortelius, is emblematic in this sense: Hoefnagel decided, so he writes, to dedicate this and two other views related to Baia and Cuma, the Lakes Averno and Agnano, Solfatara and the Phlegraean Fields respectively, all to be published by Braun and Hogenberg in their *Civitates orbis terrarum* (resp. III, 56-58) to his friend and old-time travel companion "συναυτοπής", i.e. who has seen all these marvels by himself. Both friends are also represented in the first view on the left hand side overlooking the bay of Pozzuoli. We encounter both humanists again in the second of the Pozzuoli prints, that of Lake Averno. Once again they both overlook the site from a high viewpoint; one of them is pointing at something (probably birds on the lake, as we shall see), while the other is taking notes or even drawing the view. The legend at their right reads as follows: "Abraham Ortelius et G. Hogenaglius hunc lacum hodie non esse ἄορνων animadvertentes" ('Ortelius and Hoefnagel observing that this lake today is not ἄορνων', i.e. without birds; after Lucretius 6, 738). Personal experience prevails, even where the classics are at stake.

<sup>30</sup> Nuti, *Ritratti di città*, 1996, p. 134.

<sup>31</sup> Cf. Olaus Magnus' (1490-1557) use of the word 'experience' in *Historia de Gentibus Septentrionalibus, earumque diversis statibus, conditionibus, moribus, ritibus, superstitionibus, disciplinis, exercitiis, regimine, victu, bellis, structuris, instrumentis, ac mineras metallicas, & rebus mirabilibus, necnon universis pene animalibus in Septentrione degentibus, eorumque natura*, Romae 1555, p. 697, where a distinction is made between perception, theory/knowledge and personal experience: "In contemplatione enim naturae nihil potest esse supervacaneum, nihilque incredibile conceditur intelligendum, ut unicuique existimatio sua salva sit quando conformioribus causis et rationibus approbata fuerit atque rerum experientia corroborata" (cf. OGILVIE, *The Science of Describing*, p. 18-20).

<sup>32</sup> I thank Marco Iuliano for sharing with me the results of his paper on Pieter Bruegel's representation of Naples.

<sup>33</sup> In October 1550, Andrea Doria had blocked the entrance to the island's lagoon with his ships, trapping the galleys of Dragut (Turgut Reis) inside the Channel of Cantero. The latter had his ships pulled overland to the other side of the island and sailed to Constantinople, capturing on the way two galleys which were sailing to Djerba in order to join Andrea Doria's forces.

in Naples; the nobleman Girolamo Pignatelli, his brother and some friends have left the city for a villa in the countryside, on the hills east of Naples. After dinner, they have a walk in the garden and from there they overlook the city of Naples, and then Girolamo asks his companions:

“Vedeste mai per vita vostra la più bella prospettiva di questa? Se si vedesse ritratta in uno di questi quadri di Fiandra, chi non direbbe che questa fosse la più delicata cosa del mondo? Gode la vista nostra se ella vede una casa sola, che bella sia; si ricreano gli spiriti, se in un solo verdeggiante albero risguardiamo; l’animo si ravviva ogni volta che l’occhio alle tranquille e placide onde del mare si volge. Or quanto più la vista et gli spiriti et l’animo si ricreano, si rallegrano et gioiscono mirando in un medesimo tempo tanti et così grandi edifici, quanti et quali noi hora veggiamo et insieme tante amene colline di tante et così vaghe et fiorite piante vestite. Et il mare medesimamente così traaquillo[sic]? Questa è una vista a gusto mio dilettevolissima et giocondissima [...] Miriate un poco di gratia, et discorriate meco in particolare questo bel sito della città. Vedete come è egli maraviglioso et quasi fatto studiosamente tale dalla natura”<sup>34</sup>.

What do these first phrases mean? First, the city’s perspective view is of course the one the guests have from their (elevated) position in the hills outside Naples. It can furthermore be considered, as has been argued elsewhere, to be a reference to the perspective plan (drawn from the sea-side) by Étienne Dupérac, printed by Lafreri in 1566, the year in which Tarcagnota’s dialogues were published (fig. 9). Secondly, a typical Flemish view of the city to which Pignatelli is referring here, would of course be similar to the view Bruegel composed, showing the city in detail, between sea and heaven, in one holistic view framed by a captivating landscape. His *Bay of Naples*, as Svetlana Alpers writes, “fits right into the category of topographical harbour views”<sup>35</sup>.

Dupérac’s perspective plan of Naples, although from a higher viewpoint, recalls quite naturally the famous woodcut city view of Venice of 1497-1500 by Jacopo de’ Barbari, whom we have mentioned earlier. To de’ Barbari (c. 1445-1516) is generally attributed the painting of the mathematician Luca Pacioli. Although much contested, the attribution offers a nice link with de’ Barbari’s perspective view of Venice; the painting is a celebration of measure and proportion. Indeed, in the painting Pacioli (c. 1460/70-before 1516), author of a *Summa de arithmetica geometria proportioni et proportionalità* (1494) and a *De divina proportione* (published in 1509), is surrounded by geometrical tools while explaining a theorem of Euclid<sup>36</sup>.

Just as the perspective town plans, drawn to scale, reflect the chorographers’ ambition to draw images that incorporate and express measure<sup>37</sup>,

<sup>34</sup> *Del sito, et lodi della città di Napoli con una breve historia de gli re suoi, et delle cose più degne altrove ne’ medesimi tempi avvenute* di GIOVANNI TARCHAGNOTA DI GAETA, in Napoli, appresso Gio. Maria Scotto, 1566, fol. 3r.

<sup>35</sup> ALPERS, “The Mapping Impulse”, p. 63.

<sup>36</sup> On de’ Barbari, see S. FERRARI, *Jacopo de’ Barbari: un protagonista del Rinascimento tra Venezia e Dürer*, Milano, 2006; see also G. CREIGHTON, “BARBARI, Jacopo de’”, in *Dizionario biografico degli italiani*, 6, Roma, 1964, col. 44-46.

<sup>37</sup> NUTI, *Ritratti di città*, 1996, p. 145.

so are Bruegel's Large landscapes compositions that create an illusion of real space, in which perspective and proportion are fundamental. They are characterized by large open spaces, high viewpoints, high horizons, sense for detail. It is no surprise then that the Dutch word *Landschap* could refer to the piece of land the surveyor had to measure as well as to the landscape depicted by the artist<sup>38</sup>.

Bruegel's Landscapes have been integrated, alluded to, in perspective views, as we have seen in the case of Hoefnagel's print of Tivoli, but they even may have inspired maps like the one of the Piedmont area (fig. 10), published by Hieronymus Cock in 1552. Later maps of the *Theatrum orbis terrarum* by Abraham Ortelius have also integrated this kind of perspective view: the *Salisburgensis iurisdictio* by Marc Sceznagel of Salzburg (1571) with the large bird's-eye view of the city in the lower right corner, the *Hispalensis conventus delineatio* by Hieronymus Chavez (1579), and the map of *Ischia quae olim aenaria* by Julius Jasolinus deriving from Cartaro's *Ischia* of 1586 (fig. 11).

It is that kind of perspective view that Braun uses in Lampsonius' introductory poem of book III of the *Civitates orbis terrarum* as his biggest argument in favour of his city plans against Ortelius' geographical maps: 'At last, what pleases most is the art of perspective in the representation of cities, born to charm the eyes; and the pleasure of contemplating cities represented according to this art is greater than the flat representations of the earth in geographical maps'<sup>39</sup>. But more surprising, and at the same time more interesting because linked to what Ortelius writes about his friend's art, is the latter's defence of geographical maps in the same poem by Lampsonius: not mapping as such is praised, but the countryside, 'the fields and rivers that flow in fresh valleys and groves (after Virgil, Georgics, II 485)', just like in the map of Piedmont. Ortelius never comes to defend his maps as Lampsonius interrupts him and proposes both publishers to collaborate by putting their works, the *Civitates* and the *Theatrum*, together in order to produce an amphitheatre, an all-round picture of the world and its cities.

Two designs by Ortelius, remarkably different from the publisher's main production, clearly show his interest in representing nature, and echo, as Tine Meganck pointed out, Bruegel's Large landscapes<sup>40</sup>.

*The valley of Tempe* and the *View of Daphne* clearly form a pair as can be derived from the accompanying text where the end of the commentary on Tempe introduces the view of Daphne (fig. 12). Both prints are published in the *Parergon*, Ortelius' collection of 'historical' maps, one after the other. *The valley of Tempe* may well be inspired by the same book of Virgil's Georgics used by Lampsonius in his introductory poem to the *Civitates*, although no verses of Vergil are quoted in the print nor in the text on its verso. Indeed, a few verses before these that inspired Ortelius/Lampsonius (v. 469), Tempe is mentioned explicitly (although in modern translations the reference got lost)

<sup>38</sup> ALPERS, "The Mapping Impulse", p. 69.

<sup>39</sup> The translation is from MEGANCK, *Erudite Eyes*, p. 225.

<sup>40</sup> MEGANCK, *Erudite Eyes*, p. 188-193, 188.

in a bucolic description of nature and some of the husbandmen's activities described by Vergil can actually be seen in the print:

O fortunatos nimium, sua si bona norint,  
 agricolas! quibus ipsa procul discordibus armis  
 fundit humo facilem uictum iustissima tellus. 460  
 si non ingentem foribus domus alta superbis  
 mane salutantum totis uomit aedibus undam,  
 nec uarios inhiant pulchra testudine postis  
 inlusasque auro uestis Ephyreiaque aera,  
 alba neque Assyrio fucatur lana ueneno, 465  
 nec casia liquidi corrumpitur usus oliui;  
 at secura quies et nescia fallere uita,  
 diues opum uariarum, at latis otia fundis,  
 speluncae uiuique lacus, at frigida **Tempe**  
 mugitusque boum mollesque sub arbore somni 470  
 non absunt; illic saltus ac lustra ferarum  
 et patiens operum exiguoque adsueta iuuentus,  
 sacra deum sanctique patres; extrema per illos  
 lustitia excedens terris uestigia fecit<sup>41</sup>.

So if his friendship with Ortelius can indeed explain the relationship between Bruegel and cartography, there was definitely much more to it. Both had a very strong bond with nature, not only nature as such, but the physical world. They were practitioners of chorography, naturalists. Nature's representation, or rather description, was a question of measure, of proportion, following a tradition that can be traced back to the early 15th c. and involved artists as well as mapmakers as both were often one and the same. Ortelius used scales for his maps; Bruegel geometry, after Vermeyen's example, of whom van Mander in his *Schilderboeck* writes: 'he was neither inexperienced in geometry nor surveying nor other noble sciences'<sup>42</sup>.

Neither Bruegel nor Ortelius was a scholar; both were geometrical practitioners, Bruegel making paintings and prints, Ortelius maps. Both are practitioners of *Historia*, within the Aristotelian scheme, a descriptive type of knowledge, which can be opposed to *Scientia* or demonstrative, causal knowledge. Their images are naturalistic, but not necessarily realistic.

<sup>41</sup> "Talking about the life of husbandmen: Yet theirs is repose without care, and a life that knows no fraud, but is rich in treasures manifold. Yea, the ease of broad domains, caverns, and living lakes, and cool vales, the lowing of the kine, and soft slumbers beneath the trees – all are theirs. They have woodland glades and the haunts of game; a youth hardened to toil and inured to scanty fare; worship of gods and reverence for age; among them, as she quitted the earth, Justice planted her latest stamps" (*Virgil, with an English translation* by H. Rushton FAIRCLOUGH, I, London, 1930).

<sup>42</sup> From the quotation by J. VAN GRIEKEN, "Pieter Bruegel the elder, Hieronymus Cock, Antoine Perrenot de Granvelle and the beginning of the Italian War of 1551-1559", in M. BASSENS and J. VAN GRIEKEN, *Bruegel in Black and White. The Complete Graphic Works*, Brussels, 2019, p. 18-33, 31.



Fig. 1 *Temperantia* (Bruegel), engraved by Ph. Galle © KBR, Prints, S.I 7599



Fig. 2 Maarten van Heemskerck, *De dwaasheid van te veel wereldse kennis*, Panel, London, Private collection



Fig. 3 *Temperantia* (bottom right), Dresden, Staats- und Universitätsbibliothek, Co. 79, fol. 68

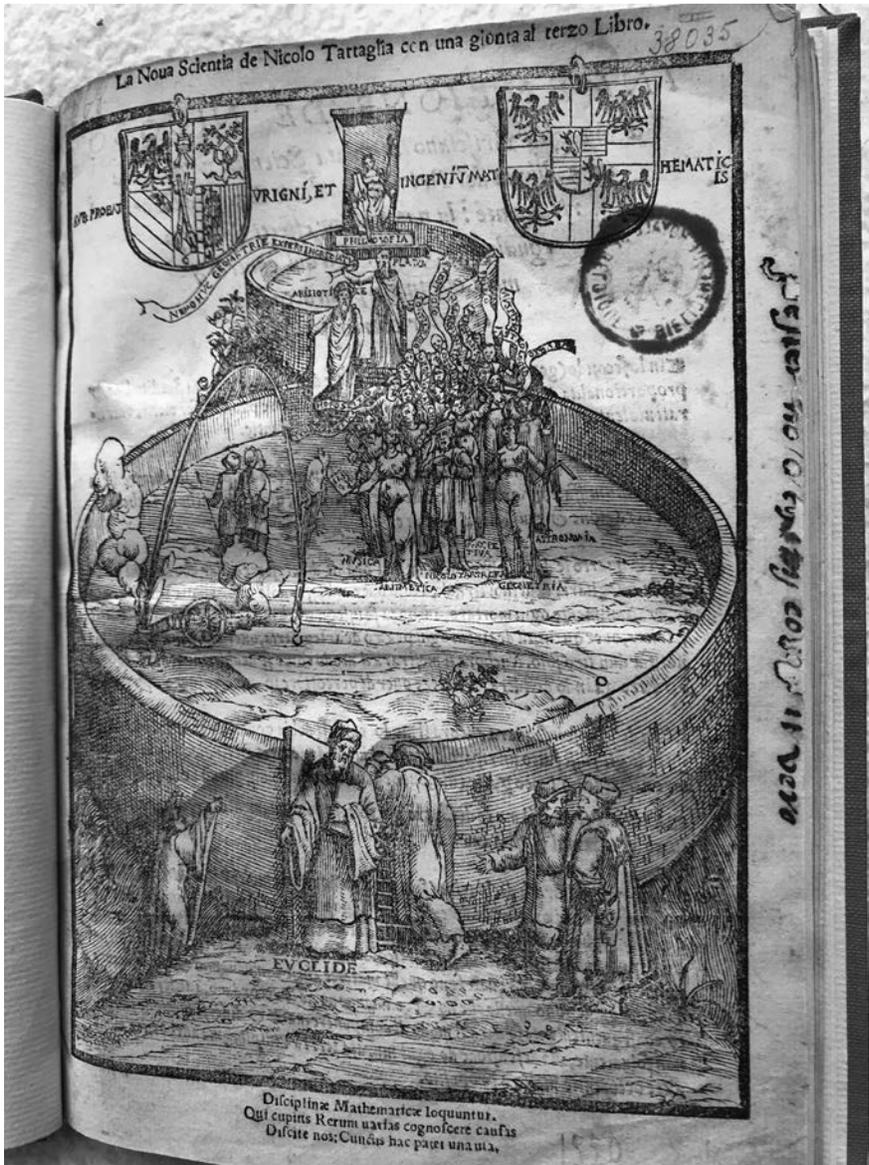


Fig. 4 Nicolò Tartaglia, *La nova scientia* (1537), frontispiece ed. 1550



Fig. 5 Augustin Hirschvogel, *On geometry*, 1543, title page



Fig. 6 Hirschvogel, self-portrait (1548)



Fig. 7 Hoefnagel's View of Tivoli (1581)



Fig. 8 Bruegel's View of the bay of Naples (ca. 1563)

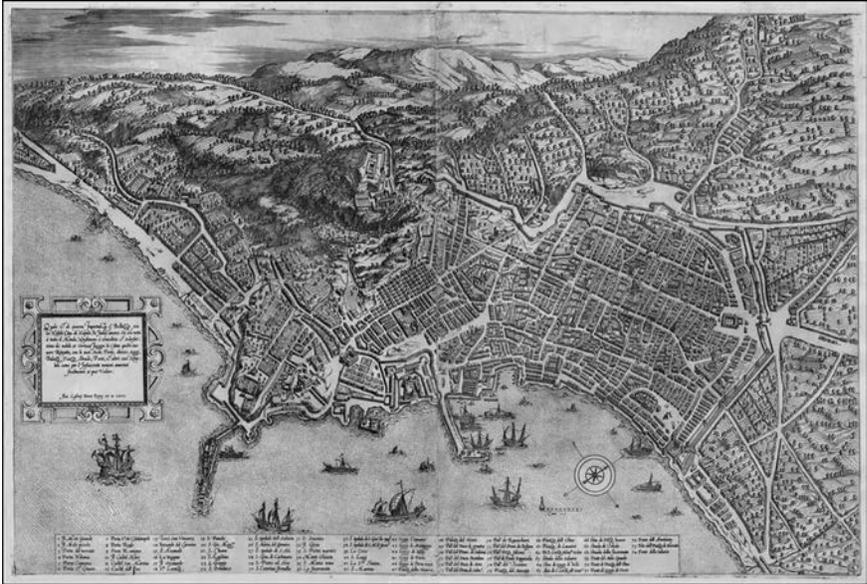


Fig. 9 Perspective plan of Naples by Étienne Dupérac, printed by Antonio Lafreri (1566)



Fig. 10 Map of Piedmont area, published by Hieronymus Cock (1552)



Fig. 11 Map of Ischia, by Julius Jasolinus (1590)



Fig. 12 Abraham Ortelius, The valley of Tempe (1545)

