How to combine philosophical ways of thinking and experimental science : a discussion on the scope of knowledge by Nicholas of Cusa in the Dialogues of the idiot, from De mente to De staticis experimentis

Autor(en): **Marcucci, Laëtitia**

Objekttyp: **Article**

Zeitschrift: **Freiburger Zeitschrift für Philosophie und Theologie = Revue philosophique et théologique de Fribourg = Rivista filosofica e teologica di Friburgo = Review of philosophy and theology of Fribourg**

Band (Jahr): **66 (2019)**

Heft 1

PDF erstellt am: **06.08.2024**

Persistenter Link: https://doi.org/10.5169/seals-869318

LAËTITIA MARCUCCI

How to combine philosophical ways of thinking and experimental science: a discussion on the scope of knowledge by Nicholas of Cusa in the *Dialogues of the Idiot*, from *De Mente* to *De Staticis experimentis*

In line with the dialogues entitled *De Docta ignorantia* (1440–1444) and *De Conjecturis* (1440–1441), Nicholas of Cusa's three *Dialogues of the 'Idiot'* (1450) sharpen the discussion on core themes of his philosophy of knowledge. God is not to be found among things, as he explains in the first dialogue, entitled *De sapientia*, and "*sapientia*", namely spiritual wisdom, has to be reached by becoming God in God Himself. Then, Nicholas draws a connection between metaphysics, especially his renewed definition of "*mens*"[1], and particularly in the second dialogue, *De Mente*, and a knowledge based on experiments and measurements in the third and last dialogue, entitled *De Staticis experimentis*, focusing on a practical approach of the created world. According to Nicholas, the mind, defined as "*mens mensura*", is determined by one's ability to measure. Its specific position within the metaphysical framework of the dialogues needs further explanations. How does Nicholas's renewed definition of mind link together metaphysical and philosophical purposes, and experimental science? In what way does the nature of mind determine the scope of knowledge? I'll focus on *De Mente* and *De Staticis experimentis*, building on a historical and conceptual approach. My purpose is to shed light on the move from theoretical to practical knowledge, taking into account the nature of mind and

[1] In this paper, I translate the Latin word '*mens*' by 'mind', according to Hervé Pasqua's French translation of the three dialogues, in: NICOLAS DE CUES: *Dialogues de l'idiot. Sur la sagesse de l'esprit*, ed. and trans. by Hervé Pasqua. Paris: Presses Universitaires de France 2011. This issue has been debated among French translators. Hervé Pasqua, Françoise Coursaget, and Jean-Michel Counet translate '*mens*' by 'esprit', namely 'mind' in my translation, while Pierre Caye, David Larre, Pierre Magnard, Jean-Marie Nicolle, and Frédéric Vengeon have chosen to translate '*mens*' by 'pensée' in their work. Hervé Pasqua in his introduction to the dialogues (NICOLAS DE CUES: *Dialogues de l'idiot*, 14) refers to the tradition of Thomas Aquinas, particularly in the line with *De veritate*, 10, 1, '*de mente, in qua est imago trinitatis*'. I follow his edition and translation of '*mens*' for this paper. Throughout this paper, I will refer to the Latin text that Hervé Pasqua has established for the French translation of the *Dialogues of the Idiot*. On the French translation debates, see for instance NICOLLE, Jean-Marie: *La traduction des œuvres de Nicolas de Cues en français*, in: EULER, W.A. (ed.): *Akten des Forschungskolloquiums in Freising von 8. bis 11. November 2012* (= Mitteilungen und Forschungsbeiträge der Cusanus-Gesellschaft 34). Trier: Paulinus 2016, 187.

the operative dimension of knowledge, based on figures and measures. Primarily, I will go over the main metaphysical statements which renew the modalities of knowledge and experience. Then, I'll focus on the implementation of Nicholas of Cusa's program and its consequences in epistemic terms, especially in *De Staticis experimentis*.

1. The renewed discovery of 'mind' in Nicholas's *Dialogues of the Idiot*

1.1 Nicholas's main metaphysical statements and the nature of mind

With the features of an ignorant[2], the genuine philosopher of the *Dialogues* provides a reflection on the nature of mind, moving from a theological point of view to a more anthropological one. Nevertheless, the divine perspective and experience cannot be completely removed from his approach, given the context of development of his critical thought.

As it can be seen in the first dialogue, *De Sapientia*, the starting point of the reflection is God identified with wisdom: God embodies *sapientia*[3]. Human creatures are likely to gain the bliss of perfect wisdom and thus they become God in God Himself[4]. Nicholas's concept of wisdom is a way to overcome the difficulties that the quite unbridgeable Eckhartian *Abgrund* has developed between God and Man[5]. This chasm is namely due to the difference of proportion and the impossibility of an analogy between the finite and the infinite, as he reveals in his *Docta ignorantia*: "*manifestum est infiniti ad finitum proportionem non esse*"[6], "it is obvious that there is no proportion from infinite to finite"[7]. In his *Dialogues*, Nicholas

[2] On 'the idiot' as a figure of thought, echoing the Socratic irony, see Nicolas de Cues: *Dialogues de l'idiot*, 8.

[3] See for instance Nicholas of Cusa: *De Sapientia*, I, 25 in: Nicolas de Cues: *Dialogues de l'idiot*, 66: "Sic vides unicam et simplicissimam dei sapientiam, quia est infinita, esse omnium formarum formabilium verissimum exemplar".

[4] This theme is also developed in posterior works, like *De Beryllo* (1458), in: Nicolas de Cues: *Le Traité du béryl*, tomes I et II, ed. and trans. by Maude Corrieras. Paris: Ipagine 2010–2012, and *De Ludo globi*: 1463, in: Nicolas de Cues: *Lettres aux moines de Tegernsee sur la docte ignorance*: 1452–1456. Suivies de *Du jeu de la boule*: 1463, ed. and trans. by Maurice de Gandillac. Paris: O.E.I.L. 1985. Nicholas relies on hermetic materials, such as *Asclepius*, I, 6–I, 8, also to be found in *De Conjecturis*, II, 14, in: Nicolas de Cues: *Les conjectures*, ed. and trans. by Jocelyne Sfez. Paris: Beauchesne 2011. On the impact of medieval Hermetism on Nicholas's thought see *inter alia* Arfé, Pasquale: *Ermete Trismegisto e Nicola Cusano*, in: Lucentini, P./Parri, I./Perrone Compagni, V. (eds): *Hermetism from Late Antiquity to Humanism. La tradizione ermetica dal mondo tardo-antico all'umanesimo*. Atti del Convegno internazionale di studi. Napoli, 20–24 novembre 2001. Turnhout: Brepols 2003, 223–245; Federici Vescovini, Graziella: *Nicolas de Cues. L'homme, atome spirituel*. Paris: Vrin 2016, 53–73.

[5] See Nicolas de Cues: *Dialogues de l'idiot*, 11.

[6] Nicholas of Cusa: *De Docta ignorantia*, I, 3, 9, in: Nicolas de Cues: *La Docte ignorance*, ed. and trans. by Hervé Pasqua. Paris: Éditions Payot et Rivages 2008, nouvelle édition revue et augmentée 2011.

[7] My translation.

intends to give priority to action instead of contemplation, and in other words, he enhances the image of Martha as she acts non-destructively in the created world[8]. This Rhenan heritage of thought and its limits have to be transcended. In this regard, Nicholas's renewed discovery of 'mind' is crucial to the progression of the dialogues. Namely, the philosopher aims to provide a metaphysical basis for the possibility of an action which may support the development of science in a positive way and even promote the advancement of empirical knowledge. The dialogues are conducive to an anthropological turn within his knowledge theory[9]. The conditions of possibility of empirical knowledge depend on the junction of metaphysical, theoretical, and anthropological levels.

According to Nicholas of Cusa's main metaphysical statements, God, Who is the embodiment of Unity, is not to be found among things, marked by the seal of plurality, in a world deprived of accuracy[10], because accuracy is specific and exclusive to God[11]. The issues of measure and of accuracy draw a connection between human knowledge and empirical approach, that are required by the world of diversity, plurality, and inequality. Furthermore, the knowledge of God relies on a similarity between divine and human minds[12]. Actually, Nicholas asserts that the human mind is effectively an *imago Dei*. Man is a microcosm in so far as the *similitudo Dei* is enabled by the figure of Christ. In the *Dialogues of the Idiot*, Nicholas focuses on human cognition and on the scope of knowledge potentially rooted in it. The first step of his demonstrative process contributes to reduce the gap between the Creator and His creatures. Consequently, metaphysics and spiritual wisdom constitute important preparatory stages to the knowledge of the world and to knowledge in general, because it is necessary to reach God who is Truth to attain truth in concrete things[13]. The mind is an image of God's wisdom. It is necessary for the mind to "appropriate knowledge",

8 Cf. MEISTER ECKHART: *German Sermons*, 2, in: MEISTER ECKHART: *Sermons*, ed. and trans. by Jeanne Ancelet-Hustache, 3 vol. Paris: Seuil 1974–1979. See also DE GANDILLAC, Maurice: *Deux figures eckhartiennes de Marthe*, in: *Genèses de la modernité. Les douze siècles où se fit notre Europe: de* La Cité de Dieu *à* La nouvelle Atlantide. Paris: Cerf 1992, 354–366; and MANGIN, Éric: *Maître Eckhart et l'expérience du détachement. Dire l'intime indicible*, in: Études 411 (2009), 65–76.

9 On this specific dimension of Nicholas's thought, see VENGEON, Frédéric: *Nicolas de Cues. Le monde humain, Métaphysique de l'infini et anthropologie*. Grenoble: Jérôme Millon 2011, *passim*.

10 NICHOLAS OF CUSA: *De Sapientia*, II, 40, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 86: "In mundo enim praecisione carente adaequata mensura ac similitudo est impossibilis".

11 NICHOLAS OF CUSA: *De Mente*, Ch. III, 69, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 120: "Nam deus est cuiuscumque rei praecisio"; "quia praecisio citra deum non est".

12 NICHOLAS OF CUSA: *De Mente*, Ch. XI, 133, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 190: "Unde mens nostra, imago mentis aeternae, in mente ipsa aeterna ut similitudo in veritate sui ipsius mensuram venare contendit".

13 NICHOLAS OF CUSA: *De Mente*, Ch. III, 69, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 120: "Hinc qui praecisionem unam attingerei, deum attingeret, qui est veritas omnium scibilium".

because cognition relies on a "*vis assimilativa*"[14], itself based on the treatment of measures, combined with the pragmatic dimension of living in the world. Actually, the appeal to the *potentates* refers to this pragmatic and even political dimension at the very end of the last dialogue[15], showing a potential concrete impact of the mind's capacity of production on politics and civilian life. The nature of mind is hence inserted within a metaphysical framework and correlated to human activities of production. Consequently, metaphysical and anthropological statements are linked together in the three dialogues.

1.2 The definition and position of Man

The main issue of *De Mente*, namely the nature of mind and its definition as "*mens mensura*", is introduced by the depiction of the wooden spoon maker. The idiot asserts: "*mentem esse, ex qua omnium rerum terminus et mensura. Mentem quidem a mensurando dici conicio*"[16]. In other words, things depend on limits and are measurable because of the nature of mind. Their delimitation and definition are connected both to the metaphysical, and the pragmatic dimension of the nature of mind defined as "*mens mensura*". The *Dialogues* are actually devoted to this statement, and to the implications of this argument for the definition and position of Man towards both God and His Creation.

This definition of the nature of mind, as it is developed in *De conjecturis* (1440), is a major contribution to the speculative and conjectural approach to knowledge in Nicholas of Cusa's philosophy. In fact, Man has a central position in the thought process, as a necessary mediation between metaphysical purposes on the one hand, and operative knowledge that takes place in the created world on the other hand[17]. Man is not a mere reflection of the physical, natural world, as Pietro d'Abano[18] and a current of medieval philosophical tradition claims, but Man is a kind of second God, since he becomes a God in God himself, an "*imago Dei*", as said above. As a matter of fact, in light of various traditions, Nicholas determines the position of Man in both a spiritual and quantifiable world. Every human being is like a little God in the world. This topic can be considered as a variation on the theme of the entanglement of microcosm in macrocosm. Nicholas endorses thereby, a herme-

[14] On the production of notions and assimilations, see NICHOLAS OF CUSA: *De Mente*, Ch. VIII.

[15] NICHOLAS OF CUSA: *De staticis experimentis*, 195, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 258: "Indeque videtur librum illum utilissimum futurum ac apud magnos sollicitandum esse, ut in diversis provinciis consignentur et comportentur in unum, ut ad multa nobis abscondita facilius perducamur".

[16] NICHOLAS OF CUSA: *De Mente*, Ch. I, 57, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 104.

[17] Cf. FEDERICI VESCOVINI, Graziella: *Nicolas de Cues*, 138–140.

[18] See for instance, PIETRO D'ABANO: *Conciliator differentiarum medicorum et philosophorum*. Venise: Gabriele Tarvisiensis 1476, reprinted Padova: Antenore 1985.

tic theme which is very present in *De beryllo* (1458), that is posterior to the *Dialogues of the Idiot*[19]. Besides, the spur of Pythagorism is obviously characterized by an emphasis on number, proportion, and arithmetic, with references to the works of Boethius[20], Plotinus, Thierry de Chartres[21], *inter alia*, and these references can be found all through the 'mathematical' books of Nicholas of Cusa's *De Mente*[22]. Nevertheless, the main originality of his philosophy relies on his specific definition of mind, which is a kind of 'nexus' in which the divine Infinite and the finiteness of natural and manufactured things come together. Moreover, the revelation of God's power and omnipotence is in us, revealed by the intellectual dimension of mind.

This reversal of perspective relies on the productive power of human mind, which builds and rebuilds the created world, relying on a conjectural process of thought, exploring step by step the network of the relations between things. The thought process of "*explicatio*" and "*complicatio*" appears as the gnoseological development of Man's rational nature, as already shown in *De Docta ignorantia*, since "the mind is the first image of the complication of infinite simplicity", according to *De Mente*[23]. Indeed, human mind becomes a metaphysical and operative notion of Nicholas's philosophical argument. It combines intellectual and theoretical purposes, as the "*prima imago complicationis simplicitatis infinitae*". In so far as the mind is presented as a tool for the five senses, "*instrumenta sensuum*", a sensitive dimension is made obvious in this context[24]. The mind is actually at the crossroads of intellectual and sensitive materials. Senses provide a hazy understanding[25], related to the conjectural method based on approximations, and on proportional precisions[26]. It is for this reason that mathematical devices are fostered in Nicholas's general framework and theory of knowledge[27]. As an image of the absolute simplicity of God, the mind is

19 cf. supra.

20 See BOETHIUS: *De institutione arithmetica*, ed. by Gottfried Friedlein. Leipzig: Teubner 1867.

21 See Hervé Pasqua's edition. See in particular THIERRY DE CHARTRES: *Glosa super Boëthium de Trinitate*, ed. by Nikolaus Häring. Toronto: Pontifical Institute of Medieval Studies 1971.

22 See NICHOLAS OF CUSA: *De Mente*, Ch. VI, sqq, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 138 sqq.

23 NICHOLAS OF CUSA: *De Mente*, Ch. IX, 122, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 178: "Et mens prima imago complicationis simplicitatis infinitae" (My translation). See also NICHOLAS OF CUSA: *De Conjecturis*, I, 5.

24 NICHOLAS OF CUSA: *De Mente*, Ch. VIII, 114, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 168.

25 NICHOLAS OF CUSA: *De Mente*, Ch. VIII, 114, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 168: "confuse per sensos ipsos comprehendat"; "sed multos status simul confuse comprehendat".

26 See also NICHOLAS OF CUSA: *De Docta ignorantia*, I, 11–12.

27 On mathematics, see NICOLLE, Jean-Marie: *Mathématiques et métaphysique dans l'œuvre de Nicolas de Cues*. Villeneuve d'Ascq: Presses Universitaires du Septentrion 2001.

able to assimilate and reflect itself in each thing. In fact, the divine Unity, defined as "*unitas*", "*aequalitas*", and "*connexio*", whereas the human mind reflects it, not as an "*explicatio*", but as an "*imago complicationis aeternae*". As the author notes: "Mind is the lively description of the eternal wisdom"[28]. In other words, the mind "envelops" and "develops"[29]. Moreover, the mind is not a mere development but it remains above all an image of God[30], and it is therefore able to access the multiplicity, which is evidence of the Unity's movement of "*explicatio*", and to obtain a genuine knowledge of the created world, characterized by alterity[31], like "a living mirror", "*quasi vivum speculum*"[32]. The scope of knowledge is determined by this metaphysical and anthropological condition of possibility.

The human mind is prone to measure things[33], and from another point of view it unifies the various and scattered reflections that things provide. This unification is somehow a *complicatio* since, through mind, the scattered multiplicity initiates the movement to the first Unit and Unity, namely a movement of return called "*reditio*", with Neoplatonic hints. The first Unit within the creature can be considered as a mere reflection. The mind sheds light on things but the mind cannot come out of itself because it can only know what is already in it. Through this process, it tends towards its unity. "*Colligere*" implies the collection and assimilation of things; "*videre*" and "*mensurare*", as parts of the thought process are closely connected. The faculty of measuring contributes to the awakening of spirit. The mind is both development and contraction: it gets the measures like a pair of compasses, a figure quoted on several occasions by Nicholas. The mind is able to "reach itself in everything"[34].

[28] See for instance NICHOLAS OF CUSA: *De Mente*, Ch. IV, 74, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 124: "Capitulum quartum: Quomodo mens nostra non est explicatio, sed imago complicationis aeternae [...]", and Ch. V, 80, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 130: "Capitulum quintum, [...] et quomodo mens viva descriptio aeternae sapientiae". On the notion of '*complicatio*', see also NICHOLAS OF CUSA: *De Docta ignorantia*, II, 3, 6.

[29] See NICHOLAS OF CUSA: *De Mente*, Ch. IV, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 124–131.

[30] See NICOLAS DE CUES: *Dialogues de l'idiot*, 31–33.

[31] On 'alterity', '*alteritas*', and its connection with degeneration and death, see for instance NICHOLAS OF CUSA: *De Mente*, Ch. VI, 96.

[32] See NICHOLAS OF CUSA: *De Mente*, Ch. V, 87, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 138.

[33] NICHOLAS OF CUSA: *De Mente*, Ch. IX, 123, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 178: "Admiror, cum mens, ut ais, idiota, a mensura dicatur, cur ad rerum mensuram tam avide feratur".

[34] NICHOLAS OF CUSA: *De Mente*, Ch. IX, 124-125, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 178-180: "Quando enim attendis mentem esse absolutam quandam mensuram, quae non potest esse maior nec minor, cum sit incontracta ad quantum, et *cum hoc attendis illam mensuram esse vivam, ut per se ipsam mensuret, quasi si circinus vivus per se mensuraret*, tunc attingis, quomodo se facit notionem, mensuram seu exemplar, *ut se in omnibus attingat*", I

Thus, *De Mente* establishes a link with two infinites, qualitatively and quantitatively specified. Namely, the infinite to be found in the process of thinking and thought experiment can be distinguished from a countable infinite depending on the plurality and diversity of natural things. Understood as "*mensura*", the mind enables this process and the epistemic congruence of Nicholas's demonstration. In some ways, the mind establishes the metaphysical junction of the two infinites[35].

The two-fold mind is turned both towards God and towards the created world, but the stress is put on one side more than the other, regarding the composition of the three dialogues. In fact, the comparison between thinking and weighing irremediably makes the mind closer to perceptive and sensitive things. Consequently, Nicholas's analysis gives way to multiple pathways to knowledge. Moreover, he makes a genuine development in thinking compatible with the advancement of empirical knowledge, as shown by the contents of *De Staticis experimentis*. As regards the criteria and modalities of access to knowledge, Nicholas combines philosophical ways of thinking and pragmatic purposes. Actually, his metaphysics leads to experimental science. Arithmetic plays a pivotal role in this process[36]. The scope of knowledge benefits from his mathematical approach to material reality.

2. *De Staticis experimentis*' epistemic context and contents

2.1 Epistemic considerations on the method

In the third and last dialogue, *De Staticis experimentis*, Nicholas provides an application of his theoretical approach, delineating the heuristic dimension of this dialogue, quite brief in length in comparison with *De Mente*. In the light of its epistemic context of implementation, and of its contents, *De Staticis experimentis* paves the way to a specific type of empiricism in science based on reason, measure, and calculation. Within this framework, the observation of nature and the implementation of technical instruments are put in a special position, which leads to some extent to re-

underline; "*Intelligo simile in circino nullius determinatae quantitatis in eo, quod circinus, et tamen extenditur et contrahitur, ut assimiletur determinatis*".

35 On the distinction between the two infinites, see also Nicholas of Cusa: *De Docta ignorantia*, I, 13–23.

36 It is also the case for posterior philosophers such as Leibniz in his *Discours de métaphysique* (1686). For a comparison between Nicholas of Cusa and Leibniz, see Deleuze, Gilles: *Le pli: Leibniz et le baroque*. Paris: Les Éditions de Minuit 1988, and Cassirer, Ernst: *Das Erkenntnisproblem in der Philosophie und Wissenschaft der neueren Zeit*. Berlin: Verlag Bruno Cassirer 1906, Bd. I, 52–77; Cassirer, Ernst: *Le problème de la connaissance dans la philosophie et la science des temps modernes*. vol. 1, ed. and trans. by René Fréreux, pref. in Italian by Massimo Ferrari, trad. by Thierry Loisel. Paris: Cerf 2004, 29–67.

lativize traditional knowledge[37]. Mind, defined as "*mens mensura*" is therefore prone to be "*mensurans*", developing its activity of production, that concretely means to measure, weigh, and balance, not only in the figurative sense, but also literally, according to the model of instruments such as scales[38] and clepsydra[39] that Nicholas mentions in this dialogue. These instruments, the scales[40] for instance, are effective applications of the conjectural approach to nature. The weight differences are compared in various fields of knowledge, for example in medicine, in order to prognosticate and heal[41]: waters, urines, blood, and "plant roots, tree trunks, leaves, fruits, seeds, and sap have their weight"[42]. The evaluation of the differences in the weight, combined with the knowledge of medicinal qualities could benefit the practice, including the dosage of medication[43].

Thus, the art of weighing is held up as a model and a method, exemplifying the art of drawing relevant conjectures, based on proportionality relationships. From an epistemic point of view, the decisive importance given to "data weighting" places empirical knowledge in a crucial case by case approach, which takes note of the uncertainty's issue[44], outlined by Nicholas throughout the last dialogue. The instrumental dimension becomes, in a sense, the guarantee of the best science possible, and *in fine* of knowledge, which is moderately built according to the diversity of situations. Actually, the point is to reach an even truer conclusion with the accumulation of experience, and their comparison. This concretely applies,

37 See VENGEON, Frédéric: *Nicolas de Cues*, 160.

38 On the use of scale, see for instance the beginning of NICHOLAS OF CUSA: *De Staticis experimentis*, 161–162, 162, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 226: "cuius est similis mensura alterius, iudicium diversitatis naturae unius et alterius melius statera quam alio attingitur instrumento."

39 NICHOLAS OF CUSA: *De Staticis experimentis*, 182.

40 See also PICO ESTRADA, Paula: *Weight and proportion in Nicholas of Cusa's* Idiota. De Staticis Experimentis, in: REINHARDT K./SCHWAETZER H./DUSHIN O. (eds): *Nicolaus Cusanus: ein bewundernswerter historischer Brennpunkt. Philosophische Tradition und wissenschaftliche Rezeption*. Akten des Cusanus-Kongresses vom 20. bis 22. September 2006 in St. Petersburg. Regensburg: Roderer 2008, 135–146.

41 NICHOLAS OF CUSA: *De Staticis experimentis*, 163–167, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 226–230.

42 NICHOLAS OF CUSA: *De Staticis experimentis*, 164, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 226: "Sic etiam, cum herbarum radices, stipes, folia, fructus, semina et succus suum habeant pondus".

43 NICHOLAS OF CUSA: *De Staticis experimentis*, 166, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 228: "Unde, quando medico constaret pondus expirationis sani aut pueri aut adolescentis et similiter aegrotantis varia infirmitate, indubie tali experimento ad notitiam sanitatis et casus ab ipsa atque ad dosim remediorum citius perveniret."

44 NICHOLAS OF CUSA: *De Staticis experimentis*, 173, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 236: "Praecisio manet inattingibilis, sed quantum profecerint, statera ostendit, sine qua nihil certi efficere poterint".

for instance, to stones, vital breath, the extent of the day[45]. The quest for precision, unlimited in the world of quantifiable measures, thus described, echoes the metaphysical and qualitative quest embodied by "the hunting of wisdom", a "*venatio sapientiae*", according to Nicholas's book of the same name[46].

Furthermore, and in articulation of this aspect, measuring instruments are called to be increasingly precise and the measures obtained should be more and more accurate, reliable and valid, in the context of conjectural knowledge, which is subject to improvement. Nicholas intends to systematize and extend his method, as said by the orator at the end of the dialogue, highlighting the value of measure reports, in support of the explanation of causes[47]. Emphasis is there on the data collection, and on their quantitative dimension which complements the theoretical analyses, considering it may be useful for the community, as I mentioned above.

According to Aristotle's theory of knowledge[48], Nicholas defends the idea that only general cases can be known and that there is no knowledge of the particular and individual. The experiments enclosed in this last dialogue are exemplifications of his philosophical method applied to natural things – and with the understanding that mind is now considered as a reduction of the entire world. As a matter of fact, the Aristotelian framework is partly overturned by the rise of practical case studies and with a need for quantification: it is the encounter of general and qualitative notions with the finite and measurable world. The research results must be narrowed. A wide range of cases is therefore examined[49]. In this context, Nicholas makes a kind of survey, including traditional arts and sciences, like medicine on the one hand, and new experiments, for instance with boats, and quantifications on the other hand. Measurable outcomes are considered as

45 NICHOLAS OF CUSA: *De Staticis experimentis*, 176, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 238: "Ita et per hoc ad omnium metallorum et lapidum dementa et pondus elementorum *coniectura veriore pertingere posset*", I underline; NICHOLAS OF CUSA: *De Staticis experimentis*, 183, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 246: "ut ad pondus spirituum vitalium coniectura ascendere posset"; 185, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 248, "poteris semper et diem mensis et horam diei coniecturaliter staterà atingere, licet diebus illis, quando parva est brevitatis earundem variatio, minus certe quam aliis".

46 NICHOLAS OF CUSA: *De Venatione sapientiae* (1462), in: NICOLAS DE CUES: *La Chasse de la sagesse*, ed. and trans. by Hervé Pasqua. Paris: Presses universitaires de France 2015.

47 NICHOLAS OF CUSA: *De Staticis experimentis*, 195, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 258: "Satis nunc explanasti causas, cur rerum pondera optas per stateram capi et seriatim et multipliciter conscribi. Indeque videtur librum illum utilissimum futurum".

48 See ARISTOTE: *Les catégories. De l'interprétation* (*Organon* I et II), ed. and trans. by Jean Tricot. Paris: Vrin 1989.

49 See for instance, NICHOLAS OF CUSA: *De Staticis experimentis*, 183, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 246: "Aliud est pondus hominis attrahentis et tenentis anhelitum, aliud expirantis, et aliud vivi et aliud mortui, et sic in omnibus animalibus. Unde pulchrum esset has differentias habere annotatas in diversis animalibus et diversis hominibus et diversis hominum aetatibus, ut ad pondus spirituum vitalium coniectura ascendere posset".

a positive progress. The law of number is gaining ground and wins its spurs, since measures enable the more precise outlining of the 'empirical characteristic' of natural things notwithstanding the Aristotelian claim, as shown by Ernst Cassirer in his theory of knowledge[50].

2.2 The method's consequences: a practical art of conjectures

In the context of a broader reflection, it would obviously be premature and anachronistic to introduce the notion of "laws of nature", as understood in the 17th. Nevertheless, it is interesting to note that Nicholas focuses on observation and measures, and thus he shifts the centre of gravity of knowledge towards the object of knowledge itself, according to Ernst Cassirer's interpretation of Nicholas of Cusa's theory of knowledge[51]. The transformation of theology and the internal movement of metaphysics foster the empirical and technical investigation of nature, with the appearance of new topics of interest such as weighs, speed, and force, all parts of a historical change. Nicholas intertwines two paradigms in *De Staticis experimentis*, which makes his originality and specificity. The last dialogue can be read as an exemplification of the nexus which links philosophical ways of thinking with experimental science, in so far as this nexus relies on the combination between rational and intellectual faculties, echoing the two infinites' characteristics. Nicholas focuses on the logic of numbers and proportionality. This level of rationality is combined with the case by case approach of the conjectural method, based on observation, data capture in the field, and intellectual constructions. One cannot be achieved without the other. In fact, this philosophical position leads to a mapping of the world, through categorizations and figures, conducive to the development of engineering and craft[52]. Nicholas of Cusa knew Leon Battista Alberti, the author of *De Re aedificatoria* (1443–1452)[53] and he saw him in 1450, when he wrote the *Dialogues of the Idiot*. Moreover, *De Staticis experimentis* contains references to the architectural art of Vitruvius[54]. The scope of knowledge is broadened, without being disconnected from the metaphysical purpose. The mathematical tools ensure, to some extent, the junction between the distinct spheres of human activity and production.

50 CASSIRER, Ernst: *Le problème de la connaissance dans la philosophie et la science des temps modernes*, 31.

51 CASSIRER, Ernst: *Individuum und Kosmos in der Philosophie der Renaissance*. Leipzig: Teubner 1927.

52 On the notion of mapping by Nicholas, see VENGEON, Frédéric: *Nicolas de Cues*, 167–174.

53 See ALBERTI, Leon Battista: *De Re aedificatoria. L'art d'édifier*, ed. and trans. by Pierre Caye and Françoise Choay. Paris: Seuil 2004.

54 See for instance, NICHOLAS OF CUSA: *De Staticis experimentis*, 162, in: NICOLAS DE CUES: *Dialogues de l'idiot*, 226: "Vitruvius de architectura scribens".

Moreover, the stress is put on the practical dimension of science. The case studies *De Staticis experimentis* provide an operative dimension to knowledge and practical science. Actually, Nicholas considers a wide range of examples, showing his scientific culture, and his concern to provide further improvements. As for medicine, for instance, he encourages physicians to diagnose and heal by weighing urine rather than judging merely according to its colours. Astrological medicine is criticized. The principles of "*sympatheia*" between natural things is accepted but the efficiency of medicine could be strengthened if the consideration of weight were taken into account. Above all, and whatever the topic he deals with—urine, breath, metal alloys, etc.—Nicholas is interested in the weight differences. Then, he refers to agriculture, breeding, soil fertility, and waters. He also refers to Archimedes's principle and he conceives experiments in which the weight of water is involved. Moreover, he intends to provide a method to avoid being fooled by a metal alloy. These considerations about the weight of metals tend to discredit ancient alchemy, regarding the transmutation of base metals into precious ones. He examines several experiments of falling bodies, well known to classical physics. He also pays attention to astronomy in his survey while simultaneously discrediting fortune tellers. At the end of his enumeration of topics and cases, he recalls the importance of harmony, proportion, and geometry. Nicholas shows his interest in the world of multiplicity, plurality, and diversity, as a consequence of his conjectural method. This concern is necessary to a real theoretical progress, since the paradigms of "*complicatio*" and "*explicatio*" determine human production of knowledge and the way Man can invest in spaces for the purpose of theoretical knowledge and activity, according to Martha's model[55], and as an *imago Dei*.

In fact, *De Staticis experimentis* and its specific methodology combine several levels of analysis. First, it's not easy to decide between the following hypotheses. Does Nicholas intend to determine the foundations of a renewed science? Should the last dialogue of the three *Dialogues of the Idiot* be interpreted as a review of his working methodology designed to clarify his epistemic framework? Is *De Staticis experimentis,* taken alone, a concrete application of his aims and purposes? These questions remain open but it is noteworthy that the nexus between a qualitative infinite and a quantitative one is obviously at stake in the last dialogue in its practical dimensions. But it should also be stressed that this text represents a step forward in the quantification of data in the process of observing nature. The art of conjectures and the focus on the human production of figures, and thus the production of precision and consequently of knowledge, reveal the connection between thought and the external world, and more deeply the experimental dimension of philosophy itself.

55 Cf. supra.

Whereas mathematical developments show the internal movement of the mind, linked with the shaping of mathematical objects, the field of experience is connected with a description of the external world. The sensitive data world is itself an effect of the activity of mind. Hence, the gap between the qualitative infinite of mathematics and the indefinite quantitative world is filled in. Moreover, an acute typology allows us to distinguish on the one hand experiences of thought which may not be achievable, as it is the case with the experience which features the squaring of the circle, and on the other hand feasible experiments coping with epistemic issues and practical concerns, as is the case with metal alloys with the purpose disqualifying alchemy and seeking out counterfeiters. As a last resort, given the nexus claimed above, the philosopher is allowed to assume successive approximations, and from another point of view he builds the relevant tools to arbitrate in critical situations. The art of conjectures is thus completed by an art of production and judgement. The range of criteria is organised according to degrees of precision. Approximations could not be considered as evidence of the weakness of knowledge but are exemplifications of its effective progress. In the world of plurality, measurement errors are just relative.

The starting point of Nicholas's philosophical reflection in the *Dialogues of the Idiot* is both theological and metaphysical. His metaphysical statements lead to a renewed definition of the nature of mind (*mens*), conceived as "*mens mensura*". A central position is devoted to Man, who is an *imago Dei* and a little God in the world. The "*mens mensura*" envelops and develops, as a nexus, the countable and uncountable infinites, at a point where the linkage between God and the created world is discussed in the *Dialogues*. Thus, "*mens*", considered as a reduction of the entire world, is at the crossroads of assimilative and creative forces, combining rational and intellectual capacities. The nature of mind delineates the multiple pathways of knowledge from a theoretical and pragmatic point of view. The created world, characterized by plurality, diversity, and multiplicity, has to be built and rebuilt by the "*mens mensura*" because human knowledge is a construction. Mathematics provide the philosopher the necessary to investigate the field of knowledge. Within this framework, measuring is the concrete form taken by the conjectural method, based on a case by case approach and approximations, supported by instruments such as scales, combining relations of proportionality and figures. In fact, the nature of mind itself determines the scope of knowledge and its operative dimension. In this way, Nicholas's renewed definition of mind, as "*mens mensura*", links together metaphysical and philosophical purposes, and experimental science. From *De Mente* to *De Staticis experimentis*, Nicholas introduces a gnoseological and anthropological turn within his metaphysics. Finally, the emphasis on numbers and measures paves the way for

another core theme of Nicholas's philosophy, that can be found in the *Directio speculantis, seu De non aliud*[56], 1462: the creature is itself a creator.

Abstract
The paper aims to show how the definition of mind, as mens mesurans, *developed by Nicholas of Cusa in the* Dialogues of the Idiot, *links together metaphysics and scientific experiment. The focus is put on the connection between* De mente *and* De staticis experimentis, *in so far as these two dialogues renew the issue of the modalities of knowledge and experience. In this way, the move from theoretical to practical knowledge is made possible by the nature of mind and the operative dimension of knowledge, based on figures and measures. The position of Man is not the only element that needs to be considered. Actually, this epistemic turn leads to an art of practical conjectures.*

56 NICHOLAS OF CUSA: *Directio speculantis, seu De non aliud* (1462), in: NICOLAS DE CUES: *Du non-autre. Le guide du penseur*, ed. and trans. by Hervé Pasqua. Paris: Cerf 2002.