

# MILL AND NEWMAN ON SCIENCE

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**Abstract.** I analyze the meanings of the term *science* in different historical contexts, establishing distinctions between the Aristotelian use of the term and subsequently its modern use. I emphasize the situation in the 19<sup>th</sup> century, believing that the way Mill and Newman think about science is relevant to the way we view the relationship between science and theology today. Starting from these facts of a linguistic and theoretical nature, I argue that it is the privilege and freely assumed responsibility of each of us to produce arguments to support our positions in the matter of the relation between science and theology.

**Keywords:** science; theology; meaning as use; knowledge; personal commitment.

## CLARIFICATIONS

Starting from the idea of different uses of terms, in particular of the term *science*, the aim of this paper is to highlight the positions of the terms' users and, above all, the reasons, the justifications for preferring a certain usage. Such an investigation begins with the study of various uses in context, presupposes a clear understanding of the uses of the terms and of the reasons for their adoption, and assumes that the users of the terms are persons endowed with reason and will, that is to say, with freedom, choose these uses in full knowledge of the facts. Of course, a more important but difficult goal to achieve is to discover how individuals in various communities negotiate among themselves the adoption of these uses, thus prioritizing some over others, which is what characterizes a culture. Maximally, these few ideas can be the essence of a model for interpreting cultural evolution; minimally, that is, what I propose here, they provide us with a tool to read the positions of various important authors. The following considerations must be taken into account. 1) People have a variety of commitments that are to be assessed in accordance with their own peculiar criteria. 2) Trying to find a general criterion – for example, the degree of control over various criteria – is tricky; when

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commitments are in opposition, it is the task of freedom (reason and will) of each of us to produce arguments, reasons (which are not always of a strictly cognitive nature) for adopting one use or another of a term, or a hierarchy of uses. From here on, two delicate issues arise: first, how each of us ensures the inner coherence of his choices, and subsequently, how we negotiate the uses of terms within the linguistic community. As I will show in what follows, important thinkers understand and express the difference between the theoretical level (where we have distinct disciplines with specific criteria of analysis) and the meta-theoretical one (where we opt in favor of a given discipline). The emphasis on these levels has two advantages: it helps to clarify the use of terms in various disciplines and to achieve the dialogue between them; and subsequently it draws attention to our freedom and responsibility as long as our problems are not only of a theoretical or calculative nature. The reference to Mill's and Newman's positions on science is not accidental; I believe that the two 19<sup>th</sup> century Britons provide a good illustration for the above ideas.

### TRADITION

The meaning of a term is context-dependent, because use changes according to context, and “the meaning of a word is its use in the language”.<sup>1</sup> Despite the proliferation of interest in the various uses of terms –, linguists have always been interested in etymologies and terminological kinships – from a cognitive point of view the main interest continues to be that of precision of statements. However, it is important to note that even when studying terms in precise contexts, that is, within specific theories, we must bear in mind that there is a dominant use at a given historical/cultural moment which puts pressure on the creators of theories. This pressure is not just social as in the case of dominant geo-centrism which excludes heliocentrism; in many cases these pressures are better explained by the understanding of institutions as equilibria, i.e., the perpetuation, the preservation of dominant positions because the authors of the theories freely want to meet the assumed expectations of the community in which they live. The elements of change of the dominant meaning are complex and difficult to analyze because their various components have different growth/change rhythms. However, we must take these aspects into account in order to correctly understand the texts and positions of some authors, and especially in order to be able to absorb the lesson of the finished analyses ourselves. Given what has been shown, philosophical analysis should concern us more than any other activity. In order to prepare ourselves to understand 19<sup>th</sup> century positions of thinkers such as Mill, Newman, Comte, Brentano, Lacordaire, we analyze the evolution over time of the meanings of terms such as

<sup>1</sup> Ludwig Wittgenstein, *Philosophische Untersuchungen. Philosophical Investigations*, Wiley-Blackwell, Oxford, 2009, p. 25. Things are different for names that point to a bearer.

*scientia, philosophia, theologia*. Here I make only a few observations about the use of the term *scientia*, the second and third terms being in some ways comparable to the first.<sup>2</sup> In the classical period, the Latin *scientia* initially stood for the ancient Greek *epistēmē*, certain knowledge, but it also meant knowledge regardless of the field in which it was applied (not only in science, in the contemporary sense, but also in art, etc.);<sup>3</sup> accordingly, the Latin translated different, but semantically kindred terms, with *gnosis*.<sup>4</sup> It is essential in order to have a science, to command the relevant knowledge by clearly specified criteria (specific to each type of knowledge). The different meanings of the term *scientia* cover the Aristotelian tripartition of sciences: theoretical, productive, practical. Aristotle uses different terms to refer to this classification of sciences, subsequent to the classification of different sciences within each group; for example, in *Metaphysics* he speaks in terms of *intellect, judgment, even thinking*<sup>5</sup> in order to introduce the basic tripartition,<sup>6</sup> or in terms of *theoretical philosophy*<sup>7</sup> to introduce the distinction between mathematics, physics and theology (the last term stands for metaphysics, sometimes called *prote philosophia*).<sup>8</sup> It is clear that the fundamental terms of intellectual life have affinities within Greek culture and then with the Latin terms of medieval Christian culture.<sup>9</sup> Here we are only interested in observing that for Aristotle all these three types of sciences suppose a form of knowledge, which cannot be reduced to the theoretical aspect, despite the highest connotation of the term. As surprising as it may seem, this tripartition also involves knowledge in the form of a skill that, if necessary, can be expressed in judgments. This understanding of knowledge is much broader than the strict theoretical and observational one specific to modernity.

<sup>2</sup> In order to see the correspondences with *scientia* of terms like *philosophia, theologia*, etc. it is sufficient to read the discussion of the terms in specialized dictionaries like: Albert Blaise, *Dictionnaire Latin Francais des Auteurs du Moyen-Age*, Typographi Brepols Editores Pontificii Tvrnholti MCMLXXV, pp. 685, 827, 912; J.F. Niermeyer, *Mediae Latinitatis Lexicon Minus*, E.J. Brill, Leiden, 1976, pp. 427, 946, 1020; C.F. du Cange, *Glossarium Mediae et Infimae Latinitatis*, L. Favre, Niort, 1886–1887, vol. VI, p. 305, vol. VII, p. 354, vol. VIII, p. 96.

<sup>3</sup> cf. P.G.W. Glare, *Oxford Latin Dictionary*, Clarendon Press, Oxford, 1968, s.v. *scientia*, p. 1703. See also ibidem, s.v. *scio*, p. 1704–1706, with the Greek correspondent *schizo*, from an Indo-European root that means *to divide, to separate*, which shows how deep the “analytical” roots of the term are.

<sup>4</sup> cf. H.G. Liddell, R. Scott, H. S. Johns, *A Greek – English Lexicon*, Clarendon Press, Oxford, 1996, s.v. *gnosis*, p. 355, *dianoia*, p. 405, *epistēmē*, p. 660.

<sup>5</sup> Vide supra n. 4 the meanings of the term *dianoia*.

<sup>6</sup> *Metaphysics* 1025 b 25: *ὥστε εἰ πᾶσα διάνοια ἢ πρακτικὴ ἢ ποιητικὴ ἢ θεωρητικὴ*.

<sup>7</sup> Vide supra n. 2, Niermeyer op. cit., p. 427, where mention is made of the meaning *monastic life* for the term *philosophy* in the Christian Middle Ages.

<sup>8</sup> *Metaphysics* 1026 a 18-19: *ὥστε τρεῖς ἂν εἴεν φιλοσοφίαι θεωρητικαί, μαθηματικὴ, φυσικὴ, θεολογικὴ*.

<sup>9</sup> A striking example is the takeover of the platonic polis tripartition into the Christian one: philosophers, soldiers and workers become rogatores, bellatores and laboratores; we are talking about a more than millennial evolution that modernity will inherit, with which it will work and on whose behalf it will have to articulate its own language that has an effect on its theories.

It is the knowledge that through its practical and poetic forms illustrates once more the connection between theory and reality. It is not surprising to see that one of the fathers of analytical thinking, regarded as a pillar of science and knowledge in the neo-positivist program of the Vienna Circle, Bertrand Russell, considers knowledge to be “by description” as well as “by acquaintance”.<sup>10</sup> Once again our attention is directed to the comprehensive use of the term *knowledge*, a use that covers quite well what Aristotle meant by *dianoia*, *epistēmē*, etc., and the Latins render by *scientia*. In this context, it is also worth remembering Ross’ observation about the Aristotelian division of sciences: “the immediate purpose of each kind is to know, but their ultimate purposes are respectively knowledge, conduct, and the making of useful or beautiful objects”.<sup>11</sup> We can observe a few things relevant to this text: although the terms used by Aristotle and rendered by the Latins just as *scientia* are more numerous, the important thing is that beyond this diversity we are in the presence of a classification of the sciences. These sciences have in common the fact that they are forms of knowledge; beyond this common aspect each has characteristic aspects. In accordance with the political thinking of Aristotle, not only with his epistemology, each of the possessors of this knowledge embodies a certain virtue, and the best constitution is that which organizes the citizens according to as many relevant virtues as possible. These considerations make it possible to state that Aristotle is conscious of the differences in level among the sciences as such and the whole issue of their classification, of the interrelations among them, etc. From the perspective of this difference between what we have called the *theoretical* and *meta-theoretical* levels, one can discern the relationships between the sciences and the various implications of these relationships (for knowledge, for individuals, for the community, etc.). Christianity posed a question of continuity to Greek-Roman culture, recognizing on both sides mutual rejections (such as that of Tertullian or that of Julian), as well as attempts at rapprochement, especially from Christianity (Origen or Augustine are exemplary). Europe and its culture were ultimately built on Athens and Jerusalem. What we see today are great achievements, such as that of integrating and bringing to the textbooks the two sets of virtues, the cardinal virtues inherited from the Greeks, from Plato (Republic, IV, 428 a – 434 d), and subsequently the theological virtues transmitted by Paul in Corinthians I, 13,13. Important for this study, however, is another example with which Thomas opens *Summa Theologica* arguing that based on different modes of knowledge there is a theology that belongs to sacred doctrine, different in genre from the theology that belongs to philosophy.<sup>12</sup> The theology belonging to sacred doctrine is knowledge

<sup>10</sup> cf. Bertrand Russell, *The Problems of Philosophy*, Williams and Norgate, London, 1918, p. 72.

<sup>11</sup> Sir David Ross, *Aristotle*, Routledge, London, 1995, p. 21.

<sup>12</sup> Sanctus Thomas Aquinas, *Summa Theologica* I, q.1, a.1, ad 2: *diversa ratio cognoscibilis diversitatem scientiarum inducit...theologia quae ad sacram doctrinam pertinet, differt secundum genus ab illa theologia quae pars philosophiae ponitur.*

revealed by God and accepted by faith.<sup>13</sup> A few observations can be made on account of these claims by Thomas: it is significant that he introduces the considerations about theology as part of sacred doctrine at the beginning of the *Summa Theologica* because in this way he marks the distinction we emphasized between the theoretical level of the various commitments (and in particular the use of the term *scientia*), and then the meta-theoretical level from which the author organizes these aspects among themselves.<sup>14</sup> The Dominican is the most important and faithful Christian interpreter of Aristotle, including in terms of the classification of sciences; however, the emphasis is on the Christian aspect and as a result Thomas argues for the existence of a science, a theology (corresponding to the philosophical theology) based on revelation. Once accepted, the revealed Christian theology is constructed by Thomas as a science; moreover Thomas believes that God can also be known naturally, beginning with the arguments for His existence. This presentation of Christian theology as a science will be particularly influential at least until Vatican II and especially after *Aeterni Patris*. In the relationship between Thomas and Aristotle, concerning theology as a science and the place of faith, we have a remarkable first example of the pressure exerted by the philosophical tradition on Christian theology even given that the meaning of the term *science* was much broader in Aristotle than it is in modernity. Important, however, is the fact that beyond the meanings of the term *science* we are in the presence of an example of the cultural influence of a philosophy on a theologian; specific to this example is the fact that the Church and theology are in a dominant position, and the influence exerted by philosophy is due to the prestige of Aristotle. This circumstance may be instructive concerning the situation in which personalities such as Brentano, Lacordaire or Newman will find themselves in relation to Comte's philosophy; in this situation the Church and theology are in a position of defense against the progress of science. Until we get there, however, let's make a few more remarks about the term that interests us, *science*, and its uses. In the medieval period, the term *scientia* retains this broad scope, but there are also occurrences in which it and its derivatives are used to name empirical knowledge, for example, in medicine.<sup>15</sup> This evolution of the term should not surprise us if we consider that the Church and the monastic orders played a fundamental role in the transmission of ancient and Arab culture in the European space and were the main actors in the founding of universities. Because he played an important role very early in familiarizing Europeans with the mathematical calculus, Fibonacci's work can even be considered a precursor

<sup>13</sup> *Ibidem*, I, q.1, a.1, ad 1: *licet ea quae sunt altiora hominis cognitione, non sint ab homine per rationem inquirenda, sunt tamen, a Deo revelata, suscipienda per fidem.*

<sup>14</sup> In this sense, it is also relevant that the five arguments for the existence of God – approaches of natural reason that take into account observation – are included (in the beginning) in the discussion *De Deo Uno*, as subordinate to revelation; see on these issues (S.T. I, q. 2 – q. 26) the article Antoine Guggenheim, The “Five Ways” and Aquinas's *De Deo Uno*, in *Analecta Hermeneutica*, vol. 2 (2010).

<sup>15</sup> cf. C.F. du Cange, *op. cit.*, vol. VII, p. 354.

to the use of mathematics for the description of the world; his *Liber Abbaci*, especially the well-known Fibonacci sequence<sup>16</sup> which is found in nature must be taken into account when considering the uses of the term *science*.

## MODERNITY

At the dawn of modernity, the term *scientia* is increasingly used in a specialized sense for knowledge of nature, particularly knowledge based on observations which can be inductively elevated to generality. Particularly instructive for the power relations between the Church and the free research into nature, and also for understanding science and its relations with faith, is the whole dispute surrounding heliocentrism. Most relevant, in my opinion, is the letter Cardinal Bellarmine writes to Foscarini. The latter is a mathematician who accepts heliocentrism and has published a commentary on this familiar to Galileo. Foscarini is a man of the Church just like the Jesuit Cardinal Bellarmine. Even the most ardent opponents of Bellarmine recognize his culture, intelligence and morality. Heliocentrism is one of the fundamental theories that changed the Aristotelian paradigm about the knowledge of nature; its rival, geocentrism, is embraced by the Church. Bellarmine writes to Foscarini but also addresses Galileo. First, he proposes that heliocentrism be presented as a hypothesis, not as an established truth, in order to avoid conflict. He then argues that the main obstacle to accepting the theory is not the scriptural text, but the interpretations that Church fathers and writers have given to it over time. In the Church, tradition is important, but it is not limited to the claims of past theologians. These may be erroneous, as evidenced by the fact that even some theses of Thomas Aquinas were condemned. The conclusions of theologians are not infallible, they can be changed if there are strong arguments, and the text of Scripture can be interpreted symbolically in such a way as to admit the new theories. Setting this framework of analysis, Bellarmine discusses the two strictly scientific issues, whether the sun is at the center of the system, and thus whether the earth revolves around it, and he states that for the first problem he finds convincing arguments, but not for the second. Accordingly, he tells Foscarini that given the lack of definitive arguments from natural science, the traditional interpretation must prevail.<sup>17</sup> Bellarmine's view is exemplary in several respects: first because a neutral perspective is proposed which is open in several directions to compatibilist solutions; second, equally important, the answer makes clear the distinction between the theoretical and the meta-theoretical levels; third, also important, personal

<sup>16</sup> cf. Leonardi Bigolli Pisani (Fibonacci), *Liber Abbaci*, Leo S. Olschki, Firenze, MMXX, p. 453: *iunximus primum numerum cum secundo...et secundum cum tertio et tertium cum quarto...et sic posses facere per ordinem de infinitis...*

<sup>17</sup> More on this topic, from a critical perspective, at Robert G. Brown, *Galileo and St. Bellarmine*, in [https://webhome.phy.duke.edu/~rgb/Philosophy/axioms/axioms/Galileo\\_St\\_Bellarmino.html](https://webhome.phy.duke.edu/~rgb/Philosophy/axioms/axioms/Galileo_St_Bellarmino.html)

freedom and responsibility are assumed in drawing conclusions; finally, we see the operative distinction between a treatment of the problem in question from the perspective of natural science that is beginning to specialize, as well as from the position of theological science in which the possibility of fallibility is accepted at the level of its adherents, not at the level of the scriptural authority, which, however, can be interpreted in such a way as to admit the new theory. We can see *in nuce* Newman's claim that there cannot be two truths, and that of Brentano who is convinced that he can make theology a science based on observation. But let us not be hasty, because at the same time, the terms that traditionally indicated the science of nature, physics, such as *philosophia naturalis* (Aristotelian *deutera philosophia*) continue to maintain links with traditional usage. The model of modern science, Galileo-Newtonian physics, is constituted along its general lines with Newton's publication of the *Principia*. He clearly formulates the scientific requirements of physics, the mathematical formulation of the laws of mechanics and their empirical applications, so that not only explanation but also prediction is possible.<sup>18</sup> At the same time Newton uses the phrase *philosophia naturalis*, although as John Harris's dictionary shows, the term *physics* had already come into use as a synonym.<sup>19</sup> More significant to the relationships that this discussion traces is the fact that in the *Scholium generale*, added to the second edition, Newton affirms the existence of God, attributing to it the order of the world.<sup>20</sup> The most relevant observation that can be made regarding Newton's position is that in so far as he states that there is a harmony between scientific proofs and revealed knowledge, meta-theoretical considerations about the relationship between the two domains are reduced to the demonstration that not every *dominus* is the Creator of the world, but only the Christian God.

Let us note from this brief analysis that 1) the term *science* covered a more varied field of knowledge in Aristotle than in modernity; 2) in the 17<sup>th</sup>–18<sup>th</sup> centuries Galileo-Newtonian science is formulated; 3) the specialization of the use of the term *scientia* presents a certain delay relative to the development of the natural sciences; 4) the requirement of the reliability of knowledge is formulated from antiquity by Aristotle, but the degree of reliability is obviously superior in Newtonian science; 5) with the declaration of Christian revelation as a science, i.e., certain knowledge based on faith, the question of their position at the meta-theoretical level of thinkers with Christian commitments becomes a much more complex one,

<sup>18</sup> Isaacus Newtonus, *Philosophiae Naturalis Principia Mathematica*, Cantabrigiae, MDCCXIII, Ad lectorem: *a phaenomenis motuum investigemus vires naturae, deinde ab his viribus demonstramus phaenomena reliqua*.

<sup>19</sup> cf. John Harris, *Lexicon Technicum*, Walthoe and Co., London, 1736, vol. II, s.v., *Physicks*; considered the first English-language encyclopedia; the first edition of volume II is from 1710; for a term to enter a dictionary it must have been used for several decades.

<sup>20</sup> Isaacus Newtonus, op. cit., p. 482: *Hic omnia regit...ut universorum dominus...Deum verum esse vivum, intelligentem et potentem*.

especially when the harmony between the sciences, that Thomas proposes, is questioned.

In connection with this evolution, it is worth noting that, especially in the 18<sup>th</sup> and 19<sup>th</sup> centuries, in addition to physics, biology and zoology are developed; this development that culminates in Darwin's *The Origin of Species* and in the proposal of the theory of evolution extends the use of the term *science* to the field of living things through the observation of which regularities, even laws, can be formulated. This time, however, those laws do not take a mathematical form, they do not offer the same degree of predictability that Newtonian physics offered. Darwin, who strives to discover the laws of evolution, presents his theory as one of Newtonian descent,<sup>21</sup> but like Newton he admits a Creator.<sup>22</sup> It can be said that this distinction between modern physics and biology marks the two disciplines until the 20<sup>th</sup> century when the former becomes the exemplary science. The degree of predictability exercised by each science over its subject matter is closely related to the possibility of mathematization. Also, in the 19<sup>th</sup> century, Mendel offers a prime example of science, genetics, in which relationships are not dynamic, but probabilistic; this type of relationship is also mathematized. Although Mendel mentions Darwin,<sup>23</sup> the Briton seems to be unaware of the monk's research; it is only in the 20<sup>th</sup> century that genetics becomes a competitor to the exemplary science that is physics, but the latter strengthens its position not only through quantum mechanics, but also through Heisenberg's uncertainty principle.<sup>24</sup> These developments highlight the importance of science specialization in modernity over more than 300 years; accordingly, in today's dominant culture, the term *science* is reserved for those theories and claims that require rigorous confirmation, by confrontation with the facts. Anyone who uses the term differently must specify and justify its usage.

This specialization of the term *scientia* was a long, complicated process which couldn't reach its modern form without the influential contribution of Auguste Comte. He wrote his *Cours de philosophie positive* proposing not only the law of the three stages, but especially the orderly classification of the sciences as based one on the other, the dominant classification even today. It is worth pointing out that Comte noticed the existence of varying degrees of predictability specific to each of the six sciences he has in mind and that he tried to avoid reductionism. It is also remarkable that for him science is in constant development, which leaves room for progress and even error. It is only with Auguste Comte that the concept of modern science is formalized: "the fundamental character of positive philosophy is to regard all phenomena as subject to invariable natural laws, whose precise discovery and reduction to the smallest possible number are the purpose of all our

<sup>21</sup> cf. Charles Darwin, *The Origin of Species*, Collier and Son, New York, 1937, p. 506.

<sup>22</sup> cf. *ibidem*, p. 505.

<sup>23</sup> cf. Gregor Mendel, *Versuche über Pflanzenhybriden*, Wilhelm Engelmann, Leipzig, 1901, p. 49.

<sup>24</sup> An accessible presentation of these issues in \*\*\* *Probability: The Heisenberg Uncertainty Principle*, in <https://courses.lumenlearning.com/suny-physics/chapter/29-7-probability-the-heisenberg-uncertainty-principle/>



efforts, considering as absolutely inaccessible and meaningless for us the search for what are called causes, either first or final”.<sup>25</sup> More than systematically ensuring the observance of this definition in his research, Comte also formulated a program for the development of science: “instead of blindly seeking a sterile scientific unity... the human spirit will finally regard the various classes of events as having their special laws...the most satisfying harmony will result spontaneously between them”.<sup>26</sup> With changes depending on the epistemological position of the researchers, the program and definition of science introduced by Comte abides to this day.<sup>27</sup>

According to the traditional comprehensive use of the term *science*, by contrast with the modern specialized usage, there are two important groups of thinkers who are increasingly different in terms of their main concerns and methods. The dominance of specialized science in the 19<sup>th</sup> century is undeniable; the adherents of traditional science are thinkers who have a metaphysical commitment, and Christian theologians have a commitment to a text, Holy Scripture, which is difficult to classify even by the particularly comprehensive Aristotelian definition of science. If we work with the tripartition scientist, theologian, philosopher and accept as fields of knowledge, modern science, Christian doctrine and philosophy, there are at least two reasons for complexity. The first is that these three disciplines have intersecting subject matter, that they borrow language and methods, that in some cases they even have overlapping ends, but at the same time they are often in competition. The second reason for complexity is the fact that those specialists have commitments beyond their own specialty so they have to negotiate their claims and their use of terms with other disciplines, and in making such decisions, they are under the influence of the dominant culture and so must also respond to the problem of coherence of their own positions. It is clear that this is one of the hardest decisions one of the aforementioned specialists can make, just as it is clear that the consistency traditionally promoted from Thomas to Newton and Darwin can no longer impose itself universally. It would be an error, however, to reduce such a complex situation to the far too ideological conflict between science and religion that was largely built in the 19<sup>th</sup> century by authors like Draper<sup>28</sup> or White.<sup>29</sup>

<sup>25</sup> Auguste Comte, *Cours de philosophie positive*, Bachelier, Paris, 1830, vol. I, p. 11–12.

<sup>26</sup> *Ibidem*, vol. VI, p. 794–795.

<sup>27</sup> This is not the case here, but – given their influence – a comparison between the Aristotelian classification of science and the Comtean one, as well as an investigation of how each of the two treats the issue of the certainty/control provided by science, would be particularly relevant.

<sup>28</sup> John William Draper, *The Conflict between Religion and Science*, Appleton and Co., New York, 1875, p. 365: *Will modern civilization... consent to retrace its steps to the semi-barbarian ignorance and superstition of the middle ages*. The whole work is deeply anti-Catholic and biased; no positive aspect of the more than thousand-year relationship between science and religion is retained.

<sup>29</sup> Andrew Dickson White, *A History of the Warfare of Science with Theology in Christendom*, Macmillan and Co., London and New York, 1898, vol. I, p. 134: *the most terrible champion [of religion] ...was Cardinal Bellarmin...earnest, sincere, and learned, but insisted on making science conform to Scripture*. The text continues with several criticisms in the same note against Bellarmine without ever analyzing the ideas he expounded in his dispute with Foscarini and Galileo.

A few considerations from Mill's and Newman's views can better shape the issues generated by this complexity. As Mill is on the side of modern science, Newman's case is more instructive; that's why I pay a little more attention to it.

It is worth remembering, however, that despite Mill's criticism of the late phase of Comte's thinking – “the *fons errorum* in M. Comte's later speculations is this inordinate demand for *unity* and *systematization*”<sup>30</sup> – the British philosopher develops his inductive method and naturalistic thinking within the limits set by Comte, taking advantage of the considerations noted by him in the *Cours de philosophie positive*. Regarding the object of knowledge, Mill adopts the same position as Comte did, inspired by Hume's thinking. Mill's naturalism, inductive methodology, the discovery of the laws of nature through observation, the correction of errors, the neutrality of science, the understanding of the laws of nature as uniformities observed at the level of natural phenomena, and still other points have their source in Comte and represent the dominant trend of science as spelled out by Comte. Even in the paper in which he criticizes Comte for not presenting sociology in perfect form and not dealing with psychology,<sup>31</sup> Mill states “M. Comte has accomplished this [the logic of science] for the first five of the fundamental sciences, with a success which can hardly be too much admired”.<sup>32</sup> As a religious skeptic and a critic of Comte's religion of humanity, Mill makes a sufficiently clear distinction between the theoretical level (science, theology, philosophy), and the meta-theoretical level at which he analyzes the reasons for his attitude towards these disciplines: “from...the evidences of Theism...the evidences of any revelation, it follows that the rational attitude of a thinking mind towards the supernatural is that of skepticism”<sup>33</sup> which Mill distinguishes from faith and atheism. From this formulation the distinction is clear between the level at which the rational attitude is required, the meta-theoretical one, and the level at which theology finds itself, the theoretical one. Despite these complex relationships, the synthesis between utilitarianism and naturalism practiced by Mill has established itself and remains to this day the dominant background conceptual understanding science.

Newman is more difficult to situate than Mill. Because of his conversion to Catholicism, Newman's positions are similar to those of other important thinkers

<sup>30</sup> John Stuart Mill, *Auguste Comte and Positivism*, Kegan Paul, London, 1907, p. 141; Littré rejects Mill's criticism by pointing out that Comte's goal was to treat sociology as part of the *Cours*, not to exhaust its study; cf. E. Littré, *Auguste Comte et Stuart Mill*, Germer Baillière, Londres, 1867, p. 16.

<sup>31</sup> *Ibidem*, p. 52: it was not, therefore, reserved to M. Comte to make sociological inquiries positive.

<sup>32</sup> *Ibidem*, p. 53.

<sup>33</sup> John Stuart Mill, *Three Essays on Religion*, Longmans, London, MDCCCLXXIV, p. 242.

like Lacordaire<sup>34</sup> or Brentano<sup>35</sup> who have similar commitments; his position is exemplary for the Catholic Church in the 19<sup>th</sup> century.

Newman faces the high degree of reliability of claims in modern science; it cannot be avoided, the new science must be assimilated, but without the metaphysical commitments assumed by the Catholic religion being destroyed. This line of thought of Newman's can be considered apologetics. Two of the cardinal's positions are particularly relevant. The first purports to show that when science makes errors the general attitude is much more lenient towards science than towards theology: "you are not at once indignant, censorious, suspicious, difficult of belief, on finding that in the secular sciences one truth is incompatible... with another or inconsistent with itself"<sup>36</sup>. Newman's intention, when he makes this observation, is precisely to draw attention to the prejudice that there is an irreducible conflict between science and religion at the expense of the latter. The second position of an apologetic nature is even more important and significant. It highlights the dominance of the new science of nature with its mathematical laws that allow explanations and predictions. If things had been different, it would have been enough to say that the biblical record, for example, about creation or geocentrism, is the truth and not the evolutionism or heliocentrism promoted by modern science. But Newman, who was a good connoisseur of the Alexandrian fathers of the Church from Clement and Origen to Cyril, resorts to an interpretation of Scripture – inspired by them – that is not in conflict with modern science, especially since Newton and Darwin accepted the idea of a Creator.

The lesson of Cardinal Newman's first position, let's call it *apologetic*, is twofold: a) in every cultural/historical phase there is a dominant vision, in our case of science, which vision has advantages by which it obtained that position, but it also has disadvantages as do its competitors, but these are not reasons to simplify things and exclude competing visions; b) if the first point is accepted, then the adherents of the traditional vision have to choose between a traditionalism that isolates them, which leads to exclusion, or a traditionalism (e.g., the Alexandrian tradition) that is open to dialogue and mutual tolerance at the level of a community.

Cardinal Newman's second position towards modern science is even more important than the first. After all, the first was the answer to modern evolutionary theory, to the specialization of science, and to the increased degree of control that modern science offered; the second position is the reaffirmation of one's own

<sup>34</sup> See Victor Giraud, *Catholicisme et Positivisme*, in *Revue des deux mondes*, Tome, XLIV, 1938, pp. 108–132, where the author analyzes the surprising influence of a critic of the religion, Comte, on the Catholic personalities of the era in France.

<sup>35</sup> See Susan Krantz Gabriel, *Can We Have Scientific Knowledge About God? Brentano on Comte's Metaphysical Skepticism*, in Ion Tănăsescu et al. (eds.), *Brentano and the Positive Philosophy of Comte and Mill*, De Gruyter, Berlin, 2022, where the author interprets – especially pp. 177 and 180 – how Brentano presents his metaphysical commitment as a science.

<sup>36</sup> John Henry Newman, *The Idea of a University*, Longmans, London, 1912, p. 462.

position, the reaffirmation of one's own metaphysical/religious commitment, and not a mere reaffirmation based on faith, even if faith is essential. It is a reaffirmation of the commitment to God on the basis of a rational argument, with the claim to respect the same reliability of the statements that modern science endorses. And in this regard the Catholic Church has a long tradition; the monastic orders played an essential role not only in the creation of universities, but, above all, in encouraging the philosophical and theological disputes that have generated the critical spirit of the modern era. The ideology of mutual incompatibility between science and religion formed in the 19<sup>th</sup> century still prevents us today from seeing these issues. In this regard, Newman states: "truth cannot be contrary to truth...truth often *seems* contrary to truth...we must be patient with such appearances and not be hasty to pronounce them to be really of a more important character."<sup>37</sup> And in this regard of affirming one's own prior position there are two important positions taken by the cardinal. The first is that the specialization of science in the natural field of observable phenomena capable of generating laws by induction represents a narrowing of the domain potentially open to scientific knowledge which was much broader in the Aristotelian approach assimilated by Thomism. In light of this observation, Newman claims not to exclude the supernatural, but to accept that the range of intelligibility may be broader than what is merely observable directly or by means of instruments. If we agree to renounce the exclusion of supernatural theology made in the name of the higher control offered by modern science, one may raise the question of Newman's second position, namely the attempt to build theology as a rigorous science that is centered on trying to prove the existence of God though not limited to that. To study God and his various attributes does not contradict the study of nature as it is practiced in modern science. Newman states that if contradictions arise, they must be carefully studied to be resolved – "when Nature and Revelation are compared with each other there be, as I have said, discrepancies, not in the issue, but in the reasonings, the circumstances"<sup>38</sup> – for the truth cannot be opposed to the truth.

Science, as Mill thinks, is an integral part of today's dominant paradigm, based on the reliability of scientific statements. Newman's position on science is in line with recent efforts by the Vatican to avoid disagreement between theology and modern science; the science that Newman is considering is an updated version of Aristotelian science of nature, of practical science in moral matters, and of the theoretical science of divinity. But the moment he states that he assumes divine design because he believes in God, and not the other way around, Newman is closer to the *credo ut intelligam* proper to Franciscans. This is a sensitive point in the relationships we are talking about; positioning himself in this way, Newman expresses the position of the Catholic Church on a fundamental matter, that of

<sup>37</sup> *Ibidem*, p. 461.

<sup>38</sup> *Ibidem*, p. 466.

faith, but his entire effort to shape the idea of the University is an illustration of how you can exercise your freedom of choice in a reasoned way to establish the relationship between theology and science.

At the end of this investigation into science it looks like we've reached a dead end; Mill works with one concept of science, Newman with another, despite the close historical dialogue between the two understandings of science. However, we are also left with something positive: with the need to reconcile the dominance of modern science with the unavoidable reality that people have commitments other than scientific ones. When someone said that Newman could be considered the Patron Saint of Scholars, I believe he was thinking about this very conjunction – between the virtue of knowledge and that of faith – present in our lives even though we don't know yet how to resolve it always in a comprehensive manner.

