

Knowledge and Science in *Paradise Lost*

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Ours is an age in which science is of various trends and each is isolated from the others. The study of human knowledge, once in the general scope of all fields and sciences, now seems to be the exclusive property of philosophy. The 20th century will be studied in the future as a century of technology and of linguistics. Improvements and new technologies are the real cause for this well established separation into different fields with their corresponding experts who often isolate themselves from the reality of the rest of knowledge. It is as if such “otherness” were a kind of threat to their possibilities within the field they have dived into. This was not the case in the Renaissance period when “curiosity” and the “will to learn and to discover” new things was a common factor among the intelligentsia. However, it was precisely a more universal conception of human learning and general interest that made sciences reach the status they hold today.

After the Dark Ages, new scientific discoveries became part of a chain of facts belonging to the history of humanity, which was brought about with such a force that events like Galileo’s imprisonment and the burning of Giordano Bruno could not stop the whole process. The development of science went together with the development of social issues such as welfare, religion, and others. All of these were reflected in the literature of the time, which was used to convey and communicate new hypotheses and opinions under no constraint or fear, and to encourage the continuation or improvement of more aspects in need of research. Hence the eclectic product so typical of this inquisitive age¹. Concerned with all the fields of culture related to Man, the humanists gave special emphasis to human values and dignity. They introduced to the curriculum of the *studia humanitatis* a wide range of subjects that varied greatly from that of the Scholastics, and which included grammar, rhetoric, history, poetry, and philosophy, both moral and natural. The study of new scientific discoveries and inventions like Galileo’s telescope, and the perfection of the printing press, together with new developments in astronomy such as Copernicus’ theory of the rotation of the earth, which inspired Kepler and Galileo, and which opposed the traditional Ptolemaic system; interest in mathematics and in the use of experimental and observational procedures, etc., were all bound together under the concept of “natural philosophy”. Milton, who was influenced by the humanist trend, dealt with all these issues, constraining them at the same time to reason. We see thus how his approach to knowledge is very close to rationalism. Milton not only accepted new theories, or at least the study and development of them, but he also encouraged a constant questioning and further dealing and thought². Milton’s system was based on human freedom, on the Fall and on the Scriptures, using all of them to interpret experience.

The return to the classical writers in their original languages encouraged the revision and retranslation of the classics permitting new interpretations under a freer approach that went together with a widespread eagerness for acquiring new knowledge and discovering new things. Could we not believe that the rediscovery of Plato and Aristotle under this new light without the misunderstandings of the Scholastic interpretation was the real cause and origin of modernity? A

¹ See John Arthos, “Poetic Diction and Scientific Language” *ISIS*, Vol. XXXII, 1940: 324-338.

² James Holly Hanford “Milton and the Return to Humanism” *SP*, Vol.XVI, No.2, April 1919: 137-147.

straightforwardly positive answer might not be applicable here, however, we may certainly believe that a great deal of modernity owes its existence to the will to return to the great masters of antiquity. The fact of reviewing, questioning, and reformulating old ideas anew, with a more open mind, allowed for more variety within different fields. To find the truth became a main objective of this period, and the search for it was done through wide discussion. The influence of classical ideas and approaches was mixed with religious beliefs and with a new sense of beauty encouraged by postulating the contemplation of nature. Cicero became an influential figure, his approach of uniting wisdom with eloquence was dominant in the literature of the time. Poetry became the special means to express the truth which is after all an individual interpretation of each poet and/or thinker with a final didactic intention¹. To use art as a means for teaching and for communicating new discoveries became a common factor. Sidney's *Defence of Poetry* is a clear example of this widespread use during the Renaissance period. In this way, interest in science was mixed with the art of the word, thus the presentation of new theories or hypotheses of interest for the author were expressed by means of the pleasure of the musical tone and used at the same time as metaphors, allegories and many other poetical tropes. Within the field of natural philosophy, astronomy was one of its more widely discussed topics. There are several reasons that need to be highlighted here: firstly, the popular belief that the universe evinces the greatest perfection and order and it should be imitated if real art was to be produced². Secondly, under the influence of Plato's *Timaeus* and Aristotle's *Metaphysics*, mathematical concepts were given an outstanding role in artistical composition; as Man was thought to be a microcosmos, a mere reflection of the perfection of the universe, everything about him should present exact proportions in order to obtain the harmony of the macrocosmos³. Finally, and linked with the latter, there is special emphasis on the need that such harmony should be applied to all fields related to Man. C.A. Patrides, in his article "The Numerological Approach to Cosmic Order during the English Renaissance", mentions the fact that many of the writers believed in an established order in the Universe which distinguishes its entire structure:⁴

During the English Renaissance, no commentator writing within the current of Christian thought failed to become enraptured by the order pervading the universe.

And he continues:

The widespread belief in cosmic order was enforced in various ways, principal among which was the establishment of a multitude of correspondences connecting the various levels of existence into a unified whole. These, according to Dr. Tillyard, resolve themselves principally into analogies between the divine, the cosmic, the human and the political planes.

These reasons account for the abovementioned eclecticism of the age, which unites different trends of thought and fields of knowledge due to the characteristic interdisciplinarity of the period. Poetry bestows such eclecticism as well, and in the case of Milton it becomes very syncretic, especially in *Paradise Lost*, which seems to be one of the most outstanding examples. We understand by syncreticism the ability to condense multiple ideas into a few lines, thereby achieving a rich and varied conceptual result, and as Patrides points out, this is also obtained with the use of analogies, as for example, "the analogy elaborated between the sun and the heart of man" (392) or the analogies involving numbers, such as number seven with the seven planets to signify the harmony of the universe.

¹ Schmitt & Skinner eds, *The Cambridge History of Renaissance Philosophy* Cambridge University Press, 1988. Last pub. 1992.

² E. M. W. Tillyard *The Elizabethan World Picture* Penguin Books, 1943. Reprinted, 1984. See especially chapters two, six, and seven.

³ Op.Cit. Schmitt & Skinner eds, *The Cambridge History of Renaissance Philosophy*: 60-70. 1992.

⁴ C. Patrides: "The Numerological Approach to Cosmic Order in the English Renaissance. *ISIS* 49: 391-397, 1958.

In order to convey the beauty of the macrocosmos in poetry, there was the widespread use of exact proportions supplied in the syllabic combination, prosody, and in the number of lines, which, when added up, acquire a significance that goes far beyond the words themselves. All these factors are directly related to Biblical exegesis, ancient philosophy, and Jewish mysticism. Cicero's union of philosophy with rhetoric gave a positive value to the latter; Ficino added a religious character to ideas and, eventually, influenced the following century¹. The controversy caused by the Reformation of the Church encouraged the writing of moral philosophical texts, and religious questions were set in relation to scientific controversies with the belief that the answers would be found in the Bible.

With *Paradise Lost* (PL),² Milton exemplifies such enriching mixture and shows the pre-occupation of an age and of a mind to find the truth. The concepts of order-harmony, knowledge-science and freedom depend on each other and are constantly intertwining. The equal combination of these conditionings constitutes the basic requirement for Man's happiness and welfare. The poem's length and its breadth of thought allows for the application of such combination to all the fields in a very explicit and visual way that became characteristic of Miltonic poetry. An example of syncretic union between order and ethics is found in the line from Book VI of PL: *God and Nature bid the same* (vi, 176), which should be interpreted as an indication of the need to obey and contemplate nature, the most perfect and harmonious work of the Divinity.

Even Milton, so eager for knowledge and curious for new discoveries, realised the dangers or obstructiveness that too many books might cause. What matters is the kind of learning one acquires, and wisdom consists in seeing the truth, the limits of our possible knowledge. Irene Samuel, in "Milton on Learning and Wisdom"³, analyses Milton's view of learning by focussing on three examples where the poet seems to reject knowledge. She states that these passages need to be read within context and they indicate the belief in knowledge determined by ethical habit. She emphasizes the interpretation of Raphael's admonition in Book VIII (66-178) as "learning desirable only as it finds its context in life" (710). It was characteristic of Milton to constrain every aspect related to human life, to reason, a virtue which will get different naming according to the field it is applied to. The need for reason understood as order was a widely shared belief of the period. Milton, no exception to the rule, uses it as signifying the inherent capacity of Man to discern between good and evil, and therefore as his capacity to reestablish an internal order, and the equilibrium between opposite factors. Oppositeness is another issue that is constantly encountered in Milton's writings as it is considered a necessary requirement for the distinction of each category. We could not postulate or explain "heat" if its contrary "cold" did not exist, as we would not be able to distinguish its quality and effect. Therefore, the need of contrasts appears as an absolute condition and principle in terms of showing the veracity of a formulated hypothesis. If we expand the existence of contrasts to a moral level, we then find the need to postulate the existence of "evil", which is the opposing quality of "goodness".

A mixture of scientific ideas, analogies and terminology is used throughout the poem, and its organization also seems to indicate a willing mathematical structure with the intention of widening its conceptual content. This structure allows for the intertwining of a great variety of sub-plots within the general plot of the poem, the Fall of Man. Such combination of events and ideas is also encountered within the underlying scenery, thus presenting the three worlds of Platonism. The intermediary world, represented in the poem by the angels' domain, evinces the cause and consequences of the first Fall, Lucifer's - to be called Satan ever after. The concept of disordered multiplicity - numberless throng/multitude - was constituted at the moment the very first

¹ J. E. Seigel *Rhetoric and Philosophy in Renaissance Humanism* Princeton, New Jersey: Princeton University Press, 1963. See Part I: "Philosophy and the Humanist Defense of Rhetoric."

² Henceforth the abbreviation **PL** will be used to refer to *Paradise Lost*.

³ Irene Samuel "Milton on Learning and Wisdom" *PMLA*, Vol.64, No.1, 1949: 708-723.

separation from the One is produced and the Dyad sees its initiation (PL, V.604-17)¹. Two opposing energies were required for the creation to take place, and this is allegorized in Book VI where the War between fallen and unfallen angels is narrated. It can easily be understood as the destruction produced by uniting matter with anti-matter; this will produce a creative and developing energy. The fact that the narration of the actual creation takes place immediately after the War in Heaven reinforces this interpretation. This War allegorizes disorder and reaches its end at the moment order is reestablished by the Son. This is done by giving a place for each category of angels, the fallen angels are sent down to the world of darkness in the “bottomless pit”, or Hell, below Chaos; the unfallen have their place in the world of light, a higher Heaven near the divinity. Thus the concept of space is clearly determined in Book VI, time has already been established during the war, which lasted three days “as they are counted in heaven”². Once time and space are established, the creation of the organic world will follow.

In the middle books of PL, Raphael informs Adam of everything he needs to know to avoid falling. The poem evinces Milton’s belief about the meaning of the Fall, which seems to follow the Plotinian belief that to fall is to forget God. This hints at moral philosophy and ethical knowledge, leading to a more perfect management of life and therefore happiness. As mentioned above, Irene Samuel very specially emphasizes Milton’s will for learning and she points out that he did not really change his mind about it, since his youth when he wrote the *Prolusions* he subjected it to being acquired without idolatry³. Although in *Areopagitica* Milton defends the publication of any books, he does not state that all readings are good, but that they are constrained to the use the reader makes of them. It is his intention to make people think and analyse what they are reading. Such beliefs are repeated in Milton’s prose and constitute a commonplace in Miltonic thought.

The passage under analysis presents the moment when Adam asks Raphael about the stars and planets, it belongs to their conversation on astronomy. As stated above, astronomy was widely discussed at the time Milton composed PL due to the contemporary differences between theories concerning the movement of the planets. Many scholars were influenced by the traditional Ptolemaic theory and felt very sceptical towards the relatively new Copernican system and the theories of Galileo and Kepler. The way Milton presents this dialogue shows his awareness of the controversy and his conviction that it was very important. However, he once more gave preference to a reasoned and unconceited analysis of the issue; truth is beyond the actual movement and situation of the stars and planets. What really mattered was to see the order and harmony of the universe as a reflection of God’s rule. This order is linked with the concept of “temperance” in Milton.

When I behold this goodly Frame, this World
Of Heav’n and Earth consisting, and compute
Thir magnitudes, this Earth a spot, a grain,
An Atom, with the Firmament compar’d
And all her number’d Stars, that seem to roll
Spaces incomprehensible (for such
Thir distance argues and thir swift return
Diurnal) merely to officiate light
Round this opacous Earth, this punctual spot,
One day and night; in all thir vast survey
Useless besides; reasoning I oft admire,

¹ This is the moment when God anoints the Son King and Satan felt deep envy. It was at this moment that the Dyad can be thought to have been initiated.

² For explanation on Milton’s use of “time” and “space” see, Harris F. Fletcher *Milton’s Rabbinical Readings* New York: The Gordian Press, 1967.

³ See Irene Samuel “Milton on Learning and Wisdom”: 708-723.

How Nature wise and frugal (Book viii, 15-25)¹

Adam is presented as a sceptical astronomer in these lines. He asks about something he ignores, maybe because the issue is beyond his possibilities or because certain knowledge is forbidden to him. McColley in his article "The Astronomy of *Paradise Lost*" explains how "the seventeenth century was an era of profound scientific transition", one in which many theories were active and important:

Milton was well aware of this situation, and proposed to discuss, not the Ptolemaic and Copernican hypotheses, but theories of celestial motions, in which he included these two conceptions, together with the idea of diurnal rotation of the central earth, and the doctrine of a plurality of worlds.²

McColley states that Milton manifested clear interest in the diurnal rotation of the earth and in the doctrine of the plurality of worlds; he adds that the poet respected Copernicus and ironized about the Ptolemaic hypothesis. In this extract the idea of celestial motions is presented together with the conception of diurnal rotation of the earth and the plurality of worlds. It is easy to deduce that it had to be difficult for Milton to choose between one theory or another. Galileo's telescope was the reason for many changes in different theories and it established many doubts. Knowing Milton's intention, we can easily think that he aimed at presenting them to promote more study and to awake curiosity.

The following extract from the same Book evinces language that, mixed with an outstanding stylistic beauty, seems to be moving from one theory to another:

But this I urge,
Admitting motion in the Heav'ns, to show
Invalid that which thee to doubt it mov'd;
Not that I so affirm, though so it seem
To thee who hast thy dwelling here on Earth.
God to remove his ways from human sense,
Plac'd Heav'n from Earth so far, that earthly sight,
If it presume, might err in things too high,
And no advantage gain. What if the Sun
Be Centre to the World, and other Stars
By his attractive virtue and their own
Incited, dance about him various rounds?
Thir wandring course now high, now low, then hid,
Progressive, retrograde, or standing still,
In six thou seest, and what if sev'nth to these
The planet Earth, so steadfast though she seem,
Insensibly three different Motions move? (viii, 114-130)

Perhaps Milton's own belief can be traced here since he put the Copernican theory in Raphael's mouth. The angel is supposed to know better than man; however, the entire dialogue leads to the importance of controlling knowledge, or the will to know the unknowable. There is the risk of falling into the blindness of not seeing that "which lies before the eyes", and which directly influences "daily life", for the simple reason of seeking much more knowledge. The paradox is that by not seeing one's most immediate reality, access to what there is beyond seems impossible.

¹ All the quotations are from Merrit Y. Hughes ed. *John Milton. Complete Poems and Major Prose* New York: Macmillan Publishing Company, 1957.

² Grant McColley "The Astronomy of *Paradise Lost*" SP, Vol. 34, 1937: 209-247.

Till warn'd, or by experience taught, she* learn
 That not to know at large of things remote
 From use, obscure and subtle, but to know
 That which before us lies in daily life,
 Is the prime Wisdom; what is more, is fume,
 Or emptiness, or fond impertinence,
 And renders us in things that most concern
 Unpractic'd, unprepar'd, and still to seek. (viii, 190-197)
 (* the mind or fancy)

Milton warns against the danger of mere speculation when the mind lacks the power to grasp true reality. Temperance and contemplation will undoubtedly prevent the acquisition of a supposed knowledge which might be the result of fancy and speculation¹. It seems that Milton was arguing in favour of experimental and empirical knowledge against the inherent tendency of Man toward speculation, which is a way of boasting. Hence the use of words such as *fume*, *emptiness*, *impertinence*. He emphasizes the daily things in life, since they are considered to be *prime wisdom*. When this wisdom is not possessed the person is left "unpractised, unprepared, and still to seek (deficient)".

To conclude I would like to point out once more the organization of the poem; it is presented according to a numerical structure following a concrete symmetry. Notwithstanding the lack of apparent chronology of events, these are narrated in relation with the worlds they belong to and the themes they convey. Right in the middle of the poem, which falls in Book vi, we find a message of hope highlighted by the imposition of order within chaos. The fact that the creation and origin of the universe is explained in Book seven seems to suggest an intentionality of the author: number seven was used to refer to the number of planets, additionally indicating a strong Biblical influence that hints at a final ethical objective. Books six, seven and eight have a very special global significance that allows the extension of content by means of the poetical force it implies. Milton's intention to compose his work according to a very structured order seems to indicate his will to imitate the beauty of the cosmos in order to increase pleasurable reading. Preoccupation for the truth of knowledge and for the welfare of human life are aspects one cannot miss when reading PL, and scientific analogies and references have been used to highlight the importance of "knowledge within bounds" to avoid "fume, impertinence". PL is the mature result of what Milton thought in his youth, and a defence of "a universal interaction of all things."²

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¹ See Alastair Fowler's note to his edition of *Paradise Lost*. A. Fowler ed. *Paradise Lost* Longman, 1968: Book viii, notes to lines 15-38: 396. Fowler includes the idea of mystical contemplation when acquiring knowledge.

² See *Prolusion II* in Merrit Y. Hughes ed. *John Milton. Complete Poems and Major Prose*.

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