

# *The Edgar Wind Journal*



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# *The Edgar Wind Journal*

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# Time and Space in Dante's *Inferno*: The Invention of Dante's Clock<sup>1</sup>

Gioachino Chiarini

## Abstract

The models that Dante adapted and integrated for the scenarios that make up the three realms of the *Divine Comedy*, once identified and interpreted with the support of the Dantean 'clock' and the rules imposed upon it by the author, enable the reconstruction of a 'bird's eye' map of the movements of Dante (as protagonist) and Virgil. This is demonstrated here with reference solely to the journey through Hell.

## Keywords

Clock; Dante; *Divine Comedy*; Space; Time

The images of the three realms that have been formulated in the seven hundred years since Dante's death are very easy to reproduce in vertical section, but they have proved less amenable to being reproduced 'from above', in a bird's eye view that enables the recognition of the spaces and times allotted by the Divine Will to Dante as protagonist and his guides, circle by circle (*Inferno*), terrace by terrace (*Purgatorio*) and sphere by sphere (*Paradiso*). This theme does not seem to have ever attracted much attention in the literature, but the author was certainly inspired by very precise models, modified to suit his purposes.

For Heaven's ten spheres, Dante used the Aristotelian-Thomistic image that grew out of a multimillennial tradition originating in Mesopotamia, passing into Greek culture in the archaic period (as evidenced notably in the *Odyssey*) and thence into Roman culture. This image is characterized by its concentric circles: at the bottom, closest to the Earth, is a sequence (or ladder) of seven spheres associated with seven planets in the order known as 'Chaldean': the Moon, Mercury, Venus, the Sun at the centre, Mars, Jupiter, and Saturn; above this is the Heaven of fixed stars (with the most important constellations, including the signs of the zodiac); still higher is the Ninth Heaven (also known as the Primum Mobile or Crystalline sphere); finally, the Empyrean, encompassing all the others boundlessly in every direction, is interpreted in a theological sense as the most appropriate

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<sup>1</sup> The text has been translated by Emma Mandley.

seat for God the Father, the Son, the Holy Ghost and the celestial host of angels, saints and the blessed, and is situated beyond time and space: for the author of the *Divine Comedy*, as we know, the Empyrean was, a heaven ‘of pure light’ (a description that appears in *Paradiso* XXX 39: the final line of the thirteenth tercet – ten plus three – of the thirtieth canto of the third canticle, representing a comprehensive exaltation of the Trinity (three) and its perfection (ten).

In the first two canticles, however, Dante sought out analogous scenarios featuring concentric circles that he found in Islamic religious imaginary – a contemporary heir to the Mesopotamian tradition – and adapted them to the scenario in the third canticle described above.<sup>2</sup>

For Hell, an Arabic afterlife already existed, with seven levels of concentric circles (the ‘seven layers of earth’) narrowing towards their base, at the bottom of which the leader of the devils was chained up.<sup>3</sup>

For the intermediate realm, Purgatory, which had only recently evolved as a theological and philosophical entity<sup>4</sup> (see Le Goff), Dante was inspired by the Muhammadan Paradise (cf. *The Book of Muhammad’s Ladder* XXXI 75-XXXVI 91), which he remodelled with a Christian meaning. This Paradise was reserved exclusively for the Muhammadan faithful who had observed the precepts of the Koran in their lifetime. It was visualized as a sort of immense ziggurat or tower, comprising seven Paradises (or Gardens) in concentric circles, placed one top of the other to reach from the Earth to the foot of Allah’s throne, and overflowing with covetable delights, principally of a carnal nature.

In seeking out and harmonizing these scenarios, by making these choices, Dante was undoubtedly guided by an objective that was to him fundamental: to create the possibility of applying a *space-time measuring device of his own invention* to these images – a device that was

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<sup>2</sup> In recent decades there has been much investigation and debate around the theme of ‘Dante and Islam’, but research has focused on textual comparison, to the detriment of deeper study into affinities between structural models and the overall settings of the respective ‘realms’, which in fact seems the most substantial and profitable theme for exploration.

<sup>3</sup> The circular structure of the Arabic Hell was then well known, and diagrams could even be found in manuscripts, for example the *Meccan Revelations* by the Murcian mystic and poet Ibn ‘Arabi (d. 1240): see M. Asín Palacios, *Dante e l’Islam, I, L’escatologia islamica nella Divina Commedia* (Parma: Pratiche Ed., 1994), p. 149, with reproductions from Ibn ‘Arabi and, for Dante, from M. Porena, *Commento grafico alla Divina Commedia per uso delle scuole* (Milan: Sandron 1902).

<sup>4</sup> It is very likely that Dante found this seven-layered structure in the fictionalized *Book of Muhammad’s Ladder* (*Il Libro della Scala di Maometto*, ed. by C. Saccone and trans. by R. Rossi Testa (Milan: SE, 1991)), a Latin translation of which still exists in the Biblioteca dei frati Domenicani in Bologna.

modelled on the form and functions of a brand new instrument that was absolutely of his time: the *mechanical clock*.<sup>5</sup>

In this instance I will confine myself to showing how the clock was applied in the realm of Hell: this is my reconstruction (Fig. 1) and the rules that I am about to explain are those that govern its application.

The first and most important of these rules is that in Hell, time passes only when Dante and Virgil are moving within a circle or one of its rings (a *girone*): the author assigns a specific duration for each visit to each sector of a particular circle or *girone* (two hours to begin with, for the largest circles, then an hour and a half, and finally shorter times still as the funnel of Hell narrows), with the hands of the clock moving clockwise if Dante and Virgil are proceeding to the left, but counter-clockwise, that is to say backwards (and backwards in time too!) if their progress is to the right. However, in Hell, when they descend radially from one circle to another, from one level to another, the clock's hands do not move.

Dante emerges from the *selva oscura* – the dark wood – at about six o'clock in the morning (I 13-18); Dante and Virgil enter the Gates of Hell at about six o'clock in the evening (II 1-5 and III 1-12) on the first day of the *Commedia*. In accordance with the rules described above, it must be assumed that the space-time clock does not move either when the Apathetic are gathering beside the two pilgrims on the banks of the Acheron to be ferried across the river on a boat which Dante, as a living being, is unable to use; nor when, after Charon's refusal to take him on board, Dante falls asleep and wakes on the other side of the Acheron; nor in fact until the pair (still proceeding radially) reach the brink of the infernal abyss, where at last they descend and turn left, according to convention, into the First Circle, Limbo, where the Virtuous Pagans reside. After two hours – as noted above, this is the length of time allotted to the pilgrims for a segment of a circle in this first part of Hell – Dante and Virgil descend into the Second Circle, containing the Lustful, and after a further two hours they descend to the Third Circle, that of the Gluttonous. It is around midnight when Dante and Virgil descend to the Fourth Circle, that of the Avaricious and the Spendthrifts. Once there, the pair do not move on, but stop (and the clock's hands stop too), merely observing the behaviour of the Avaricious, in the semicircle on their left (VII 39), and of the Spendthrifts, in the semicircle on their right: using their chests, both cohorts of damned souls ceaselessly roll enormous weights, alternately

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<sup>5</sup> The idea of a 'Dantean clock' was proposed in the mid-19th century by the Somascan Father Marco Giovanni Ponta, who even developed a first design of an ingenious clock with moveable sections that made it possible to 'easily and quickly understand the position of the signs of the Zodiac, the phases of daylight and the times indicated and described in the Divine Comedy'. See M.G. Ponta, *Orologio dantesco e tavola cosmografica*, ed. by C. Gioia (Città di Castello: Tipografia S. Lapi, 1982), p. 15. Ponta's clock was revived to mark the seven hundredth anniversary of Dante's birth by G. Buti and R. Bertagni, in *Commento astronomico della Divina Commedia* (Florence: Sandron, 1966); and used with finesse in recent years by Mario Negri, *L'orologio di Dante. Note per un atlante cronografico della Divina Commedia: dalla Selva oscura al Paradiso Terrestre* (Novara: Arcipelago, 2015).

colliding at the two points where the semicircles occupied by each group meet (the text specifies ‘when they reach the two points in the round’<sup>6</sup>). This vast panorama is the only one among them all in which we are allowed a complete view from the southern end, where the two visitors are standing, to the northern end on the opposite side of the circle.<sup>7</sup> Scanning this scene, like Dante and Virgil, we begin to glimpse the signs of a vertical diameter (perpendicular to that of the entrance to Hell which is on the horizontal) of the virtual Cross that delineates and separates the four quadrants of Hell (and therefore also of Dante’s clock). It seems that the importance that Dante ascribes, through his cosmic clock, to the subdivision of space and time ‘in quadrants’ was generated by the idea that the central symbol of Christianity, the Cross, is expressed ‘in quadrants’: the thought is carried through to the Heaven of Mars, where the Cross formed from the shining souls of the blessed is defined as ‘the honoured sign / that quadrants joined within a circle form’.<sup>8</sup>

Just after midnight, the hands of the clock start turning again, as Virgil realizes (VII 97-99). He and Dante hurry down to the next circle, the Fifth, that of the Wrathful and the Sullen. About two hours after midnight, in the second sector of this *girone*, which is swamped by the waters of the Styx, shortly after the boatman Phlegyas has taken them onto his boat at the foot of a tower – an outpost of the various towers that rise from the walls of the City of Dis – and after being violently accosted by the wrathful Filippo Argenti, their experience of the Fifth Circle must be considered complete. However, the journey by boat continues within the same circle, proceeding in a circular fashion for some time (‘Not without, first, encircling it about’<sup>9</sup>) through the Stygian marsh and then the waters of the moat surrounding the City of Dis, until they reach the gates of the City. It is reasonable to assume that the journey through these two sectors fills the four hours that are missing in the schedule to reach the dismal Gate, which is not randomly situated but placed on the eastern arm of the Cross – virtual, but now clearly visible to the reader – lining up, on the western side, with the arm of the main Gates of Hell. As they arrive at the City of Dis it must therefore be six o’clock in the morning (the first hour, or prime, as it was then called) although the text, for the moment, is silent on this question.

The two pilgrims enter the city of evil, thanks to the intervention of a heavenly messenger, who overcomes the resistance shown by the demons guarding the entrance. Here Virgil, despite having free scope to continue leftwards (in fact Dante says ‘I see a

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<sup>6</sup> ‘quando vengono a’ due punti del cerchio’ (Inf. VII 44). English translations in the text of all citations from the *Divine Comedy* are taken from the translation by Robin Kirkpatrick (London and New York: Penguin, 2012).

<sup>7</sup> Basing their efforts on the measurements that Dante himself supplied for the circumferences of the circles of the ninth and tenth *bolge* (Inf. XXIX 9 and XXX 86), many have grappled in the past to reconstruct the dimensions of Hell, including Galileo Galilei (*Due lezioni all’Accademia fiorentina circa la figura, sito e grandezza dell’Inferno di Dante*, 1588) and Giovanni Agnelli (*Topo-cronografia del viaggio dantesco* (Milan: U. Hoepli, 1821): the opposite ends of the vertical diameter of the Fourth Circle were separated, according to these and other scientists, by many, many miles.

<sup>8</sup> ‘che fan giunture di quadranti in tondo’ (Par. XIV 102).

<sup>9</sup> ‘Non sanza prima far lunga aggirata’ (Inf. VIII 79).



plain extending *all around*<sup>10</sup>), instead turns 'towards the right',<sup>11</sup> contrary to the norm: we are among the Heretics. After the encounter with Farinata and Cavalcante Cavalcanti – father of Guido, who was a friend of Dante and another *stilnovista* – Virgil considers the visit to the Sixth Circle to be over and turns 'to the left'.<sup>12</sup> However, this does not mean that he continues moving leftwards, as most of the commentaries maintain, but only that in order to reach the edge of the Sixth Circle and descend into the next one, he inevitably has to proceed radially to the left – and so he does.

However, once they have crossed the plain of the Heretics and reached the point where they must descend into the Seventh Circle, Dante and Virgil notice a last open tomb, away from the others: it belongs to the heretical Pope Anastasius II, as they learn from the inscription carved on the lid. There is still some time left for this visit, and Virgil takes advantage of it to prepare Dante for the three *gironi* of the next circle, the seventh. These contain the Violent against Others, the Violent against Self and the Violent against God: this seems to follow on logically from the circle they are currently in, since it is the Heretics, not believing in the existence of God or the importance of religion, 'who say the body dies, so too the soul'.<sup>13</sup> Those who end up in the Seventh Circle (Tyrants, Suicides and Blasphemers) have disregarded the fact that humans are made in the 'image of God': to be violent against a human being is akin to being violent against God himself. Dante and Virgil are pushed back into the depths of the night by the sin punished here, seen as a deranged abandonment of the true path, an unrepentant rejection of the divine light which is the only truth: a symbolically effective metaphor which is later inverted in Purgatory, when Dante can only ascend towards the Earthly Paradise in the daytime: in the light of the sun. Virgil finally uses an astronomical image to indicate that it is now four o'clock in the morning and it is at last time to descend into the fearsome Seventh Circle (XI 112-115). However, here too we must be careful: this is not the four o'clock in the morning that precedes six o'clock in the morning, but the reverse, because the hands of Dante's clock are moving backwards.

Dante and Virgil descend through a craggy jumble of dangerous, unstable rocks to reach the first valley (or *girone*, or ring) of the Seventh Circle, watched over by the monstrous Minotaur and crossed by the blood-red waters (representing violence) of the river Phlegethon. At this point, Dante and Virgil continue to proceed 'to the right'. And here is the proof.

The guardians of the first *girone* of the Seventh Circle are the Centaurs, led by Chiron, who was responsible for the education of Achilles. Armed with bows and arrows, they control the damned, galloping in single file between the wall of rocks and the river of violence. A troop of them appears, approaching in the opposite direction to that of the

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<sup>10</sup> *'veggio ad ogne man grande campagna'* (Inf. IX 110).

<sup>11</sup> *'a la man destra'* (Inf. IX 132).

<sup>12</sup> *'mosse a man sinistra il piede'* (Inf. X 133).

<sup>13</sup> *'l'anima col corpo morta fanno'* (Inf. X 15).

two pilgrims: Nessus (the centaur who attempted to snatch Deianira from Heracles), the aforementioned Chiron and Pholus (who had tried to abduct Pirithous's wife, on their wedding day). These three advance from right to left; when they come across the two intruders they stop and threaten them; Virgil then asks them to come closer so that he can speak to them. Since Dante is following Virgil, evidently already preparing to continue rightwards after the requested conversation, Chiron is now facing Virgil, while Nessus, who had been guiding the group beside Chiron, 'to his right',<sup>14</sup> ends up in front of Dante. Virgil asks them for assistance and Chiron orders Nessus to turn around and carry Dante (the living being) over the bloody ford that separates the first *girone* from the second, where the Suicides reside. Nessus obeys the command and takes Dante on his back. Meanwhile, the waters of the Phlegethon grow shallower, and after crossing the ford that separates the first two *gironi* of the Seventh Circle, Nessus sets Dante down and turns back (XII 139).

With continuity unresolved, Dante and Virgil set off through the dense, disturbing Wood of the Suicides (featuring harpies, hideous laments coming from the trees and violent scenes). They proceed cautiously alongside the inside of the wall, still keeping right, while observing various horrific scenes taking place on their left ('on the left-hand side').<sup>15</sup>

Once out of the wood, Dante and Virgil arrive at the desolate third *girone* of the Seventh Circle, where the damned are forced to writhe on an unbearable plain of burning sand under a rain of 'broad-winged fire flakes'.<sup>16</sup> Here too, Dante and Virgil are obliged to keep to the inside edges of the *girone*, bordered by the outside margins of the Wood of the Suicides. A little later, the Phlegethon re-emerges, for the moment appearing as 'a rill', about which Dante says: 'remembering its redness, I still squirm'.<sup>17</sup> The rill gradually becomes a river, but one whose bed and banks are now lined with a stone that is impervious to the rain of fire: Virgil leads Dante on, leaving the margins of the wood and walking unharmed along the innocuous (right-hand) banks of the Phlegethon, which makes an increasing din as it drops down in the same direction as them, towards the right: a thundering roar presages the waterfall where the river plunges into the infernal abyss.

After several devastating encounters, the two pilgrims arrive at the top of a cliff, from where they watch the spectacular cascade. At this point, Virgil asks Dante to give him the cord he wears as a belt around his waist and throws it into the abyss, beyond the cataract: this is a signal, a request for assistance, and before long they see the monster Geryon, who has the face of an honest man, rising up through the thick, murky air to collect them and carry them to Malebolge, further down, where every kind of fraud is punished. When Geryon arrives, he lands on the edge of the circle to the right of the waterfall, thus preventing Dante and Virgil from descending radially in the normal way and obliging them to descend transversally, once again to the right ('towards the right-hand

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<sup>14</sup> *'in su la destra poppa'* (Inf. XII 97).

<sup>15</sup> *'da la sinistra costa'* (Inf. XIII 115).

<sup>16</sup> *'dilatate falde di fuoco'* (Inf. XIV 28).

<sup>17</sup> *'picciol fūmicello, / lo cui rossore ancor mi raccapriccia'* (Inf. XIV 76-78).

pap').<sup>18</sup> In so doing, in that landscape which is half mountain and half desert, they come across one last group of damned souls, still further to the right: the Usurers. Virgil encourages Dante to go and have a few words with them, while he negotiates with Geryon. Dante sets off, continuing to move forward along the stony right-hand edge that now corresponds with the external edge of the *girone*: this means that when he talks to the Paduan usurer Reginaldo degli Scrovegni he has his back to the void and that therefore, when Reginaldo announces that Vitaliano del Dente will soon be sitting on his left-hand side ('he'll sit on my left flank'),<sup>19</sup> Reginaldo's left is Dante's right. At this point Dante pivots right to rejoin Virgil: 'now turned my back'.<sup>20</sup> Only here and now does Dante finally start moving to the left again. Geryon takes the two pilgrims on his back and descends, circling slowly and keeping the infernal abyss to his right (XVII 117), with the wall of the overhanging cliff on his left. Finally he deposits them in the first valley of Malebolge, where the change of direction is confirmed, as Dante explains: 'the Poet [Virgil] / took the left hand fork. I followed in his track / Then, to my right, I saw fresh suffering'.<sup>21</sup> Since Dante and Virgil had spent two hours among the Heretics, it seems reasonable to believe, sustained by the text, that the poet allowed another two hours in all for the Violent against Others and the Violent against Self (dedicating only one Canto to each of these categories), and a further two hours for the Violent against God. At this point, in the very middle of the canticle (that is to say at the end of Canto XVII), the division of time into segments of two hours comes to an end.

From the first 'malabolgia' (Pimps and Seducers) onwards, all the way to the funnel of Hell, the subdivision by quadrants changes consistently from three stops of two hours per quadrant, to four stops of an hour and a half per quadrant. Also described as a *mezz'ora terza*, an hour and a half corresponds to twenty-two and a half degrees, which for Dante was equivalent to the angle of the sun in relation to the equator – in reality twenty-three and a half degrees, although for Dante, from a symbolic perspective, 'an approximation', as has already been duly noted, was clearly sufficient. The author thus subdivides into four sequences of one hour and a half (making a total of ninety degrees) both the next quadrant of the *Inferno* (from six o'clock in the morning to midday), as Dante and Virgil pass through four further *bolge*, and the following and last quadrant consisting of four sequences that include the ninth and tenth *bolge* (from midday to three o'clock in the afternoon). An hour and a half is then allocated to crossing the ice of Cocytus from the Pit of the Giants to the Judecca, followed finally by an hour and a half for the descent to the centre of the Earth, using Lucifer's pelt as a ladder. The descent into Hell has lasted exactly twenty-four hours.

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<sup>18</sup> 'a la destra mammella' (*Inf.* XVII 31).

<sup>19</sup> 'Vitaliano / sederà qui dal mio sinistro fianco' (*Inf.* XVII 68).

<sup>20</sup> 'Torna' mi indietro' (*Inf.* XVII 78).

<sup>21</sup> 'il poeta / tenne a sinistra, e io dietro mi mossi. / A la man destra vidi nova pieta, / novo tormento' (*Inf.* XVIII 20-23).

It is worth observing here that when the two pilgrims leave the hemisphere of Jerusalem, at about six o'clock in the evening of the second day, they gain twelve hours. From this it may be inferred that the climb past Lucifer's haunches and along the *natural burella* (a natural subterranean corridor) that will take them to the foot of the Mountain of Purgatory begins at six o'clock in the morning of the second day and is completed a little before six o'clock in the morning of the third day, when first the preparatory rituals and then the ascent of the Mountain of Purgatory commence (Fig. 2). Everything will be completed by midday on the sixth day when, from the middle of the Earthly Paradise, next to the Tree of Knowledge of Good and Evil, Dante and Beatrice will rise up into the Heavens. At the end of the seventh day they are in the Ninth Heaven, and according to human calculation the eighth day ought to begin; instead Dante and Beatrice enter the pure light of the Empyrean, in the new dimension of an 'eighth day' which is exclusively spiritual, outside of both time and space (Fig. 3).

In conclusion, I will add that while on the one hand the sequences of an hour and a half evoke the obliquity of the ecliptic, which is responsible for the succession of the seasons and all the benefits which that entails for the human sinner's life on Earth, as well as implying the sun's mastery over the planets, on the other hand the two-hour sequences that characterize the length of time spent by Dante and Virgil in each of the first seven circles correspond exactly to the time required for a sign of the zodiac to pass fully over their (and our) heads, making way for the appearance of the subsequent sign. From this we can deduce that the author intended to give his Hell a structure, descending and inverted with respect to the starry sky reaching upwards, whose meaning perhaps consisted in giving individual sinners responsibility for having succumbed to the negative influences of one or the other zodiacal sign or planet. The redemption of humankind, brought about by Christ's death on the Cross, requires human beings to resist, in his name, all evil temptations, thus opening the gates to Paradise, or at least to repent in time and temporarily open the gates of Purgatory.

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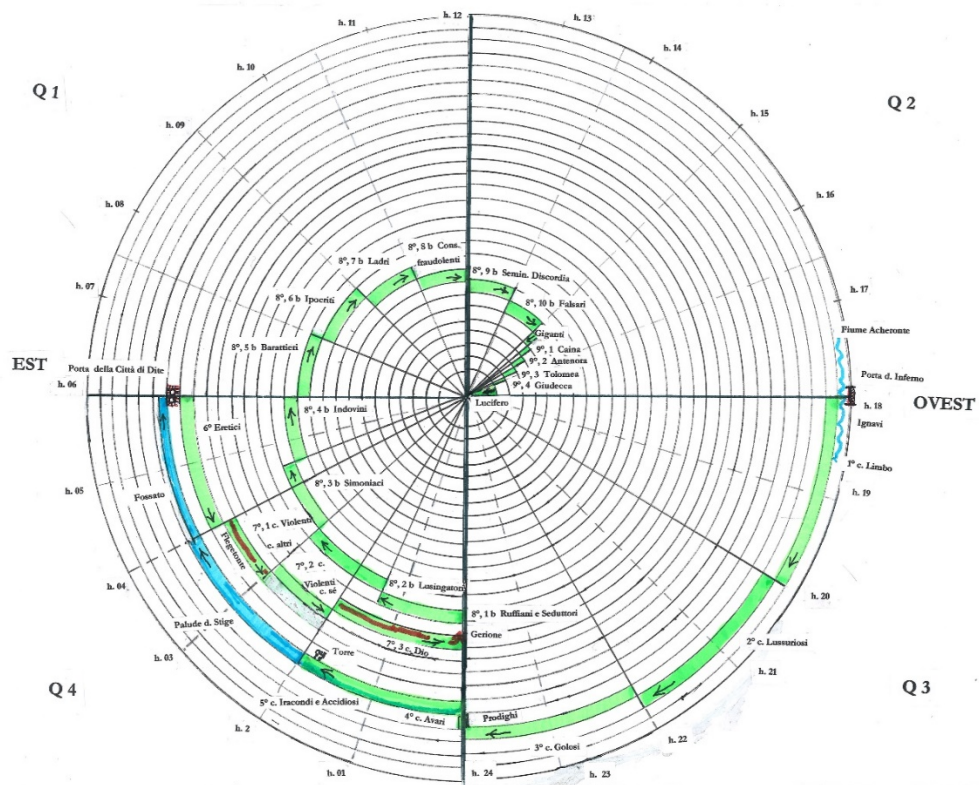


Fig. 1



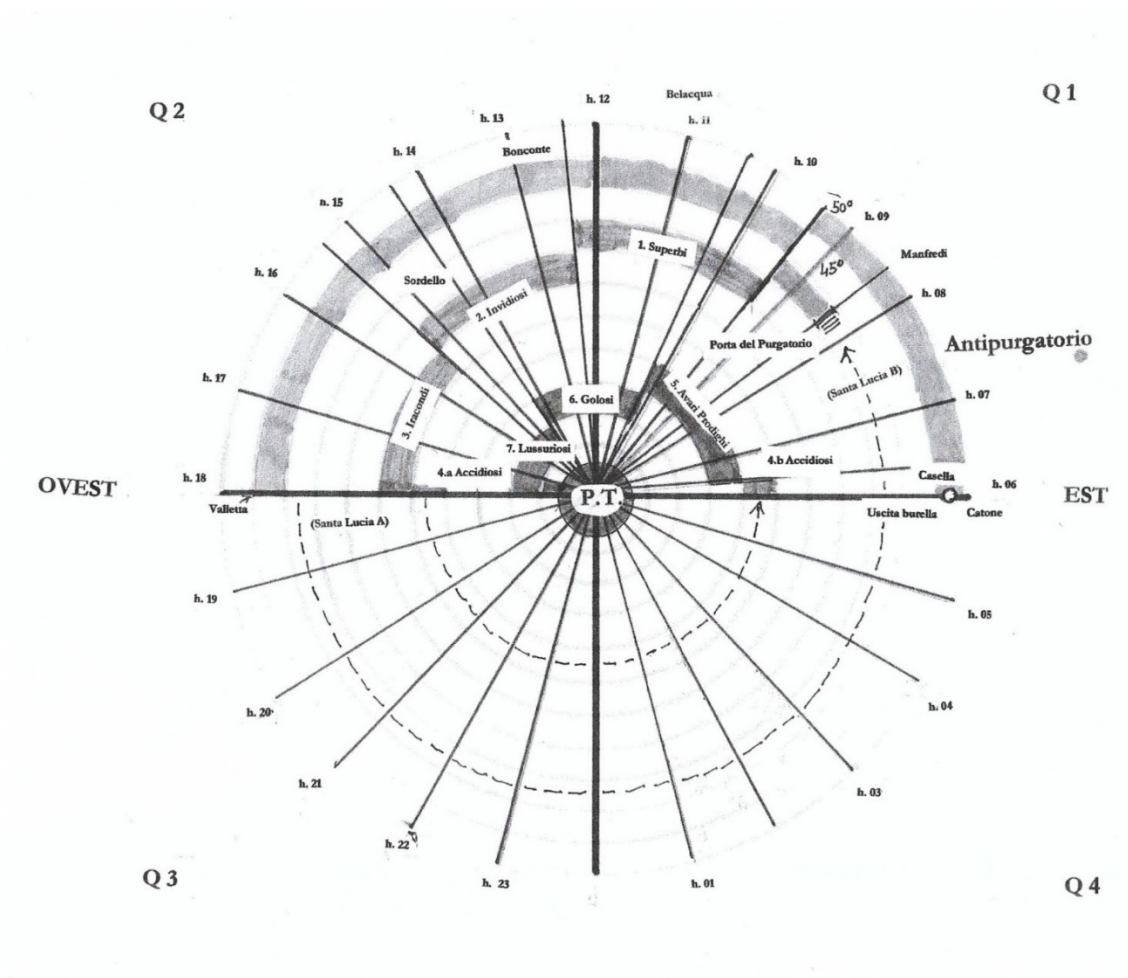


Fig. 2

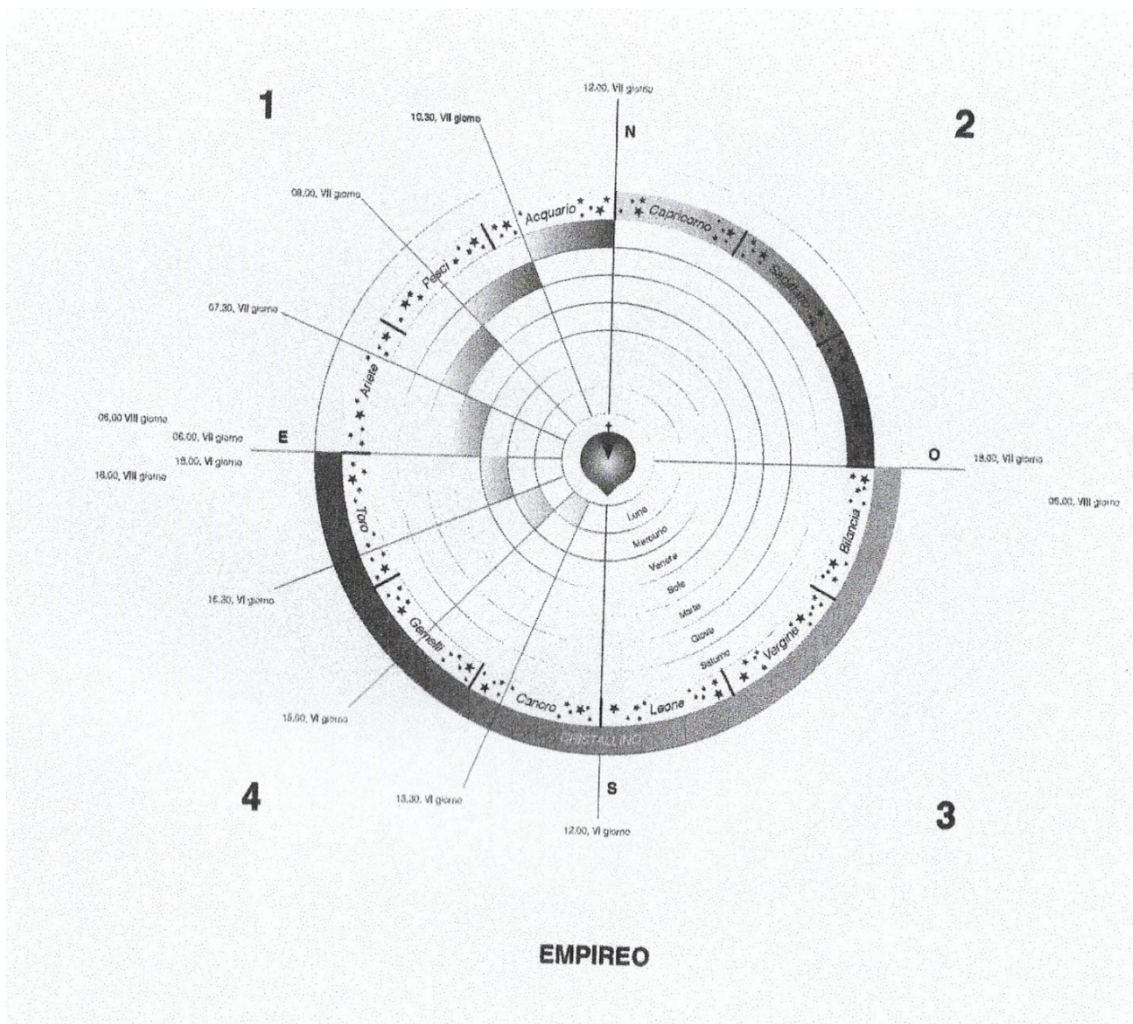


Fig. 3