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Saint Ambrose and His Four Basilicas Guarding the Faith of Mediolanum

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Abstract

When Saint Ambrose arrived in Mediolanum - the Roman Milano - the local churches were in conflict with each other on the Arianism and the Nicene Creed. Ambrose was firmly in support of the Nicene side of the conflict, acting for it by preaching and building new churches. He planned carefully the location of them, outside the town, near the gates corresponding to main roads arriving in Milan from the four quarters of the surrounding territory. In this manner, he creates four sites that acted as strong guardians of the Roman faith in his town.

Keywords: Archaeoastronomy, Satellite Images, Architecture.

Aurelius Ambrosius, known in English as Saint Ambrose, was one of the most influential ecclesiastical figures of the fourth century. He was born into a Roman Christian family in Trier, but was educated in Rome, studying literature, law and rhetoric. In about 372, he became consular prefect of Liguria and Emilia, with headquarters at Mediolanum, the Roman Milano. He was governor until 374, when he became Bishop by popular acclamation [1]. Today, Ambrose is the patron saint of Milan.

When Ambrose arrived in Mediolanum, the local churches were in conflict with each other on the Arianism and the Nicene Creed, as well as on numerous local issues. He was a strong supporter of the Nicene side of the conflict, and wanted to make the northern Italy into a pro-Rome stronghold. He did this by preaching and by constructing new churches. He built four basilicas about Mediolanum. They were the Basilica Apostolorum (San Nazaro in Brolo), the Basilica Virginum (San Simpliciano) and the Basilica Martyrum (which was later renamed in his honor). This basilica, the Basilica of Sant'Ambrogio, one of the most ancient and famous churches in Milano, was built by the saint in 379–386 [2], choosing the location in an area where numerous martyrs of Roman persecutions had been buried. The basilica is also the place where we find the relics of the saint. A fourth church, Basilica Salvatoris (San Dionigi) is attributed to him as well. This church was demolished to make way for a garden. The four churches were dedicated with an anti-Arian language, as symbols of the wealth and power of the pro-Nicene faction in Milan [3].

It is interesting to consider where the four churches had been located. They were outside the perimeter of the Roman town, as we can see in the Figure 1. This image has been obtained using Google Earth: the red perimeter is connecting the gates (porte) of the town. Note that, if we imagine to link the basilicas of Sant'Ambrogio and San Dionigi with a straight line and also the basilicas of San Simpliciano and San Nazaro with another straight line, we have a cross laid on the town. This is an important symbolic meaning which needs to be considered, because, as we can easily observe, Ambrose planned carefully the location of these churches, outside the town, near the main roads arriving in Milan from the four quarters of the surrounding territory.



Figure 1: Mediolanum, the Roman Milano, in an image of Google Earth with the perimeter marked in red. The Roman Milano had several gates (porte). Outside the town, Ambrose planned to build four basilicas (San Dionigi, San Nazaro in Brolo, Sant' Ambrogio e San Sempliciano), as four guards of the faith in Mediolanum and in the surrounding territory.

As discussed in [4], the early Christian basilicas of Milano can be divided into several categories, according to their building periods. The first basilicas were composed by two separate churches, one for the baptized people, the other for catechumens. This particular conformation could have been modelled on the "horrea", a public warehouse used during the Roman period. A later stage corresponds to that of the great cathedrals of the late Roman Empire [4], formed by a polygonal shape, the layout of which was the model for the very large basilicas such as those in Constantinople. The area that is corresponding to Piazza Duomo had two cathedrals, the "basilica vetus", used during the winter season, and the "basilica nova", used during the summer [5].

With the onset of Christianity, the center of the town, that during the Roman period was the forum, located in today Piazza San Sepolcro, shifted to Piazza Duomo. The center of the town was no more the political and economic core of the Roman time but the new spiritual place of the basilicas [6]. Therefore, Mediolanum passed from being a "forum-centric" town to being a "theocentric" town [6].

Because of the new churches that he promoted, for the theocentric Mediolanum, Ambrose was not only a spiritual leader but also a person that influenced the urban development of the area. As shown by the Figure 1, and explained in [7], Ambrose's project aimed at Christianizing the urban space and the territory surrounding it, and then his churches became the guards of Roman faith and power in the town and in the suburbs located along the major roads moving towards the four cardinal directions [7].

In fact, this Ambrose's planning was not far from a tradition of ancient Romans, that of subdividing the land in four quarters by two main axes, one along the apparent motion of the sun, from rising to setting, the other along the "axis mundi", the axis about which the sky seems rotating [8,9]. These axes, corresponding to two main roads (Decumanus and Kardo), which were perpendicular to each other, were not necessarily aligned along the cardinal directions, but following some local augural rituals of good omens connected to the sky. In the case of Mediolanum, Ambrose added a Christian symbolical meaning to the cross the Roman used for the subdivision of settlements by means of Decumani and Kardines, turning them into the two axes of Christ's cross (for the planning of the Roman Milano,

see [10]).

Let us start discussing the four churches planned by Ambrose from that which had been demolished, the Basilica Salvatoris (San Dionigi). This was the eastern one. Therefore, San Dionigi, according to Ambrose' planning, was guarding the East. This church is the least known of the four Ambrose's basilicas, and consequently, as told in [6], doubts have been and continue to exist on its foundation and dedication. In fact, the primitive nucleus already existed in 475. Around 1025, close to the Basilica, there was also a Benedictine monastery. In 1410, Benedictines were replaced by Cassinesi that abandoned the monastery around 1433. Since then, it began the decline of the church as a whole [11].

Let us note that this basilica was the Basilica Salvatoris, that is the Basilica of the Salvator, the Savior of the World. Matthew (24:27) tells that " for as lightning that comes from the east is visible even in the west, so will be the coming of the Son of Man ". Symbolically, Christ is like the sun which is rising in the east. Therefore, it is interesting the coincidence of the name of this Basilica to its eastern location.

San Simpliciano is the northern of the four Basilicas. Located on the important road to Como. This basilica was the 'Basilica Virginum', the first dedication to Mary and to the Virgins seems confirmed by the chronological coincidence between the planning of the basilica and Ambrose' struggle in defending the virginal birth of the Mother of Jesus, against those who claimed the opposite [12]. After, the church had been dedicated to Simpliciano, successor of Ambrose to the bishop's chair of Mediolanum. The southern gate was guarded by San Nazaro in Brolo, on the road that connected Milan to Rome. Not surprisingly it was originally dedicated to the Apostles, and thus known as Basilica Apostolorum. It was on the Roman roads that apostles and many Christian people moved spreading their faith from Rome to all the empire.

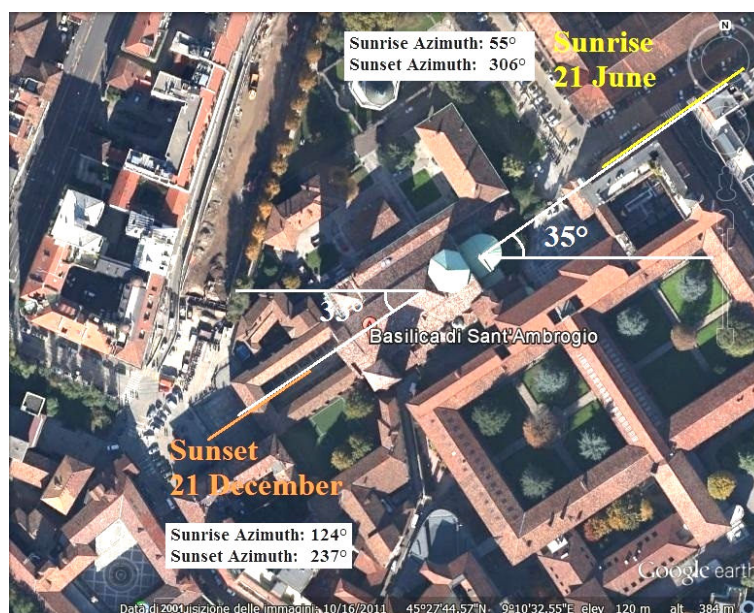


Figure 2: The basilica of Saint Ambrose and its orientation, with the directions of sunrise and sunset on solstices.

The last basilica we discuss is the western one, the Basilica Martyrum. This edifice, in the centuries after its construction, underwent several restorations and partial reconstructions, until it assumed the current appearance in the 12th century. It became a center of religious life and a community of can-

ons, so that in 789, a monastery was established within the basilica ground [13]. As previously told, it was dedicated to martyrs and placed where numerous martyrs had been buried. Let us remember that, according to the Roman funerary practices, the Roman cemeteries were located outside the sacred boundary of cities (pomerium) [14].

The basilica has a remarkable orientation. In the Figure 2 we can observed that its axis is oriented along the directions of sunrise on summer solstice and sunset on winter solstice. Being the apse facing the rising sun, it shows the same orientation of the Gothic cathedrals, that we discussed in [15], an orientation which is referring to the Savior of the World who is raising in the east. According to [13], the basilica that we see today has maintained the layout of the original Ambrose's Basilica, and therefore also this specific orientation.

If we consider, in the Figure 1, a straight line from this basilica to San Dionigi, the line is forming an angle of 57° from true North. It is remarkable that this alignment has an angle very close to the angle of the basilica in the Figure 2. It means that Ambrose, possibly, could have added to his planning of the eastern and western churches a symbolic alignment to the rising sun on the summer solstice.

References

- [1] Herbermann, C. ed. (1913). *St. Ambrose*. Catholic Encyclopedia. New York: Robert Appleton Company.
- [2] McLynn, N. B. (1994). *Ambrose of Milan: Church and court in a Christian capital*. Vol. 22. University of California Press.
- [3] Esler, P. (2000). *The warly Christian world*. New York: Routledge. pp. 1196–1199.
- [4] Vv. Aa. (2016). *Early Christian churches in Milan*, Wikipedia. Available at en.wikipedia.org/wiki/Early_Christian_churches_in_Milan
- [5] Lusuardi Siena, M. S. (2012). *Quale cattedrale nel 313? Nota per una messa a punto del problema del primitivo gruppo episcopale*, in Sena Chiesa, G., Biscottini, P., Electa, Roma.
- [6] Margheriti, G. L. (2015). *101 tesori nascosti di Milano da vedere almeno una volta nella vita*, Newton Compton Editori.
- [7] Saita, E. (1998). *Monastero di San Dionigi, Benedettini (sec. XI - 1468)*, Lombardia Beni Culturali. Available at www.lombardiabeniculturali.it/archivi/soggetti-produttori/ente/MIDB0002EF/
- [8] Sparavigna, A. C. (2015). *Roman centuriation in satellite images*. PHILICA Article number 547. Available at SSRN: <http://ssrn.com/abstract=2742223>
- [9] Sparavigna, A. C. (2016). *Roman towns oriented to sunrise and sunset on solstices*. SSRN Journal. DOI: 10.2139/ssrn.2777118
- [10] Sparavigna, A. C. (2016). *Some notes on the urban planning of Mediolanum and on the orientation of its Decumanus*. SSRN Journal. DOI: 10.2139/ssrn.2779265
- [11] Vv. Aa. (2016). *Basilica di San Dionigi (Milano)*, Wikipedia. Available at [it.wikipedia.org/wiki/Basilica_di_San_Dionigi_\(Milano\)](http://it.wikipedia.org/wiki/Basilica_di_San_Dionigi_(Milano))
- [12] Saita, E. (2004). *Monastero di San Simpliciano, Benedettini (ante 881 - 1798)*. Lombardia Beni Culturali. Available at www.lombardiabeniculturali.it/archivi/soggetti-produttori/ente/MIDB000360/
- [13] Vv. Aa. (2016). *Basilica of Sant'Ambrogio*, Wikipedia. Available at en.wikipedia.org/wiki/Basilica_of_Sant%27Ambrogio
- [14] Vv. Aa. (2016). *Roman funerary practices*, Wikipedia. Available at en.wikipedia.org/wiki/Roman_funerary_practices
- [15] Sparavigna, A. C. (2014). *The solar orientation of the Gothic cathedrals of France*. International Journal of Sciences, 3(4), 6-11. DOI: 10.18483/ijSci.484