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*Quis dubitet hominem
coniungere caelo?*

a cura di
Elio Antonello

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Baptisteries and baptismal fonts: interpretation of the orientation of Early Christian and medieval baptisteries in Friuli (North-East of Italy). The case of Aquileia

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Abstract. The author examines the orientation of Early Christian medieval baptisteries and their churches located in south-central Friuli (in northeastern Italy; the only five still existing) regarding their historical, liturgical, architectural and archaeoastronomical significance. Here, the Early Christian baptistery of the basilica of Aquileia is discussed in detail for its particular position (in front of the façade and in line with the axis of the church) that emphasizes the path that the catechumen fulfilled during the baptismal rite and which corresponds exactly with the written steps in the baptismal *Catechesis* composed by the Fathers of the Church. Nevertheless, in the other baptisteries built in the Medieval times, even they show another disposition (or situated on the left or on the right of the church), the catechumen still followed the symbolic path dictated by the priest during the celebration. The research methodology consisted of a GPS survey and astronomical calculation correlated with historical sources. The patristic writings were essential for a full understanding of the meaning of the disposition of a baptistery with its church. The fundamental result was that all the baptisteries analysed show an astronomically and a liturgically determined interior path which the catechumen followed during the baptismal rite in accordance with the *Catechesis*: turning to the West for the renunciation to Satan and then to East to obtain Salvation.

Introduction

The Early Christian and medieval baptisteries that were used for baptismal immersions (Leclercq 1910), which survived in the North-East of Italy, testify a tradition and a deep Christian faith. The numerous baptismal catechesis of the Fathers of the Eastern Church (Cyril of Jerusalem, *Mystagogic Catechesis*, c.313-387; John Chrysostom, *Homilies*, c.349-

407; Theodore of Mopsuestia, *Baptismal Homilies*, c.350-428; Narsai c.399-502) and of the Fathers of the Western Church (Tertullian, *On Baptism*, c.160-c.220; St. Ambrose, *On the Mysteries*, c.339-397; Chromatius bishop of Aquileia, *Sermons*, c.335-408) describe in detail the various stages of the baptismal rite, but rarely specify the type of building that was used and even more seldom its orientation.

In this study, five existing Early Christian and medieval baptisteries with its churches situated in southern and central Friuli were examined¹. Their orientation as well as the baptismal rite were carefully analysed and related to one another. Therefore, a deep study of the patristic writings together with the scholarly literature was essential. This review of historical literature combined with GPS survey and astronomical calculations made it possible to understand the architectural significance of the baptistery. The central steps of the liturgical sources are here outlined and the case of Aquileia is discussed in detail². The awareness that the three fundamental moments of the ritual (renunciation, baptism, chrism) were related to the way a baptistery was assembled held particular significance in this research. In fact, it is possible to identify a clear movement within these sacred buildings, from the West to the East, related to the symbolic path that the catechumen followed during the baptismal rite. Another important point is the light which falls in from different openings revealing the divine sacredness of the baptismal font, transmitting a strong symbolic meaning of light and liturgy. The shape of the baptistery and the font also hold a deep meaning, symbolizing the rebirth of Christ and so, of the catechumen.

The source of life in patristic literature

The word 'baptism' derives from the Greek word *baptizein* and means 'to immerse'. It identifies the religious initiation rite in which water represented purification by the Holy Spirit (*John* 3.5). Initially, the place where the rite of baptism was to be celebrated was chosen at a water source or river. This reminded one of the source of life and of the baptism

¹ Santa Maria Assunta, Aquileia. Santa Eufemia, Grado. San Giusto, Trieste. Santo Stefano, Concordia Sagittaria. Santa Maria, Udine.

² For the whole study of these baptisteries see: Spinazzè (2016b). For works about the orientation of other Early Christian baptisteries see: Spinazzè (2015, 2016a, pp. 191-197, 387-395, 701-709, 757-762); Santa Maria Maggiore, Lomello (Northern Italy); St. Maurice d'Agaune (Switzerland). Works on the orientation of other medieval baptisteries see: Incerti (2002, 2010).

in the river Jordan that Jesus was given by John the Baptist, hence the name ‘*fontes baptisimi*’ (springs or sources of baptism). The ritual was later celebrated in a building, next to or in front of the church and the water was poured into the baptismal font. In the Gospel of John it is written: “Indeed, the water I give them will become in them a spring of water welling up to eternal life” (*John* 4.14). So, baptisteries were dedicated to John the Baptist, in memory of the baptism of Christ. The doctrine of *The Teaching of the Twelve Apostles* (middle of the 2nd century) prescribes to “baptize in water” (*Didaché* 7; Harnack 1884, 7.23. Allen 1903, p. 7)³ and so do the *Acts of the Apostles* (8.36, 8.38). Then, we learn from the *Letter to the Hebrews* (10.22) “to have our bodies washed with pure water” and from the *Letter to Titus* (3.5) that “He saved us through the washing of rebirth and renewal by the Holy Spirit, whom he poured out on us generously through Jesus Christ our Savior”. In this way He saved us with the water used at baptism in the form of a bath, namely of a purification bath (Stommel 1959, p. 6).

The baptismal font was also called a pool or a *fontisterio*, the place of illumination (Rossi 1983, p. 8), as the Father of the Church John Chrysostom says. He invites the catechumen to dive into the source of these holy waters and to come out “purer than the rays of the sun” (John Chrysostom [1963], 9.16, p. 137; Giovanni Crisostomo [1982], p. 48). The bond between baptism and the symbolic meaning of light is also highlighted by the bishop of Constantinople Gregory of Nazianzus (IV century). In his work *Oration on the Holy Lights* (39.14) he celebrates the holy day of light and of baptism, saying: “Christ is illumined, let us shine forth with Him. Christ is baptized let us descend with Him that we may also ascend with Him” (Gregory of Nazianzum [1894], 7.39.14, 357; Gregorio Nazianzeno [1983]).

³ Harnack (1884, 7.23); here we can also find one of the most ancient examples of a baptism celebrated by sprinkling the Holy water: *Wenn du aber fliessendes Wasser nicht hast, so taufe in anderem Wasser. ... Wenn du aber beides nicht hast, so giesse aus auf das Haupt dreimal Wasser auf den Namen des Vaters und Sohnes und heiligen Geistes*. Allen (1903, p. 7); here we also find one of the oldest testimonies for baptismal asperges: “And concerning baptism, baptize after this manner: Having first recited all these precepts, baptize into the name of the Father and of the Son and of the Holy Ghost in living water. But if you hast not living water, baptize into other water; and if you canst not in cold water then baptize in warm. But if you hast neither, pour out water upon the head thrice, into the name of the Father and of the Son and of the Holy Ghost”.

It is in the water that the rebirth of the sons of God takes place, so the baptismal font symbolizes the burial place where the catechumens descended to die in the death of Christ and were resurrected as newborns in His Resurrection.

In the mid-4th century the bishop Cyril mentions and describes the source in his writings, calling it 'the holy font of rebirth' (Cyril of Jerusalem, *Mystagogic Catechesis*, 1.10; *Cyril of Jerusalem* [2000], p. 172). A testimony of the baptismal rite related to this description arrives from Etheria (late 4th to early 5th century) in the narrative of her pilgrimage to the Holy Land. She says that after crossing the Jordan River, she came to Ennon, near Salim, where John the Baptist baptized the faithful and at Easter everyone came to this place, at this church, to be baptized in this source of water so copious and pure, accompanied by songs and lights (Gamurrini 1890, pp. 21-22; *Peregrinatio Egeriae* [2000], pp. 68-133). Cyril reflected and explained the baptismal rite in his catechetical writings, indicating to the catechumen a precise symbolic pathway that took place within the baptismal building from the West to the East. In this way a passage towards the rising Sun was designed.

The bishop turned to the newly-baptized with these words: “First, ye entered into the vestibule of the Baptistery, and there facing towards the West ye listened to the command to stretch forth your hand, and as in the presence of Satan ye renounced him. Now ye must know that this figure is found in ancient history. [...] I wish also to say wherefore ye stand facing to the West; for it is necessary. Since the West is the region of sensible darkness, and he being darkness has his dominion also in darkness, therefore, looking with a symbolic meaning towards the West, ye renounce that dark and gloomy potentate. What then did each of you stand up and say? ‘I renounce thee, Satan’. [...] When therefore thou renoucest Satan, utterly breaking all thy covenant with him, that ancient ‘league with hell’ (*Isaiah* 28.15), there is opened to thee the paradise of God (*Genesis* 2.8), which He planted towards the East, whence for his transgression our first father was banished: and a symbol of this was thy turning from West to East, the place of light. Then thou wert told to say, “I believe in the Father, and in the Son, and in the Holy Ghost, and in one Baptism of repentance” (Cyril of Jerusalem, *Catechetical Lectures*, 19.2.4.9; Cyril of Jerusalem [1894], pp. 144-146; Ambrose, *On the Mysteries*, 2).

Another testimony comes from Pseudo Dionysius the Areopagite (first half of 6th century), who describes the baptismal ritual with these words: “When the whole Church have completed the holy prayer, the bishop

unlooses the sandals of the catechumen and removes his clothing by means of the deacons. Then when he (the bishop) has placed him (the catechumen) facing the west, and whilst he beats with aversion his hands towards the same quarter he (the bishop) thrice commands him (the catechumen) to breathe scorn upon Satan, and further, to profess the words of the renunciation, he turns him to the east, after he has confessed this three times, and has looked up to heaven and extended his hands thither ward, he commands him to be subject to Christ, and to all the divinely transmitted oracles of God” ((Pseudo)-Dionysius the Areopagite [1894], 2.2, *Mystery of illumination*, 55)⁴.

Turning to the East symbolized the rejection of Satan and conversion to Christ, the Sun of righteousness. Through the immersion and the emersion in the font, which symbolizes his or her burial with Christ and his or her spiritual resurrection, the catechumen will be purified, as we can read in several passages of the *New Testament* (*Romans* 6.3-11; *Colossians* 2.12) and in many writings of the Fathers of the Church, mentioned before. The *Sacraments (On the Mysteries)* by St. Ambrose, bishop of Milan (374-397), shows us how to dissolve the bond that ties us to our sins: through baptism, man has first to 'die', then to 'resurrect' to finally become alive (Ambrose, *De Mysteriis*, IV; St. Ambrose [1919], 4.22, 33). Also Origen (c. 183-254) develops some treaties regarding baptism, which he expresses it in his *Commentary on Romans* where, referring back to the *Romans* 6.3-4, he teaches us: “Know ye not, that so many of us as were baptized into Jesus Christ were baptized into his death? Therefore we are buried with him by baptism into death: that like as Christ was raised up from the dead by the glory of the Father, even so we also should walk in newness of life” (Origen, *Commentary on Romans*, 5.8; Origen [2001], 5.8, 353-354). First you must die to sin with Christ, to be reborn to a new life. And, in addition, the triple immersion in the baptismal font recalls the Trinity (the Father, the Son and the Holy Spirit): “The baptism has made three things clear: the Son who is present in his body, is visible; the Holy Spirit descends on us as a dove; in the sky resounds the voice of the Father” (Chromatius, *Tractate on Matthew*, 13. Cromazio di Aquileia [1984, p. 132]).

But the triple immersion was also a symbol of the three days during which Christ was prepared for his burial, as Cyril explains to us in his

⁴ See also: Cirillo and Giovanni di Gerusalemme [1977, 53-90]. Sant’Ambrogio [1982, cap. 2.7, pp. 138-139]. S. Eusebii Hieronymi [1845, 6, PL 26, 1068].

treaty *Mysteris* (2.4): “After these things (after having being stripped and anointed with exorcised oil), ye were led to the holy pool of Divine Baptism, as Christ was carried from the Cross to the Sepulchre which was before our eyes. And each of you was asked, whether he believed in the name of the Father, and of the Son, and of the Holy Ghost, and ye made that saving confession, and descended three times into the water, and ascended again; here also representing a symbol of the three days during which Christ was buried. [...] And at the self-same moment ye were both dying and being born; and that Water of salvation was at once your grave and your mother” (Cyril of Jerusalem [1894], *Catechetical Lectures*, 20.4, pp. 147-148).

The solemn celebration took place in a meaningful liturgical moment, on Saturday night before Easter, to highlight the Salvation and Resurrection of Christ, on the night when death is defeated and life lives. This Easter eve was a ritual of light accompanied by the blessing of the fire and the water. Just Chromatius, Bishop of Aquileia, sees the two key moments in the Easter: the Passion of the Lord and the Resurrection (*Sermo* 17.1), the meaning of which he emphasizes in his *In nocte magna: Quanta sollemnitas noctis praesentis sit, mundus ipse testis est, in quo totius noctis huius vigiliae celebrantur; non immerito autem quia in hac nocte mors devicta est, vita vivit, Christus a morte resurrexit* (Chromatius, *Sermon* 17; Chromace d’Aquilée [1969], p. 17). “The world witnesses how great the solemnity of the present night is during which this vigil is celebrated all night long. It is not without reason, for tonight death was defeated, life lived, and Christ arose from the dead” (Chromatius, *Sermon* 17; McEachnie 2013, p. 295).

Baptism is therefore seen as a pathway to light, “the true light that gives light to everyone” (*John* 1.9) a passage towards the right (from West to East) in which the catechumen passes from the darkness of sin to the light of Christ, along real spaces: as we have seen, the entrance faced the West and the altar was placed facing the East. As Jesus said: “I am the light of the world. Whoever follows me will never walk in darkness, but will have the light of life” (*John* 8.12). Often on the sacred building, on frescoes and bas-reliefs, one can read the sentence “*Ego sum lux mundi*”, which refers to this evangelic step, as can be seen in the churches herewith examined as in the apsis of the church of Saint Mary of the Assumption in Aquileia.

Already in ancient times light became the symbol of the divinity. Men were praying in the temples facing the simulacrum of their God and out of

the temple they raised their eyes to heaven. The temples looked to the West and so the devotee stared at the statue with his face towards the East (Vitruv, *De architectura*, 4.5). In the cult of Mythras the prayer was said turning towards the Sun three times a day: at dawn, at noon and at dusk. In the morning facing East, at noon facing South and in the evening facing West (Cumont 1903, p. 166; Spinazzè 2016). The cult of the Sun spread from Persia to the Mediterranean world mainly through the return of the Romans stationed in Syria. Tacitus in his work *Historiae* narrates how the legionaries worshipped the Sun and greeted the rising star: “*Undique clamor: et orientem solem, ita in Syria mos est, tertiani salutavere*” (Tacitus, *Historiae* 3.24. Tacite [1978], 3.24, 167).

This pagan custom of facing the East during prayer was taken up by the Early Christians, who gave a new significance to this practice (Tertulliano, *Ad nationes* 1.13.1-5. Tertulliano, *Apologeticum* 16.11. Dölger 1925, 20-149; Leclercq 1936, 12.2, 2665-2669 ; Peterson 1945, p. 59, 52-68 ; Spinazzè 2007/2008, 2010, 2016a). East is the place where light and Christ are born, where the garden of Eden is located (*Genesis* 2.8), where His coming is placed (*Matthew* 24.27). So turning to the East, is turning to Jesus Christ who does not let us walk in the darkness, but accompanies us in the light of life (*John* 8.12. *Isaiah* 42.16. Tertullian [1984, 30]). As Origen, the Greek scholar and Early Christian theologian, explains in his work *De oratione*, for the Christian prayer the East was the symbol of the soul seeking the true light: “And now we must add a few remarks on the direction we should face while praying. There are four cardinal points - north, south, east, and west. It should be immediately clear that the direction of the rising sun obviously indicates that we ought to pray inclining in that direction, an act which symbolizes the soul looking towards where *the true light rises*” (Origen, *On Prayer*, 32. Origen [1954], chap. 32, 136). In his other work, *Leviticum*, Origen explains that from the Orient will be coming the Son of Man as the lightning coming from the East and shining up to the West. So the Orient is the symbol of Christ, "the Sun of Justice" (*Malachi* 3.20) enlightens man, He is the light of knowledge, of faith, of love and of peace (Origen, *Homelies on Leviticus*, 9; Origen [1990, 124-235]). In this context the most used system of orientation was certainly related to the course of the Sun in accordance with the theological-solar theory (Podossinov 1991, chap. 15, pp. 233-286). It distinguished above all four directions for ceremonies related to the observation of the Sun, all of which are in close contact with each

other: orientation of the sacred building, orientation during the rites of prayer, burial and baptism (Spinazzè 2016a, chap. 2.6, p. 91).

Shapes

One of the peculiarities of the baptisteries we have studied lies in the hexagonal shape of the baptismal fonts (it symbolizes the rebirth and salvation of man through the death of Christ and the creation of the world), and in the octagonal shape of the building (the day of the Resurrection of Christ, *octava dies*). This central concept has successively been expressed in numerous baptismal buildings through the shape of their baptismal fonts.

In Early Christian times a typical kind of baptismal building was born in the Eastern world with a shape which was ideal for liturgical functions: a central nucleus often having an octagonal form and two longitudinal lateral areas preceded by a narthex (Castelfranchi 1980, p. 10). Examples are found in the baptistery of the church of Hagia Sophia in Constantinople, St. John in Ephesus, Qalat Seman in North Syria and in the ancient monastery of Abou Mina in Egypt (near Alexandria) (Khatchatrian 1962, p. 78, 119, 61, fig. 180, p. 59, 98, 60): all of the baptisteries present this architectural typology. Furthermore, in the last three cases, the font shows a circular form with the pool in *gradus descensionis et gradus ascensionis*.

Chromatius sees the font as the spiritual womb of the Church that conceives and gives birth to the children of God: "*spiritalis uterus Ecclesiae qui concipit et parit filios Deo*" (Chromatius, *Sermon 18*. Cromazio [2004], 18, 136-137). The hexagonal shape of the font symbolizes the resurrection of the faithful in the death of Christ which brings salvation as the Passover Lamb was sacrificed in the evening of the sixth day, which also represents the days of creation. In fact, the world was created in six days. The hexagon also expresses the two opposites: its principle and its reflection, which can move towards good (towards the union with God), but also towards a rebellion (Chevalier, Gheerbrant 1986, p. 2, 355-356). Therefore the hexagonal shape of the pool signifies the death and the resurrection of the catechumen. He is reborn through Christ the moment he re-emerges from the baptismal bath.

On the other hand, the octagon indicates the eighth day of the new creation, that is to say the new life that begins with the Resurrection of Christ. It symbolizes the death and rebirth that is accomplished through the sacrament of baptism (*Romans 6.3-11*). The number eight has gained a

theologically meaningful significance (Dölger 1934, pp. 153-187), precisely through the Resurrection of Christ on the eighth day after the Sabbath with the sunrise (*Catechismo della Chiesa Cattolica* 1992, N. 2174; *Mark* 16.1-2. *Matthew* 28.1). The early Church Father St. Augustine of Hippo (354-430) in his *Letters* explains that the eighth day is like the first. It is the original life, the first day of the week which is Sunday and which is called the day of the Lord, made eternal (Augustine, *Letter* 55.9.17; St. Augustine [1886, p. 308], Sant'Agostino [1969]).

The octagonal form is recommended by St. Ambrose. He wrote a solemn poem of eight couplets (sixteen verses) sculpted on the eight walls of the baptistery belonging to the church of St. John and St. Tecla in Milan. These verses represent his theological compendium which symbolizes the new birth in Baptism, the eighth day on which He rose again from the dead. His thoughts are indeed reflected in the construction of the sacred building symbolizing the divine perfection achieved on the day of the Resurrection of Christ (Sancti Ambrosii [1994], pp. 96-99).

<p><i>“Octachorum sanctos templum surrexit in usus. Octagonus fons est munere dignus eo. Hoc numero decuit sacri baptismatis aulam. Surgere, quo populis vera salus rediit. Luce resurgentis Christi qui claustra resolvit. Mortis et e tumulis suscitatur exanimas. Confessosque reos maculoso crimine solvens. Fontis purifluis diluit irriguo. Hic quicumque volunt probrosae crimina vitae. Ponere, corda lavent, pectora munda gerant. Huc veniant alacres; quamvis tenebrosus, adire. Audeat; abscedet candidior nivibus. Huc sancti properent: non expers ullus aquarum.</i></p>	<p>With eight apses this temple for saints was erected; And octagon is the font, worthy of the gift given to it. It was right that on this number the space of the sacred baptism was raised, Whereupon the true salvation is returned to the people, In the light of the risen Christ barriers are resolved. And the exiles rose from their tombs; Which dissolves confessed sinners by the stains of guilt Telling them in the clear wave that flows. How many are determined to abandon the shameful crimes of their lives Here the hearts are pure and pure then keep their souls. Here they are willing; even though one is oppressed by darkness, It comes with courage: it will leave more candid than snow. Here the saints hasten; no one is holy if he does not try these waters:</p>
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<i>Sanctus: in his regnum est, consiliumque Dei.</i>	There is in them the kingdom and the plan of God
<i>Gloria justitiae: nam quid divinius isto.</i>	And the glory of Justice. What can be more divine than this,
<i>Ut puncto exiguo culpa cadat populi?"</i>	That in a short time erase a people's guilt?

Also the font described by the bishop has an octagonal shape to emphasize rebirth and eternity. There are few Early Christian baptismal fonts with eight sides whereas we often find an hexagonal shape. Saint Ambrose says: “who passes through this source does not die, but rises again” (*Qui per hunc fontem transit, non moritur, sed resurgit*) (St. Ambrose, *De Sacramentis* I.4.12. Sant’Ambrogio [1982, I.4.12, 50]).

Prospectus of the baptismal rite’s path related to the architectonical spaces

Each space of the baptistery was related to the main moments of the rite and so the three phases that formed the sequence of the baptismal ceremony (renunciation, profession of faith with trine immersion and chrism) were closely related to the type of building, thus acquired deep liturgical functionality: the environment - space in the West was chosen for the rites in which the catechumen gave up Satan also facing the West. The font where the triple immersion took place and where the catechumen symbolically died to be reborn was placed in the centre. During this phase of the ritual he/she turned to face the East, from which the Easter Sun was shortly to rise, and bidden to make a brief profession of faith. Indeed, this turning from West to East, from darkness towards the region of light, symbolized his / her conversion. The altar where the mystery of enlightenment took place was built facing East. Coming up from the font, the catechumen was clothed in a white baptismal robe and anointed with perfumed oil, called chrism. Once the ceremony was concluded the newly baptized was welcomed by the community and was allowed to enter into the church for the Eucharist.

A profound liturgical meaning can also be more clearly expressed by the combination of the numbers eight and six reflected in the octagonal shape of the baptistery and in the hexagonal shape of the baptismal font. Indeed, this research shows that the orientation of the architectural

structures that have been studied is closely connected with the baptismal rite⁵.

Baptismal buildings in central and southern Friuli (Northeast Italy)

Baptismal buildings and their churches, dating back to the times of Early Christianity (Aquileia, Grado and Trieste reconstructed in Medieval times) and to the Middle Ages (Concordia, Udine) located in central and southern Friuli, have been examined from a historical, architectural, archaeoastronomical and liturgical point of view. Only these few baptismal buildings have survived in this geographic area. Furthermore, the position of the baptistery used in Middle Ages changed in Early Christianity: the baptistery was no longer built in front of the façade and in line with the church (like in Aquileia), but was situated aside of the church, though maintaining the same orientation of the church as well as the symbolic path of the catechumen during the baptismal celebration. Another peculiarity of all these baptisteries is represented by the hexagonal shape of the fonts and the octagonal (Aquileia, Grado, Udine) or a quadrangular (Concordia, Trieste) shape of the building. As the fonts over the centuries have been moved and / or raised from the original position, the interpretation of the location of these pools remains a theory. However, studying the baptismal buildings was less complicated as some of these constructions have retained their original location and characteristics. The religious and architectural history of these churches and baptisteries is very complex due to their many reconstructions that have partially undergone changes and / or enlargements over the centuries and their understanding is multifarious, especially because of the different and discordant opinions among historians regarding the original location of the baptistery and its font.

The analysis made by the author was conducted through accurate GPS ground surveys combined with trigonometric calculations and the study of the Church Fathers' writings, medieval sources as well as scholarly literature and archaeological reports for each of these five sacred

⁵ However, the study *Frühchristliche Baptisterien* by the archaeologist S. Ristow (1998) states the contrary, that there is no meaning given between orientation and baptistery/church. In his study Ristow did not specify the methodology used to get the orientation of each building. He took the data from different other studies and gave only general information about the disposition of the baptistery (North, South, East, West, North-East, North-West, South-East and South-West). Values of the azimuths are missing as well as the history of the tradition of the orientation.

buildings. In this research we have the same alignments already found in previous researches by the author: alignments with one of the four days in which the Virgin Mary was celebrated in the Middle Ages: the Annunciation, March 25; the Assumption, August 15; the Nativity, September 8; the Purification, February 2. Other alignments are related to the day in which the Patron Saint of the church was celebrated and to the astronomical points (to the equinox and to the lunistic) (Spinazzè 2007/2008; 2010; 2015a-b; 2016a-b; Spinazzè, Moroni 2011).

Aquileia is one of the earliest examples of an octagonal baptistery and a hexagonal font. The baptistery building is placed in front of the church's façade in line with the direction of the church. It reflects the three phases of the baptismal ritual exactly as Chromatius explains in his *Sermons*. The case of Aquileia is here described in detail for its deep liturgical architectural significance and for its long history and evolution that contains the building complex in itself. The main technical results of the other four baptisteries with their churches are shown in the attached scheme (Figures 5-8) and for the whole text and interpretation see the entire work by the author (Spinazzè 2016b).

Aquileia: the basilica of Saint Mary of the Assumption and its baptistery

The tradition attributes the first preaching in Aquileia (Coronini 1889, pp. 31-32) to the Evangelist Mark. He chose the first bishop, Ermagora, who, together with Fortunato suffered martyrdom in the year 70 AD. These two became the two proto martyrs of the city. Already in Early Christianity Aquileia became an important cultural centre with a growing metropolitan authority which extended beyond the Alps to the Danube. Some intellectuals were active in that environment, including Rufino of Concordia (c. 345-410), and the clergy took part in theological discussions. The Bishops of Aquileia Theodorus (IV century), Fortunasio (...-369) and Chromatius (c. 388-408) held constructive friendships with other bishops, like Athanasius of Alexandria, Gerolamo of Strido, Ambrose of Milan and Chrysostom of Constantinople. As we have seen, the *Sermons* of Chromatius, Bishop of Aquileia, dating from the end of the 4th to the beginning of the 5th century, describe in detail the path of the Christian initiation through the ritual of baptism.

Baptism took place on the eve before Easter⁶, in Spring, during the rebirth of nature. This was associated with the creation of the world, the conception of Jesus Christ and His death. Chromatius teaches, that the believer is invited to begin the new year in Easter time where everything resumes life and "all elements of the world are renewed", but not in January, where the whole world is arid without grass, flowers, trees and gems (Chromatius, *Sermon* 17.128-131). At springtime, also Man rises to new life, through the water of baptism, through Christ who is the true light and the Sun of Justice. Chromatius in his *Sermon* on baptism (18,132-135) calls *Christus sol iustitiae, lumen aeternum and lumen verum* and in his *Sermon, In nocte magna I* (17.130-131) (Chromace d'Aquilée [1969, p. 94]), which was pronounced during Easter, summons the congregation to celebrate this holy day "in all joy, joy and joy of the soul" and to sing and to repeat *Psalm 117: Haec dies in Dominus, exultemus et laetemur in ea*.

The several archaeological excavations carried out at the basilica of Santa Maria Assunta in Aquileia at the end of the 19th and early 20th centuries (von Lanckoronski 1906; Swoboda 1909; Gnirs 1915a, 1915b; Brusin 1934; see also Buora, Pollak 2010) brought to light numerous overlapping buildings of different ages thus confirming the development of religious architecture in that area at the time of the Emperor Constantine (edict of Milan, 313, Peace and freedom of the church). The most ancient architectural structure excavated in this area was a rectangular-shaped building composed of three rectangular spaces without apses, almost certainly a building for worship⁷ with a sacred inscription dedicated to Theodore (308-319), the first bishop with a chair in Aquileia and traces of a circular baptismal font. Today we can still see the mosaics on the southern floor of the present basilica, which was part of the first Theodorian basilica. Later a much larger post-theodorian basilica was built by bishop Fortunaziano (343-355), which leant on the western and northern walls of the Theodorian building (Tavano 2015, p. 46). It was a long rectangular building with three naves but without apses. A quadrilateral porch was built on the west side preceding the entrance to the basilica and on the south side next to the church a new baptistery with a hexagonal font, maintaining the same orientation. During Bishop

⁶ For a full explanation of the significance of Easter and the symbolism of the number eight, see Saint Augustine's *Epistola* 55.

⁷ A sacred building with a rectangular plan but without an apse is similar to other churches in Aquileia, erected in Early Christianity; Brusin (1934, p. 44).

Chromatius's times a third basilica was erected on the southern side, next to the Theodorian building with a large new immersion baptistery connected to the church by a narthex. This is the basilica that we still see today in its essential structure (Figure 1). The baptismal building had a square plan with large angular niches and was raised with an octagonal drum. It was flanked by two rectangular halls (called by the Austrian archaeologists in the early 20th century '*Südhalle und Nordhalle*'), which linked it to the narthex (Cuscito 2015, p. 30). So, for a certain period of time there were two basilicas side by side.

After Attila's incursion in 452 the basilica of Bishop Chromatius was restored and the post-Theodorian one was abandoned. At the end of the 8th century the church was again restored, this time by the Franks with part of the goods confiscated by the Lombard nobles (Castagnara Codeluppi 2015, p. 130). A semicircular apse and a transept were introduced into the church and three of the four large angular niches formed the square plan of the baptismal building, leaving only the south-east side free. Following these changes the baptismal building assumed, both internally and externally, the octagonal form that we can still see today. At the beginning of the 11th century the basilica was again restored because of the Hungarian incursions and an earthquake that in 998 caused the sacred building to collapse. The works were carried out by the patriarchs of Aquileia Giovanni IV of Ravenna (984-1017) and Popone (c.1017-c.1042). Popone also built the great northern tower of the basilica on the site of the ancient post-Theodorian building. The restored church was inaugurated on July 13th 1031 (Coronini 1889, p. 26; Quercioli 2004, p. 57; Placida 2005, p. 56; Castagnara Codeluppi 2015, p. 130). Today we can see the church with its architectural language of the Romanic period: a building made of bricks with blind arches running at the top of the church along the side walls and also along the transept, with full arch openings and with a large double arched window on the façade (Figure 1).

Studying the reports and drawings of the various archaeological excavations, the orientation of the church, which we see today, follows the orientation of the first two sacred buildings, the Theodorian and post-Theodorian churches. The baptistery is placed in front of the entrance of the church (on the western side) and almost in axis with it (between the two buildings there is a slight angular difference of about 1°45'). On the western wall of the baptistery, both from the outside and from the inside, there are traces of an arch that could have originally been the entry to the baptistery, where the catechumens passed from the western side,

symbolically associated with sin, to be released before descending into the regenerating and purifying waters of the holy baptism towards the East. This ritual path from West to East was described, later in the centuries, also by Charles Borromeo (1538/1584) in his treaty where he points out that the door must face the West and the altar of the baptistery the East (Caroli Borromei [2000], cap. 19).



Fig. 1. Baptistery (right) and church (left) of Saint Mary of the Assumption in Aquileia.

Observing the disposition of the sacred buildings, first of all we must consider the Roman road system (centuriation) which included Aquileia, a colony founded in the 2nd century BC. The various studies of historians, however, have not cleared the many doubts regarding the system and have found a probable inclination of 22-23° to the North-West in relation to a big area which also includes Udine and Cividale⁸. Therefore the *decumani* had to have an azimuth of about 67-68°. But these theories for the Aquileia centuriation are only hypothesis without objective evidence. Very often the centuriations were orientated by observing the cyclicity of the stars as evidenced by the treatises of the Roman land surveyors (Hygini Gromatici, *Constitutio limitum*, 21-22. Frontin, *De limitibus*, 3.12. *Les arpenteurs*

⁸ See the bibliographic list of those who studied the concept of Roman *centuration* for the Regio X: Montevicchi, Negrelli (2009. p. 24).

romains, Hygin le gromaticque, Frontin [2005])⁹ and by the topographic surveys carried out on still existing Roman road traces. A significant example can be seen in Verona, whose *decumanus maximus* is orientated on the local horizon towards the Sunset during the winter solstice, or in Lucca, where the ancient tracing corresponded to the Sunrise in the middle of March, which represented the beginning of the Roman year. Returning to the case of Aquileia, the angular values of its centuriation lead to the points where the Sun rose in early May and mid-August in the 2nd century BC: we are close to April 21, the day of *Natalis Romae*, the anniversary of the foundation of Rome.

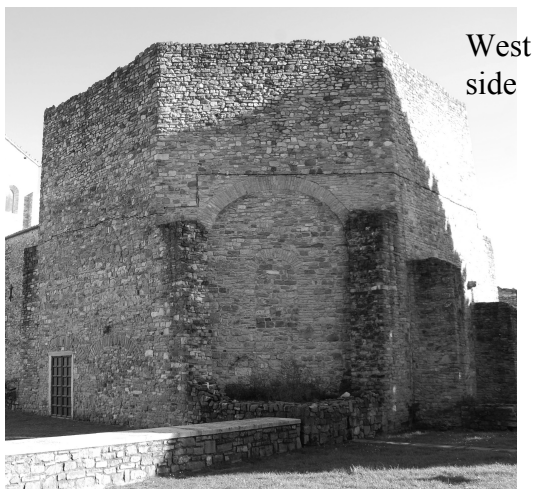


Fig. 2. Aquileia, baptistery with an octagonal shape. West side: *Renunciatio*, standing with the face to the West, the catechumen renounced Satan.

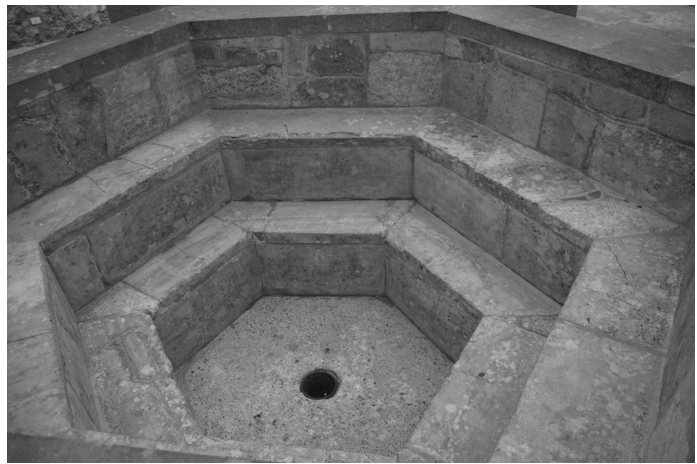


Fig. 3. Aquileia, font with a hexagonal shape. *Profession of Faith and trine immersion*, the catechumen faced the East. The turning from West to East towards the region of light symbolized the conversion in Christ.

Instead, secure data comes from the georeferenced topographic survey carried out on the baptistery and the cathedral (Figure 2) of Aquileia. The baptistery is located West of the church almost in line with the main nave (Figure 2). So, the apsis of the church looks to the North-East with an azimuth of $68^{\circ}57'$ and the baptistery looks to the West with an azimuth of

⁹ The many sundials found in Aquileia during archaeological excavations attest the assiduity of the observation of the sky in Early Christianity in Aquileia. One of them in particular is a *hemisphaerium*, a semisphere excavated in a limestone block of the Carso with eleven vertical curved lines engraved inside to indicate the hours and three horizontal lines marking the two solstices and the two equinoxes. The characteristic of this sundial is that it does not have a gnomon but has a small hole in the top of the ball where the light goes through it and marks a line. Brusin (1934, 115-117 n. 17). Vitruvius, *De architecture*, 9. 8.

250°42', emphasizing the passage of the catechumen in the baptismal rite. The hexagonal font is deep enough for a total immersion and its two sides facing East and West are parallel to those of the baptismal building (Figure 3). In this way, it can be assumed that the steps that brought to the pool (now no longer visible) were located on these two sides¹⁰. It has to be pointed out that at the beginning of Christianity only adults were baptized, because they were required to have a complete knowledge of the Christian doctrine (Coronini 1889, p. 27).

The baptistery and the church of Aquileia have a position and orientation similar to the Early Christian episcopal complex of Cividale del Friuli (church azimuth 68°46'), but its baptistery was destroyed in 1458 and the building material was used to renew the façade of the church. In 1906 during a series of excavations, its foundations were found under the pavement of the cathedral in front of the façade. Mario Mirabella Roberti suggests that the baptistery was built in the 5th century in front of the original church and in axis with it as well as with the current church that was originally medieval and rebuilt in the 15th century (Mirabella Roberti 1975, pp. 41-51). The difference with Aquileia lies in the shape of the font: in Cividale both the baptistery and the font were octagonal as we can see in the description made by Ambrose.

The Early Christian baptistery of Aquileia faced the setting Sun on the local horizon around the day of Purification of Mary (February 2nd) and together with its ancient church, it faced the rising Sun on the local horizon (angular height of 1°25') on the solemn feast of the Assumption of Mary on August 15, thus emphasizing the dedication of the church to the Virgin. The baptistery and the church in Cividale del Friuli follow the same orientation but show a slight difference of 2°30' in their angular height, so that it faced the rising Sun on the Assumption's day too. This feast of the Assumption is already mentioned in the ancient *Martyrologium Hieronymianum* of the IV / V century. Both churches with their baptisteries (in Aquileia and in Cividale) dedicated to the Virgin, date back to the Early Middle Ages and have the same orientation.

The azimuth of the two sacred buildings of Aquileia (church and baptistery) is slightly different, but both receive the sunrise around August

¹⁰ Since the origin it is an immersion font, so it had the presence of steps and channels for the flow and the outflow of water.

15th (Assumption of Mary)¹¹ and the sunset on February 2nd (Purification of Mary). This alignment of the baptistery and its church perfectly emphasizes the teaching of the Bishop Chromatius of Aquileia, as we can learn from his *Sermons*. The baptistery in the West and the church in the East are placed thus on an imaginary line, which connected the setting of the Sun on the day of Purification with the rising Sun on the day of the Assumption of Mary.

Conclusion

In this research we can notice that the architectural and liturgical features are closely linked together. The architectural components of the baptistery and its church have a precise direction in correspondence with the symbolic path of the catechumen, performed inside the sacred building during the rite of baptism, particularly in the Early Christian churches such as in the basilica of Santa Maria Assunta at Aquileia with its baptistery. Aligned from West to East there are the entrance, the pool and the altar, showing a lighting path from the darkness of sin (in the West) towards the Resurrection of Christ (in the East). The catechumen renounced Satan by standing with his face to the West on the evening of Easter eve. The baptismal rite continued at night and finished at dawn with the Profession of Faith. The catechumen had to turn to face the East from which the Sun was shortly due to rise and was bidden to make a brief profession of Faith. The conversion of faith was underlined by literally turning from West to East, looking towards the region of light. Then he/she was immersed in the water three times professing faith in God the Father, Son and Holy Spirit and once he/she re-emerged from the font, he/she was anointed with fragrant oil and dressed in white baptismal clothing. Thus purified, he/she passed the narthex and entered the church for the first time to attend the Eucharist.

A similar criteria where the architectural components show the baptismal path may also be noticed in the other churches (re)built later in the Middle Ages, but with a main difference: the disposition of the baptistery is no longer situated in front of the façade, showing a unique path in line with the church, but it is located beside the church, either at its left or its right. However, the baptismal ritual sequence is maintained: the catechumen still enters from the West in the baptistery and once inside the

¹¹ It must be noted, that these sacred buildings have been restructured or rebuilt several times throughout the centuries.

font he/she turns towards the risen Sun on the East where the altar is placed. After the baptism he/she enters from the side into the church where he/she completes the celebration. In all the places analysed, the baptistery and its church show a deep link with the testimony of written sources by the Church Fathers and the Early Christian bishop, Chromatius, and these sacred buildings are linked with an alignment to the rising or setting Sun on significant liturgical days connected with the history of each church. The geometric forms of the baptistery and the pool are of significant importance, too: the baptistery of Aquileia¹², incorporates an octagonal shape, highlighting the eighth day which symbolizes the Resurrection of Christ; and its pool a hexagonal shape, emphasizes the rebirth of the catechumen in Christ's death. There can be seen a connection with the church's alignment: inside the font, the act of purification was followed by the conversion, turning from the West (alignment on the Purification feast) to the East (alignment on the Assumption feast). Once purified, the catechumen faced the rising Sun. The Assumption, to which the church was dedicated and orientated, can be seen as death and rebirth, symbolically represented by the triple immersion into the holy water emphasised it with a hexagonal shape inscribed in an octagonal form.

¹² The basilica of Aquileia is the only sacred building of the five studied cases where the baptistery and the font still maintain the original form (only reconstructed in the Middle Ages). The fonts of the baptisteries of Trieste, Grado, Concordia also have a hexagonal shape, while the baptisteries of Udine and Grado an octagonal shape, like Aquileia. However, the baptisteries of Trieste and Concordia have a rectangular shape.

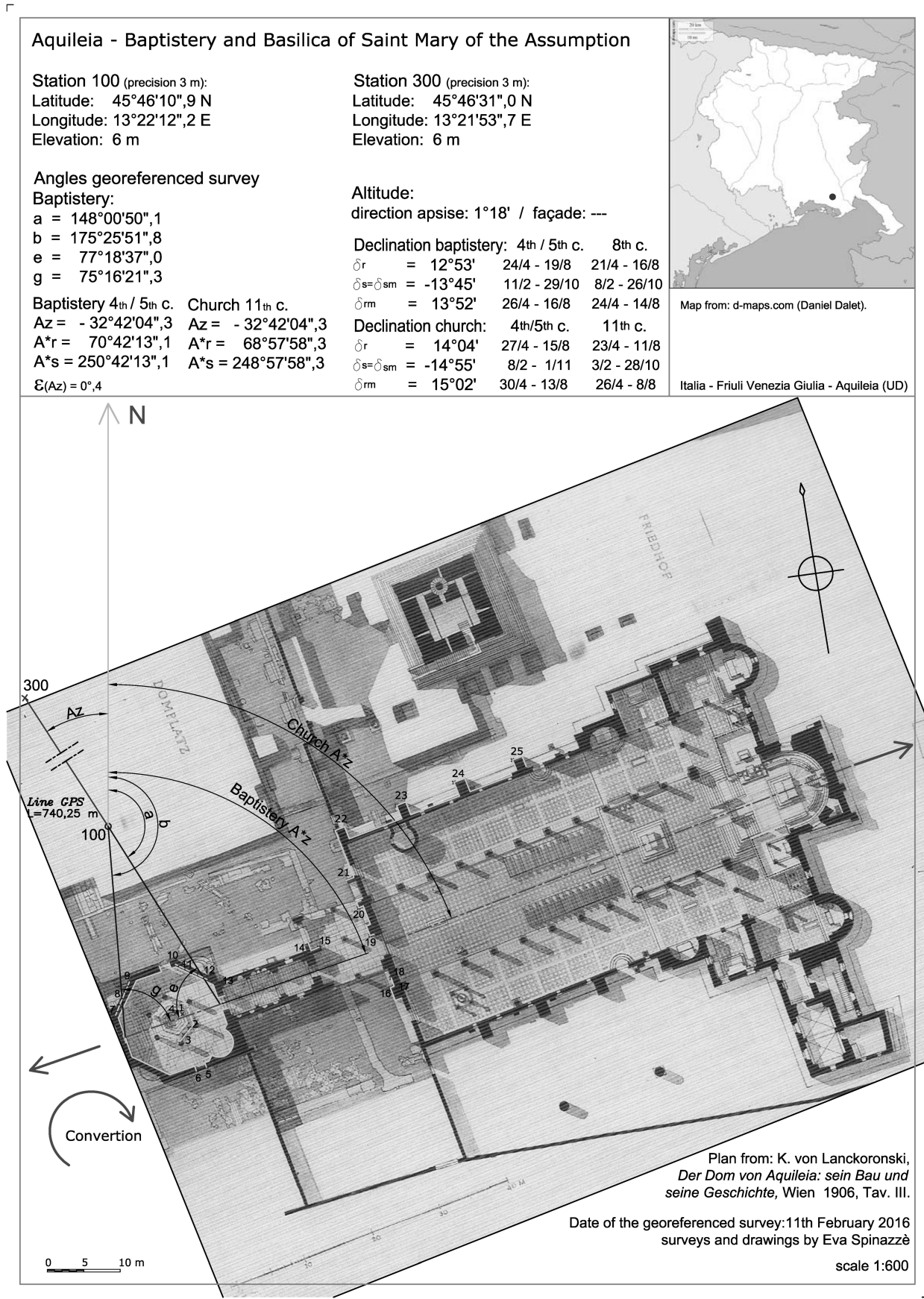


Fig. 4. Aquileia, baptistery and church of Saint Mary of the Assumption. The study of the orientation of the Early Christian baptistery and church.

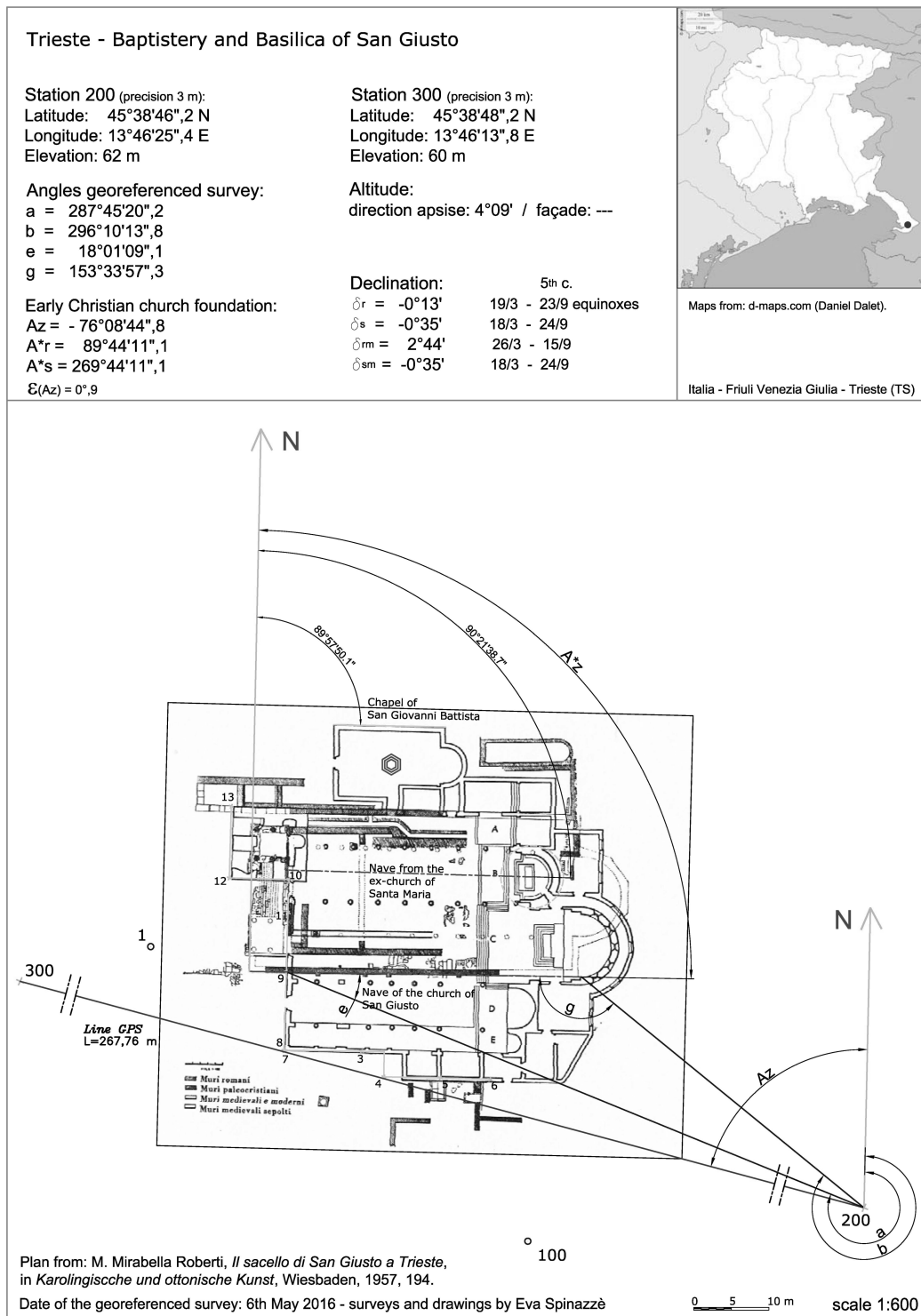


Fig. 5. Trieste, baptistery and church of San Giusto. The baptistery with its church has a perfect equinoctial alignment on the astronomical horizon; however on the local horizon these sacred buildings dating back to the Early Christianity have an orientation towards the East on the 25th March, the Incarnation of Jesus Christ and the Annunciation to Mary, with the rising of the Sun. The Catholic Church traditionally considered this day as the death of Christ, too. In this alignment the Passion and the Resurrection are symbolically incorporated, and it is where the catechumen renounce the sin with the act of turning to the West and then to the East to be re-born again.

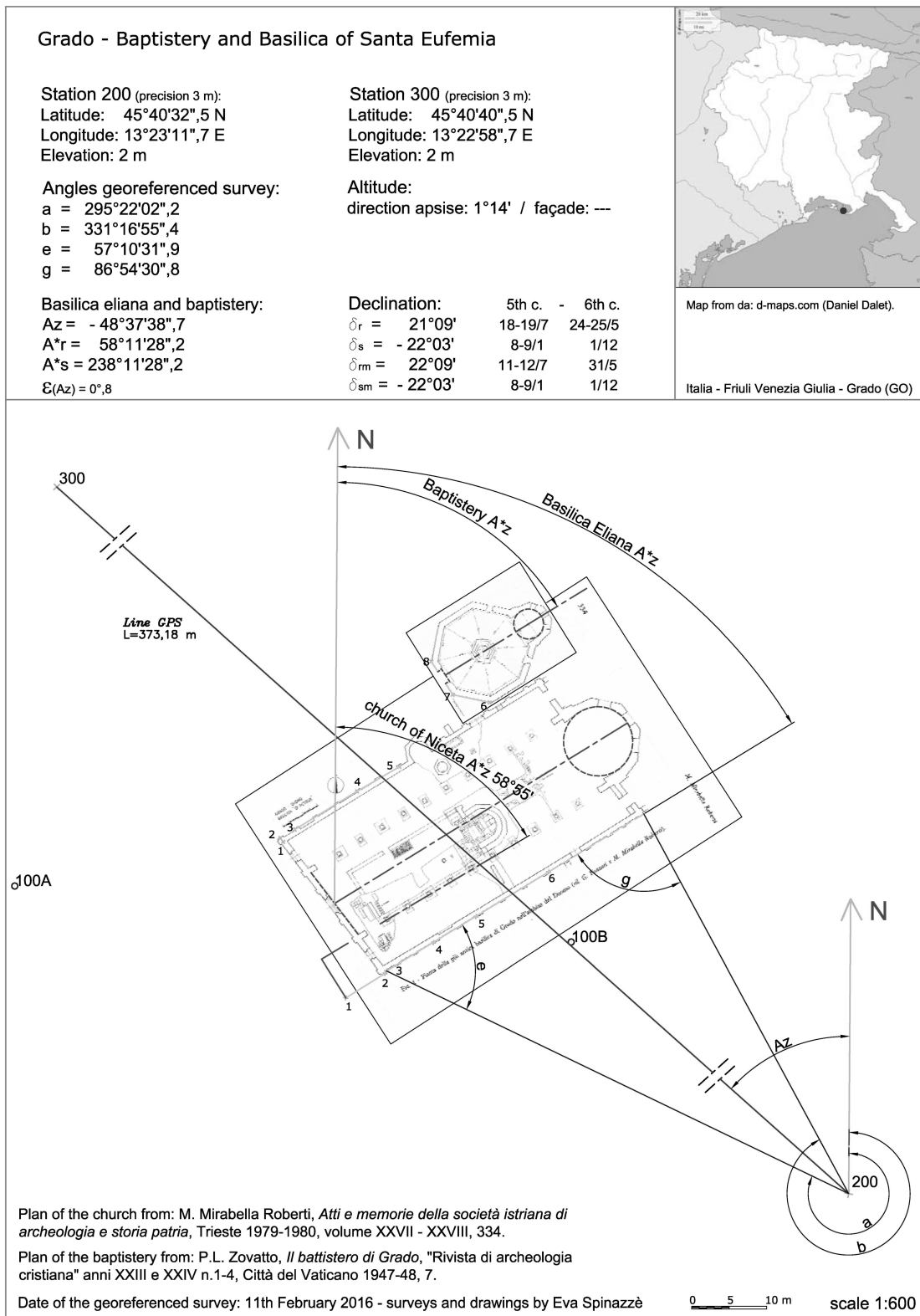


Fig. 6. Grado, baptistery and church of Sant'Eufemia. The Early Christian baptistery and its church have the same alignment; with an azimuth of 58°11' this direction corresponds to the rising Sun on the 11th July, day of the anniversary of the martyrdom of saint Eufemia.

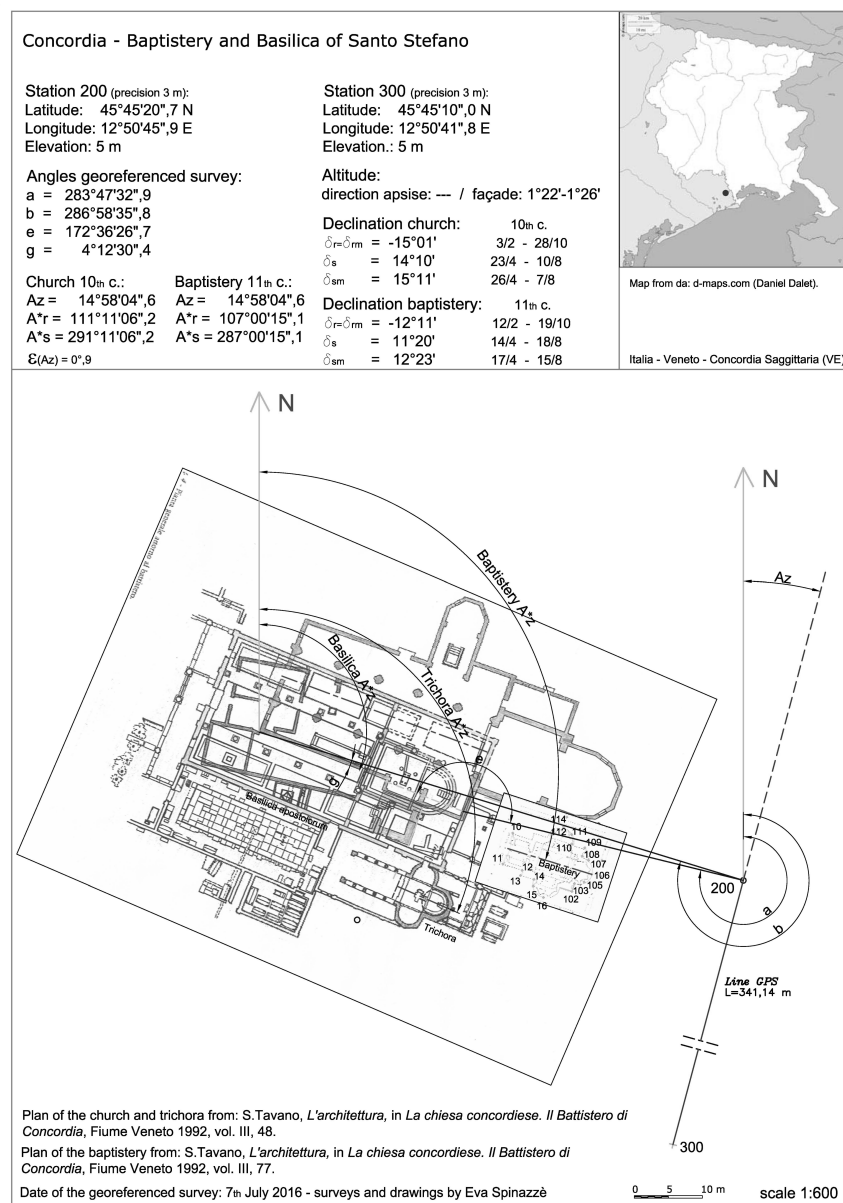


Fig. 7. Concordia, baptistery and church of Santo Stefano. Some studies of historians showed different hypothesis of the *decumano*'s orientation which passed the area of Concordia. It is hypothesized an azimuth of 115° or 51°. 51° on the local horizon corresponds to an lunistice alignment. At the beginning of December 42 BC, in the year of the alleged foundation of the city Concordia, an extreme upper lunistice with the rising full moon occurred at the setting of the sun. Considerable divergence with the traces of the foundation of the *trichora* and *basilica apostolorum* dating back to the IV century and parallel to each other show an azimuth of 113°33' which corresponds with the sunrise on the 2nd February, feast of Mary's Purification. Also the medieval church (rebuilt in the 10th century) has an alignment with the rising Sun on the 2nd February, though the azimuth is slightly different (azimuth 111°11'). This shows that the builders during the centuries looked for an alignment with the day of the Purification. However, the axis of the medieval baptistery (rebuilt in the 11th century) corresponds to an azimuth of 107°00' and is oriented with the sunset on the 15th August, feast of Mary's Assumption.

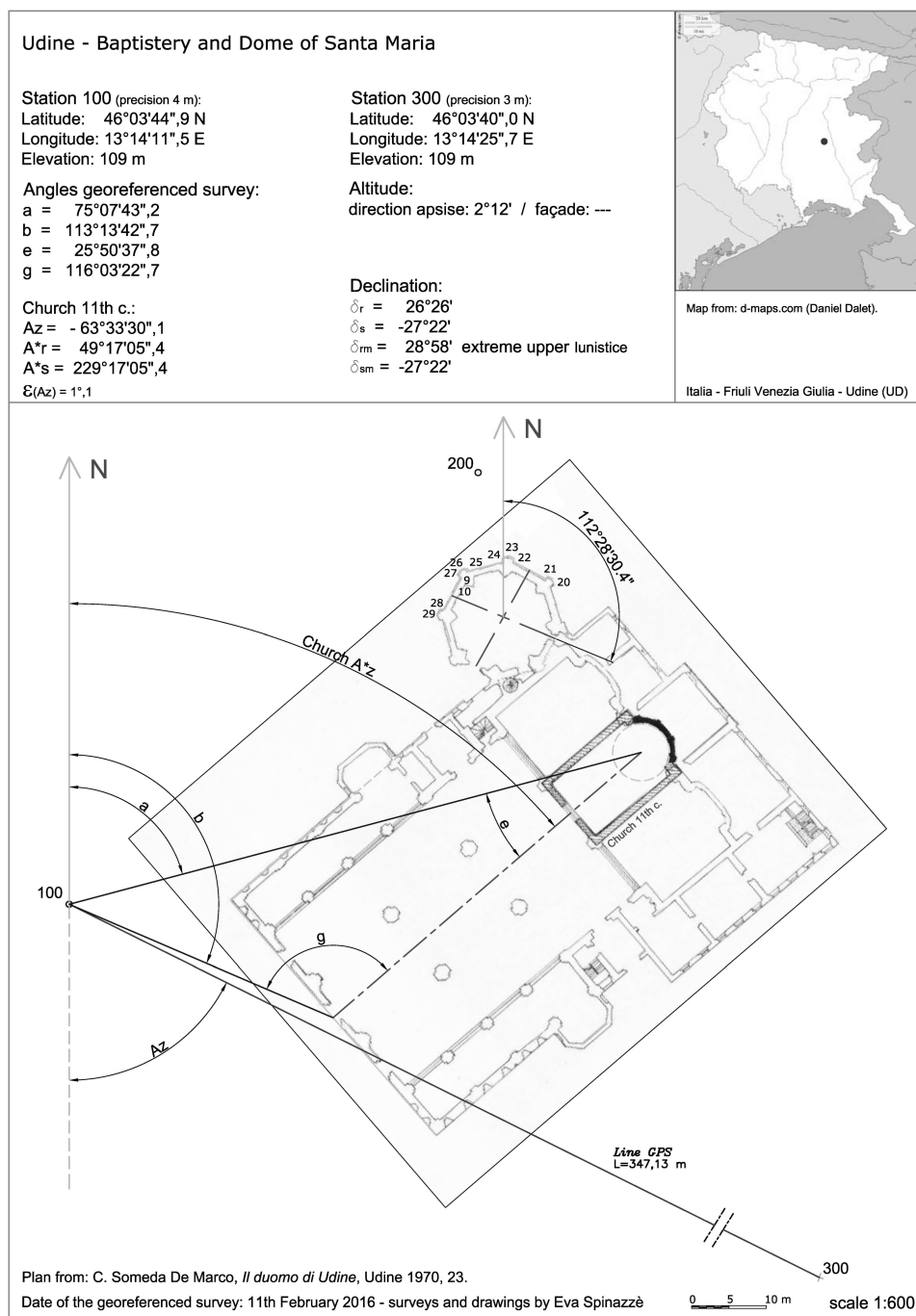


Fig. 8. Udine, baptistery and church of Santa Maria. The medieval church, which we see today, dates back to the 13th century and was built on a previous one (approx. 11th century). Both show the same alignment with an azimuth of 49°17' and a declination of 28°58' on the local horizon corresponding with the rising of the full moon at the extreme upper lunistice. These phenomena happened also during the time frame of the first church foundation, exactly on the 24th December 1094. On this day the lunistical moon rose just as the solsticial sun was setting. The baptistery is situated in the Northern part of the church which was rebuilt in the 14th century in a time when the tradition of the orientation of a sacred building was declining.

References

(primary sources)

Sant'Agostino [1969] *Le Lettere*, tr. M. Pellegrino, Roma: Città Nuova.

Allen G.C. (1903) *The Didache or The Teaching of the Twelve Apostles*, London: The Astolat Press.

Sancti Ambrosii [1994] *Hymni inscriptiones fragmenta*, tr. G. Banterle, Roma: Città Nuova.

Sant'Ambrogio [1982] *I Sacramenti*, tr. G. Banterle, Roma: Città Nuova.

St. Ambrose [1919] *On the Mysteries and the treatise on the Sacraments*, tr. T. Thompson. New York: Macmillan.

St. Augustine [1886] *The Confessions and Letters*, in P. Schaff (ed.) *Nicene and Post-Nicene Fathers*, 1, Buffalo: The Christian literature Company.

Borromei C. [2000] *Instructionum fabricae et supellectilis ecclesiasticae*, tr. S. Della Torre, M. Marinelli, Città del Vaticano: Libreria Editrice Vaticana.

Catechismo della Chiesa Cattolica (1992) Città del Vaticano: Libreria Editrice Vaticana.

Chromace d'Aquilée [1969] *Sermons 1-17*, tr. J. Lemarie, H. Tardif, Paris: Les éditions du Cerf.

Cirillo, Giovanni di Gerusalemme [1977] *Le Catechesi ai Misteri*, tr. A. Quacquarelli, Roma: Città Nuova.

Cromazio di Aquileia [1984] *Commento al Vangelo di Matteo*, 1, tr. G. Trettel, Roma: Città Nuova.

Cromazio, Vescovo di Aquileia [2004] *Sermoni*, tr. G. Cuscito, Aquileia: Città Nuova.

Cyril of Jerusalem [2000] tr. Edward Yarnold, New York: Routledge.

Cyril of Jerusalem [1894] *On the Mysteries*, in P. Schaff, H. Wace (eds.) *Nicene and Post-Nicene fathers of the Christian Church*, S. Cyril of Jerusalem, S. Gregory of Nazianzum, 7, Oxford: Parker.

Eusebii Hieronymi [1845] *Commentariorum in Amos Prophetam*, in J.P. Migne (ed.) *Opera Omnia*, 26, Paris: Petit Montrouge.

Giovanni Crisostomo [1982] *Le catechesi battesimali*, tr. A. Ceresa-Gastaldo, Roma: Città Nuova.

Les arpenteurs romains, Hygin le gromatique, Frontin [2005] 1. tr. Jean-Yves Guillaumin, Paris: Les belles lettres.

Gregorio Nazianzeno [1983] *Omelia sulla Natività*, tr. C. Moreschini, Roma: Città Nuova.

Gregory of Nazianzum [1894] *Select Orations*, in P. Schaff, H. Wace (eds.) *Nicene and Post-Nicene fathers of the Christian Church*, S. Cyril of Jerusalem, S. Gregory of Nazianzum, 7. Oxford: Parker.

- John Chrysostom [1963] *Baptismal Instructions*, tr. P.W. Harkins, New York: Paulist prest.
- Narsai [1963] *Homélies sur le baptême et l'eucharistie*, in A. Hamman (ed.) *L'initiation chrétienne*, 192 segg, Paris: B. Grasset.
- Origen [1954] *Prayer, exhortation to martyrdom*, tr. J.J. O'Meara, London: The Newman Press.
- Origen [1990] *Homelies on Leviticus: 1-16*, tr. G.W. Barkley, Washington: The Catholic University of America press.
- Origen [2001] *Commentary on the epistle to the Romans book 1-5*, tr. T.P. Scheck, Washington: The Catholic University of America Press.
- Origene [2000] *La preghiera*, tr. N. Antoniono, Roma: Città Nuova.
- Origenes [1985] *Omelia sul Levitico*, tr. M.I. Danieli, Roma: Città Nuova.
- Peregrinatio Egeriae* [2002] in H. Donner (ed.) *Pilgerfahrt ins Heilige Land*, 68-133. Stuttgart: Verlag Katholisches Bibelwerk.
- (Pseudo)-Dionysius the Areopagite [1894] *The celestial and ecclesiastical hierarchy*, tr. Rev. John Parker, London: Skeffington.
- Tacite [1978] *Histoires*, tr. Henri Geolzer, Paris: Les belles lettres.
- Theodorus, vescovo di Mopsuestia [2008] *Le omelie battesimali e mistagogiche*, tr. F. Placida, Messina: Elledici.
- Tertulliano [1984] *La preghiera*, tr. P.A. Gramaglia, Roma: edizioni Paoline.
- Tertullianus [1929] *Ad nations*, ed. J.G.P. Borleffs, Leiden: E.J. Brill.
- Tertullianus [1980] *Apologeticum*, tr. A. Resta Barrile, Bologna: Zanichelli.
- Tertullianus Quintus Septimius Florens [1933] *De baptismo*, Roma: apud aedes Pont. Univ. Gregoriana.
- Vitruvio Pollione Marco [1990] *De Architectura*, tr. L. Migotto, Padova: Studio Tesi.

(secondary sources)

- Brusin G. (1934) *Gli scavi di Aquileia*, Udine: La Planarie.
- Buora M., Pollak M. (2010) *La Zentralkommission e l'inizio della tutela archeologica ad Aquileia*, Aquileia Nostra 81, 365-410.
- Castagnara Codeluppi M. (2015) *Della memoria in architettura*, in L. Fozzati (ed.) *L'aula meridionale del battistero di Aquileia*, ed. Luigi Fozzati, 129-145, Milano: Electa.
- Castelfranchi Falla M. (1980) *Bantiethpia, intorno ai più noti battisteri dell'Oriente*, Roma: Viella.
- Chevalier J., Gheerbrant A. (1986) *Dizionario dei simboli*, Milano: Rizzoli.
- Coronini F. (1889) *I sepolcri dei patriarchi di Aquileia*, Udine: Tipografia del Patronato.
- Cumont F. (1903) *The mysteries of Mithra*, London: Chicago.

- Cuscito G. (2015) *Origine e sviluppo dell'insula episcopalis di Aquileia*, in L. Fozzati (ed.) *L'aula meridionale del battistero di Aquileia*, 25-31, Milano: Electa.
- Dölger F.J. (1925) *Sol salutis, Gebet und Gesang im christlichen Altertum*, Münster in Westfalen: Verlag der Aschendorffschen Verlagsbuchhandlung.
- Dölger F.J. (1934) *Zur Symbolik des altchristlichen Taufhauses*, *Antike und Christentum: Kultur- und religionsgeschichtliche Studien*, 4, 153-18,. Münster in Westfalen: Verlag der Aschendorffschen Verlagsbuchhandlung.
- Gamurrini G.F. (1890) *Silvia Aquitana*, Milano: Tip. Pont. di S. Giuseppe.
- Gnirs A. (1915) *Die Basilika in Aquileia. Bericht über die gelegentlich der Restaurierungsarbeiten im J. 1914 beobachteten Funde*, *Mitteilungen der k. k. Zentral-Kommission für Denkmalpflege III F.*, 14: 59-68, 133-135.
- Gnirs A. (1915) *Die christliche Kultanlage aus konstantinischer Zeit am Platze des Domes in Aquileia*, *Jahrbuch der kunsthistor. Instituts der k.k. Zentral-Kommission für Denkmalpflege*, 140-172, Wien: Kunstverlag Anton Schroll.
- Harnack A. (1884) *Die Lehre der zwölf Apostel. Untersuchungen zur ältesten Geschichte der Kirchenverfassung und des Kirchenrechts*, Leipzig: Hinrichs'sche Buchhandlung.
- Incerti M. (2002) *Il battistero di Parma. Questioni proiettive sul registro delle stelle dorate*, *Memorie della Società Astronomica Italiana* 73, 141-146.
- Incerti M. (2010) *Case Study 11.2: The Baptistery of Parma, Italy*, in C. Ruggles, M. Cotte (eds.) *Heritage sites of astronomy and archaeoastronomy in the context of the UNESCO World Heritage Convention*, 182-185, Paris: International Council on Monuments and Sites.
- Khatchatrian A. (1962) *Les baptistères paléochrétiens. Plans, notices et bibliographie*, Paris: école pratique des hautes études.
- Leclercq H. (1910) *Baptistère*, *Dictionnaire d'archéologie chrétienne et de liturgie*, 2, 382-469, Paris: Letouzey et Ane.
- Leclercq H. (1936) *Orientation*, *Dictionnaire d'archéologie chrétienne et de liturgie*, 12.2, 2665-2669, Paris: Letouzey et Ane.
- McEachnie R. (2013) *Constructing Christian Community: The Sermons of Chromatius of Aquileia*, 388-407, University of Florida, (dissertation).
- Mirabella Roberti M. (1975) *Il battistero paleocristiano di Cividale*, *Studi cividalesi*, 41-51, Udine: Arti grafiche friulane.
- Montevecchi G., Negrelli C. (2009) *Antichi Paesaggi. Una proposta di valorizzazione della centuriazione romana in Emilia-Romagna*, Bologna: IBC Istituto per i beni artistici culturali e naturali.
- Peterson E. (1945) *La Croce e la preghiera verso Oriente*, *Ephemerides Liturgicae* 59, 52-68, Città del Vaticano.
- Placida F. (2005) *Aspetti catechistico-liturgici dell'opera di Cromazio di Aquileia*, Soveria Manelli: Rubbettino.

- Podossinov A. (1991) *Himmelsrichtung*, Reallexikon für Antike und Christentum, 15, 233-286, Stuttgart: A. Hiersemann.
- Quercioli M. (2004) *Aquileia*, Roma: Istituto poligrafico e Zecca dello Stato.
- Ristow S. (1998) *Frühchristliche Baptisterien*, Jahrbuch für Antike und Christentum, Ergänzungsband 27, Münster Westfalen: Aschendorffsche Verlagsbuchhandlung.
- Rossi M. (1983) *Gli antichi battisteri della Lomellina*, Centri di fede e di storia, Vigevano: Editrice Opera Diocesana.
- Spinazzè E. (2007/2008) *Luce ed Orientazione nelle Abbazie Benedettine Altomedioevali e Medioevali nel Veneto*, master's thesis in Medieval Archaeology, Univ. Ca' Foscari Venice, publ. with the title: *Luce e canto incisi nelle pietre; l'orientazione delle chiese monastiche benedettine del Medioevo nel Veneto*, Padova 2015.
- Spinazzè E. (2010) *Luce ed Orientazione delle chiese monastiche medioevali nel Veneto*, *Benedictina* 57.1, 91-102.
- Spinazzè E. (2015) *Un santo, una Pasqua e un lunistizio a Saint-Maurice d'Agaune*, in V. Girotto, G. Rosada (eds.) *Il Cielo in Terra ovvero della giusta distanza*. XIV Convegno della Società Italiana di Archoastronomia, 307-314, Padova Univ. Press.
- Spinazzè E. (2015b) *Le pievi della Carnia. Il legame tra la loro disposizione e l'osservazione del cielo*, *Atti dell'Accademia "San Marco" di Pordenone* 17, 469-523.
- Spinazzè E. (2016) *La luce nell'architettura sacra: spazio e orientazione nelle chiese del X-XII secolo tra Romandia e Toscana*, *Mediaevistik* n. 20, Frankfurt am Main: Peter Lang Verlag (dissertation).
- Spinazzè E. (2016b) *Il battistero e il fonte: un'interpretazione sull'orientazione degli edifici battesimali medioevali nel medio-basso Friuli. Il percorso 'simbolico' del catecumeno da Occidente verso Oriente*, *Atti dell'Accademia "San Marco" di Pordenone* 18, 491-550.
- Spinazzè E., Moroni P. (2011) *Rilievi topografici per uno studio archoastronomico sulle architetture sacre di origine medioevale a Venezia*, *Geocentro* III, 18, 36-53.
- Stommel E. (1959) *Christliche Taufriten und antike Badesitten*, *Jahrbuch für Antike und Christentum* 2, 5-14.
- Swoboda H. (1909) *Neue Funde aus dem altchristlichen Österreich*, Wien: Selbstverlag.
- Tavano S. (2015) *Il modello aquileiese nell'architettura paleocristiana*, in L. Fozzati (ed.) *L'aula meridionale del battistero di Aquileia*, 45-61, Milano: Electa.
- von Lanckoronski K. (1906) *Der Dom von Aquileia: sein Bau und seine Geschichte*, Wien: Gerlach & Wiedling.