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*Quis dubitet hominem
coniungere caelo?*

a cura di
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Ut ad orientem spectet ¹

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*...genera aedificiorum ad usum
et caeli regiones acte debeant spectare...
Vitr., De arch., VI, 4, 1*

Abstract. The sense or practical meaning of direction in the sources, especially in the Latin ones, is what I want to gather and discuss in this paper, looking in particular at the very special relationship that has always been established between the man on earth and the *nomos* of the stars or, in any case, of the sky. A desired and looked for relation, however, often contradicted by the *natura soli*, which becomes antagonist to the *natura caeli*. So it happens for example when tracing the agrarian organisation, where the *regula* or rule (deriving, as we know, from *rex*, which is the “basis also of the later *directum*, from where our modern ‘right’ originates”) is the ‘set square’ required to mark straight lines on the ground. These lines, as for the orientation, can certainly follow the astronomical indication of the *hora sexta* (the sixth hour, which is noon for us), suggested by the written rule; but they are lines which most of the times take into account the features of the earth and conform to them. In any case the obtained determination of the *finis* is then safeguarded by the sacred (*regere finis*), which also oversees the *rectitudo* of the human *agere* (to the point that it has become a common saying the Latin expression of *recta regione deflectere*, i.e. move away from the right path).

Riassunto. Il senso ovvero il valore pratico dell’orientamento nelle fonti, soprattutto latine, è quanto si vuole cogliere e discutere in questo contributo, che guarda in particolare a quel rapporto specialissimo che ha da sempre coinvolto l’uomo sulla terra e il *nomos* degli astri o comunque del cielo. Un rapporto voluto, cercato, ma spesso contraddetto dalla *natura soli* che diventa antagonista della *natura caeli*. Così è per esempio nel tracciamento del disegno agrario, dove la *regula* ovvero la regola (che

¹ I would like to thank Ms Nadia Jones and Mr Christopher Jones for the English translation of the text.

deriva, come si sa, da *rex*, che sta alla “base anche del più tardo *directum*, da cui il nostro ‘diritto’) è la “squadra” necessaria per segnare sul terreno linee diritte; linee che per l’orientamento possono certo seguire, secondo la norma scritta, l’indicazione astronomica dell’ora sesta (il nostro mezzogiorno), ma il più delle volte tengono conto della forma della terra e a essa si adeguano. In ogni caso la determinazione ottenuta dei *finēs* viene poi tutelata dal sacro (*regere finēs*) che soprintende anche alla *rectitudo* dell’*agere* umano” (al punto che è entrata nel modo comune di dire l’espressione latina *recta regione deflectere*, ‘allontanarsi dalla retta via’).

In Italian there is a turn of phrase which, apart from being widely used, has kept its place in the language for a great many years: “perdere la trebisonda”. The *t* is in lower case because the majority of people appear to have forgotten that Trebisonda is the Italianised toponym of an Anatolian port-city on the Black Sea: Trabzon in the Turkish of today (Figure 1). Trabzon was previously known in Latin as *Trapezus*, which in its turn was a transliteration of the Greek *Trapezous*. Various interpretations have appeared which seek to provide an explanation for this figure of speech, and one of these pieces refers to the surrender of Trebisonda in 1461 following the Ottoman advance, although it seems to me that this is not altogether in keeping with the tradition and the meaning that is customarily associated with the given expression. It seems far more likely that the reference is to the ancient commerce that flourished there and to the merchants who traded their goods in that “Eastern” centre and who, had they lost their route to the port, would also have lost their financial investment in what was intended as a journey of profit. Such an interpretation, indeed, appears more practicable and more in keeping with the importance of the maritime port of Trebisonda both in bygone times and today in the context of the route along the southern coast of the Black Sea, between Europe and the Middle East, or between East and West. In other words, “perdere la trebisonda” meant (and still means) “no longer able to find the desired destination”, and thus to lose one’s bearings, either in a literal or in a metaphoric sense.

Furthermore, the title of this paper translates the meanings that we commonly intend to convey in the phrase “to orient oneself”, or “orientation” with the requisite precision, where in each case the astronomical orient (that is to say, where *oritur dies*) is tangible in a physical sense as it performs its guiding role, because it is there that *lux*

oritur (Horat., *Serm.*, I, 5, 39) or *oritur sol* (*Psalm.*, CIII, 22), and there, again, are the *noctis orientia signa* (Verg., *Aen.*, VII, 138).



Fig. 1. The Anatolian peninsula and the harbour of *Trapezus* on the Black Sea.

In this regard, Christ was born in the east, and it was from the east that the three Magi began their journey. It is also towards this ideological and religious reference point that the new Christian geographic cognition orients itself. One cannot escape the fact that cosmography and astronomy were very delicate subjects as far as faith was concerned, especially if one takes into account that the doctrines of “pagan” scholars could not always be reconciled with the teachings of holy scripture in practical terms. It is for this reason that we read, in various patristic printed texts, curious cosmographic descriptions in which, for example, the heavens have assumed the form of a sphere or a vault, or even of a curtain, of a veil (which seems to correspond with the veil in Solomon’s Temple that separated the Holy Place from the Holy of Holies, which the high priest would enter only once a year; cf. Paul., *Heb.*, VI, 19), or a tabernacle, whereas the earth was described as a geometric plane, a disc, or sometimes a cylinder. As is well known with regard to the earth in particular, the theory of sphericity, recurrent in the Greek and Roman worlds, was abandoned in favour of flat or level ground, and in fact punishments were prescribed for anyone who affirmed the contrary and, in so doing, placed

himself at variance with the biblical record.² Geography thus becomes revived and adapted within an ideological and religious construct and a rigorously hierarchical descriptive schematism (cf. earth-heaven, vault-other heaven and vault superimposed). In this way the world/*kosmos* returns in full possession of divinity, partially retracing the situation pertaining at the time of the first examples of Greek and particularly Milesian “cartography” (6th century BC), when, as has been indicated elsewhere, portraying the earth was an act of *hybris*.³

Isidore (570-636 AD) must certainly feature as one of the most significant authors from this particular Christian epoch to produce a geographic *katastrophé*. He was a member of a high-ranking family from Cartagena; later he moved to Seville. Among his several works, those of a geographic character include *De rerum natura* / “On nature” and the more famous *Etymología* or *Origines*, in twenty volumes. This latter work is in the form of an etymological dictionary where, in books XIII-XIV, he speaks of cosmography and physical geography (springs, lakes, oceans, gulfs, tides, etc.). The data is drawn from Pliny and Solinus, although it is organised in a different manner: whereas Pliny commenced his description with the Straits of Gibraltar (Pillars of Hercules) and Solinus set out from Rome and therefore from Italy, Isidore allocated separate chapters to each of the continents and made his initial departure from Asia – that is to say, from the east. In this respect he followed the trends established by earlier Christian geographers and cartographers who oriented their maps with the east at the top of the page and gave precedence to the Earthly Paradise, beneath which there would often be connections to the city of Jerusalem. Isidore also alludes to a fourth part of the world located in the south, almost as if it were a sort of antipodes, though he hasten to add that these

² Stahl (1962) 1991².

³The *kosmos* was the absolute domain of the divine (or, in some cases, representatives of the divine on earth). In addition to the account of Mettius Pompusianus’s tragic fate recorded by Suetonius (*Domit.*, X, 2), the actuality was confirmed by Xenophon, who recalled that Socrates “strongly discouraged the study of astronomy ... in that it was inadvisable to occupy one’s mind with celestial phenomena as these were matters for the gods and were therefore inaccessible to men. Those who sought what the gods had chosen not to reveal were denied their blessings” (and he also alludes to Anaxagoras of Clazomenae who, wishing to explain phenomena in naturalistic terms and without reference to the presence and the interventions of the gods, incurred accusations of impiety: *Memorab.*, IV, 7, 5-7).

the two lower quarters of the circle, Europe and Africa, which in their turn were separated by the waters of the Mediterranean. Besides forming a T (that is, together with the Nile and the Don) which provided the origin of the name of the *mappa mundi* (the union of a T and a circle; therefore T-O, which could also indicate *Terrarum Orbis*/"terrestrial globe"), the Mediterranean also indicated, at its intersection with the transversal arm, the site of Jerusalem, which thus became the *umbilicus mundi*/"the world's navel". The north had thus yielded the place at the top of the map to the east, to the orient which saw the birth of Christ, in a sort of ideological-religious *katastrophé* (as it has been described). It is well known that this granting of privilege to the east at the expense of the astronomical north is widely practised and applied in Christian religious architecture, where the apse points towards the horizon of Christ's birth (this is similar to the way in which the *mirhab* in a mosque points towards Mecca); however, it is also true that morphological situations or spatial and architectural considerations can result in modifications being made with regard to the ideology from which one initially set out. Of the many examples of this that we might consider, let it suffice to recall the instance which we brought to light at *Tyana*, in Cappadocia, where a diocesan church in perfect orientation, not being even so much as a fraction of a degree out of kilter, is flanked by a baptistery (5th – 6th century AD) that is conditioned by the larger building and by the morphology of the land (and hence by the amount of space available).⁵

Nevertheless, as has already been said, the Orient which "orients" was not simply some product of Christian geography which ideologically overturned the relationship between heaven and earth. A fascination with the place where *lux oritur* was also evident in the planning of the fields in Roman times,⁶ and, as is well known, was particularly evident in the agrarian layout which in numerous instances continues to mark and delineate many areas of land even today – and these not only in Italy.

As a matter of fact the Roman surveyors, whilst keeping in mind the possibilities of marking out a centuriation with all four of the cardinal points being considered as a basis, illustrate how, from the beginning, an

⁵ Cf. Rosada, Lachin (2010) and Rossi (2016).

⁶ It is no mere coincidence that a passage from Virgil's *Georgics* reminds us ...*redit a nobis Aurora diemque reducit, nosque ubi primus equis Oriens adflavit anhelis* ("when Aurora moves away from us to herald in the day just as the Orient directs the panting breath of the sun-horses toward us.": *Georg.*, I, 249-250).

east-west orientation was the most usual.⁷ On this point Fraccaro,⁸ drawing his inferences from the *Gromatici* texts, emphasises how orientation usually occurred with the rising sun, and that the cardinal points were considered as a projection of the celestial *templum* on the earth (*Primo duo limites duxerunt: unum ab oriente in occasum quem vocaverunt decumanum; alterum a meridiano ad septentrionem, quem vocaverunt cardinem*/"Two boundaries were traced initially; one running from east to west which they called *decumanus*, the other from south to north which they called *cardo*": Front., *De limit.*, p. 28, 6-9, Lach.). This procedure, which we can describe as *secundum caelum*/"according to the sky" or "according to astronomical orientation", was theorised, if not indeed considered technically, by the surveyors, who referred explicitly to Etruscan haruspicy (*Limitum prima origo, sicut Varro descripsit, a disciplina Etrusca ...*/"The *limites* owe their first origins, according to Varro, to Etruscan branches of learning": Front., *De limit.*, p. 27 ff.; cf. Hygin. Grom., *De limit. const.*, p. 166, 1-7, 10-12, Lach.). In order to determine such astronomical orientation, they either made recourse to a true meridian, or simply to a gnomon (Figure 3).

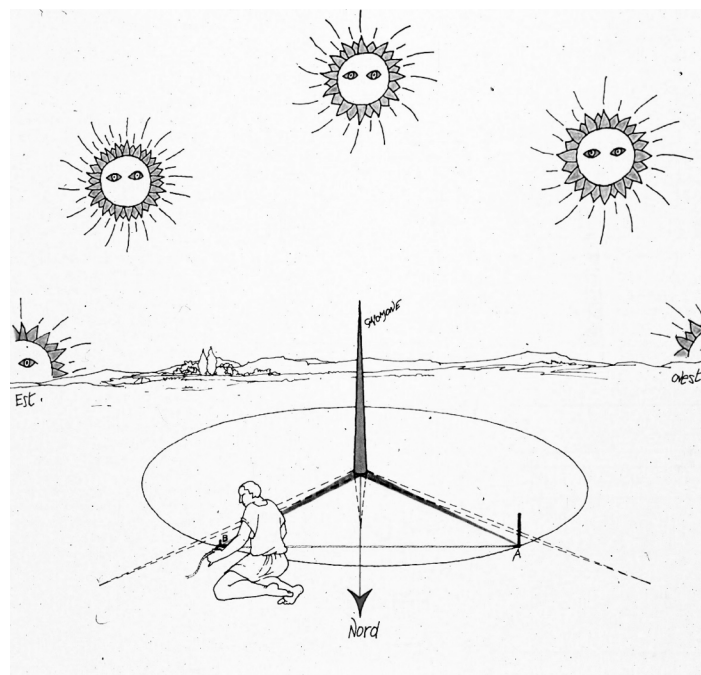


Fig. 3. The orientation with the gnomon (from *Misurare la terra* 1983).

⁷ For what follows on the subject of centuriation, cf. *Topografia antica* 2000; Quilici, Quilici Gigli (2004) and also Rosada (1991).

⁸ Fraccaro (1941) 1957; cf. also Fraccaro (1940) 1957.

In this regard it was recommended that the operation be carried out at the sixth hour (the Romans divided the hours of the day into twelve hours *ante meridiem*/"before midday" and twelve *post meridiem*/"after midday". The *prima hora*/"first hour" roughly corresponded with that between 06.00 and 07.00, and a distinction was also made between the *horae brumales* which commenced with the winter solstice (22 December) and the *horae aestivae* which were initiated with the summer solstice (21 June). The latter meant that the system was brought forward by approximately two hours). As Hyginus Gromaticus affirmed (*De limit. const.*, p. 170, 5-8; cf. also p. 188 ff., Lach. and Vitruvius, *De arch.*, I, 6, 6-7), it was only at midday that the shadow projected by the gnomon gave a precise indication of the north: *Optimum est ergo umbram hora sexta deprehendere et ab ea limites inchoare, ut sint semper meridiano ordinati; sequitur deinde ut et orientis occidentisque linea huic normaliter conveniat*/"It is best to catch the shadow at the sixth hour and to set the limits from there, so that they are always calculated according to the meridian; one then proceeds in such a way that the line from east to west is perpendicular with this meridian". In these circumstances the maximum tolerance in the movement of the *limites* in relation to the astronomical axis cannot exceed the angular width between the winter and summer solstices, i.e. the two extreme limits at which the sun rises in the course of the year.

To all intents and purposes, with orientation *secundum caelum* one in fact enters into the realms of the sacred (it was not by chance that Hyginus advised *posita auspicaliter groma* "The groma is positioned after having regard to the omens"), under the cover of which one undertook important actions from both social and political points of view – rather as people do today when something is formally "inaugurated" or when the foundation stone of a building is consecrated (the centuriations at Turin, Cesena and Florence are characterised by a fairly precise astronomical orientation, whereas there is a slight deviation from the north-south axis in the way the fields are laid out at Altino, Ivrea and Brescia.)

Limites was the name given to the parallel and perpendicular lines which marked the boundaries of each *centuria*, or that plot of land which, according to tradition, was subdivided and assigned by Romulus to one hundred families (*Centuriatus ager in ducena iugera definitus, quia Romulus centenis civibus ducena iugera tribuit* / "The centurial countryside is formed from two hundred *iugera*, because Romulus divided two hundred *iugera* amongst a hundred citizens": Fest., p.47, Lindsay). These *limites* (cf. *lex Mamilia*, p. 263 ff., Lach.) could not be moved for

any reason whatsoever, and in this regard we know from Varro (*De lingua lat.*, V, 74) of a cult, present in Rome, which followed the god *Terminus* (*ut annales dicunt*/ “as stated in the annals”) from very ancient times (syncretic with Jupiter, as an inscription from the Ravenna *ager* appears to confirm – CIL, XI, 351– which records the dedication *Iov(i) Ter(minali)*/to Jupiter *Terminalis*). As proof of the innate firmness of the deity, Livy (I, 45) and Dionysius of Halicarnassus (*Ant. Rom.*, III, 69, 5-6) cite the legend according to which, when the temple to Jupiter *Optimus Maximus* (*O. M.*) was built on the Capitoline Hill, the only gods who were unwilling to leave the shrines founded there by their original cult were *Iuvantas* and *Terminus* (cf. also Aug., *De civ. Dei*, IV, 23). For this reason two suitable spaces had to be left in the new building.⁹

The *limites* that were normally aligned from east to west (or were close to such an orientation) were called *decumani*, whereas those aligned from north to south were known as *kardines* (*Decimanus appellatur limes, qui fit ab ortu solis ad occasum; alter ex transverso currens appellatur cardo* “*Decumanus* was defined as the limit which traced from east to west; the other limit which intersected with it was called *cardo*”: Fest., p. 62, Lindsay). The two *limites* that formed the axes of the centuriation were the *decumanus* or *decimanus maximus* (DM) and the *kardo maximus* (KM) (Hygin. Grom., *De limit. const.*, p. 168, 8-9, Lach.: *Decimanus autem primus maximus appellatur, item kardo* “The first *decumanus* was called the ‘maximus’, and likewise the first *cardo*”). These, which represented the fundamental constituents of the whole *ager limitatus* or *centuriatus*, were traced out first of all, and their point of intersection became the centre of the entire centuriation. This point, where the two base lines converged and created their perpendiculars (*omnis limitum connexio rectis angulis continetur* “Each intersection of the *limites* is contained/defined by right angles”: Hygin. Grom., *De limit. const.*, p. 181, 14-15, Lach.). The point of intersection was known as the *tetrans* or *umbilicus* (*quoniam ab uno umbilico in quattuor partes omnis centuriarum ordo componitur* “because starting from a single point the whole sequence of the *centuria* is arranged in four parts”: Hygin. Grom., *De limit. const.*, p. 195 s., Lach.); this was defined by the *groma* with a rituality linked with the field of sacredness (indeed, it was said *posita auspicaliter groma... sic et in castris groma ponitur in tetrantem* “positioned the *groma* after having consulted the omens ... thus in the encampments, too, the *groma* is

⁹ On this matter, cf. Dumézil (1974) 1977, pp. 160 ff., 184 ff.

set at the intersection of four lines”: Hygin. Grom., *De limit. const.*, pp. 170, 5, 180, 8-9, Lach.) (Figure 4).

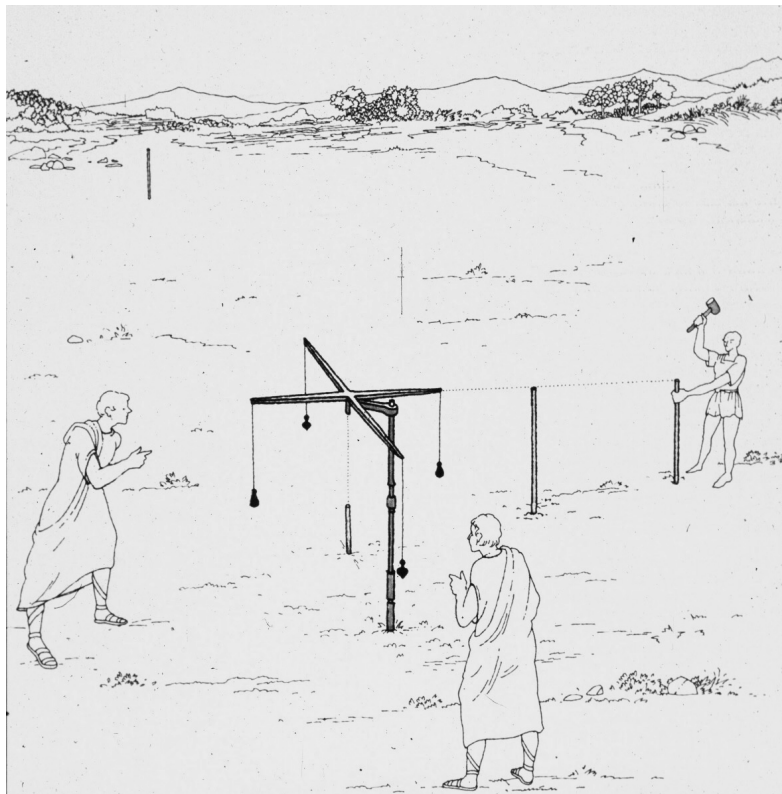


Fig. 4. The use of the *groma* to trace the *limites* (from *Misurare la terra* 1983).

In this way the whole of the land under consideration was divided into four *regiones*/“regions” by these two principal lines; that is to say in *pars dextra* or *dextrata*/ “right” and in *sinistra* or *sinistrata*/“left” in relation to the *decumanus maximus* (the east being behind the shoulders of whoever was looking in the direction of the *decumanus*, which was the starting position of the surveyor when placing the *groma*); and in *pars postica* or *citrata/kitrata* (“part on this side”, in other words) and in *pars antica* or *ultrata/vltrata* (“part on that side”) in respect of the *kardo maximus* (the east still being at the back of a person who stood facing the direction of the *decumanus*) (*Quod aruspices orbem terrarum in duas partes diviserunt, dextram appellaverunt quae septentrioni subiaceret, sinistram quae a meridiano terrae esset... Aruspices altera linea ad septentrionem a meridiano diviserunt terram, et a media ultra antica, citra postica nominaverunt... Decumanus autem dividebat agrum dextra et sinistra, cardo citra et ultra*/“Because the haruspices divided the earth into two parts, and the part on the northern side was said to be on the right, whereas the left was the part on the south side of the terrain ... The haruspices divided the land with another line, running from north to south, and they

called the part on this side of the resulting median line *antica*, and the area on the other side was called *postica* ... The *decumanus*, therefore, divided the field into ‘right’ and ‘left’; the *cardo* divided it into ‘this side’ and ‘that side’”: Front. *De limit.*, p. 28, 2-4, 9-10; cf. Hygin. Grom., *De limit. const.*, p. 166 ff., Lach.) (Figure 5). Naturally this *secundum caelum* rituality – or better, *a caeli regione*/ “following the astronomical orientation” – was, more often than not, subservient to a consideration of the *natura loci*/“the morphology of the land”.

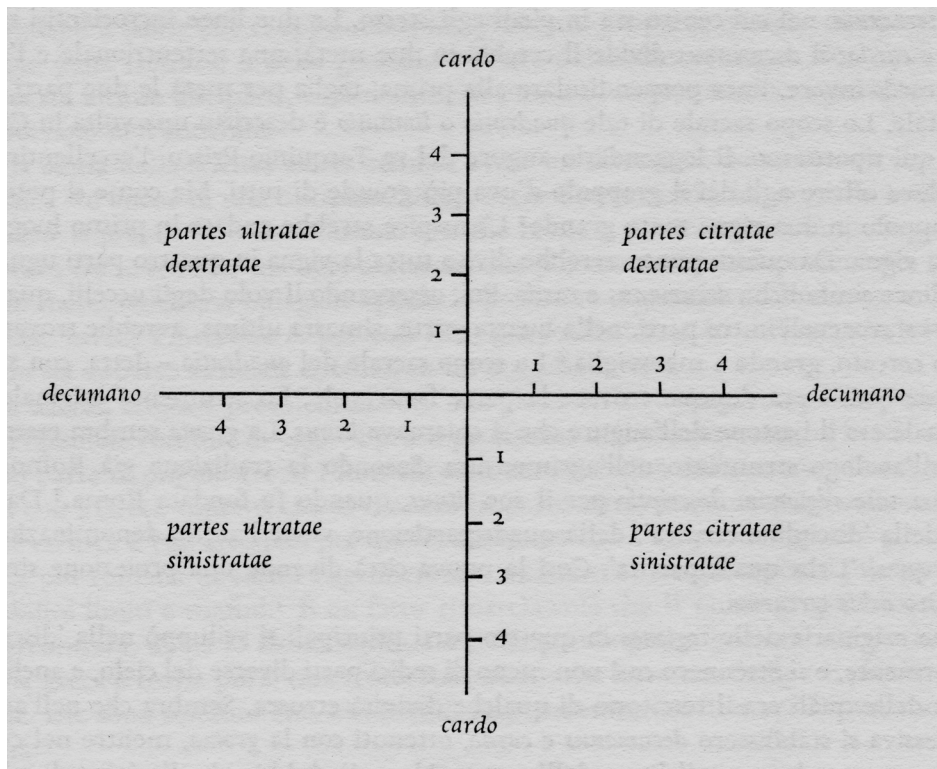


Fig. 5. The centuriation sectors defined by the DM and KM (from *Optima hereditas* 1992).

We therefore know that the layout of a centuriation on the ground could also depend on other factors, not least – or rather, first of all – the *natura loci*/“nature/the morphological characteristics of the terrain”. In these cases:

1) the DM could be made to trace a major route, such as the *via Appia* at Terracina (*Quibusdam coloniis decumanum maximum ita constituerunt, ut viam consularem transeuntem per coloniam contineret; sicut in Campania coloniae Axurnati. Decimanus maximus per viam Appiam observatur!* “At some *coloniae* the *decumanus maximus* was designed so that it corresponded with the consular road which ran through the *colonia*, as occurred at the *colonia* of the *Axurnati* (the inhabitants of *Anxur* – i.e.

modern-day Terracina - our edit). The *decumanus maximus* here followed the *via Appia*": *Liber colon.*, II, p. 256, 13-15, Lach.); however, it is interesting to note that in the area of the Pontine level, the old centuriation was not oriented at all with relation to the route of the *Appia*, whilst the modern land drainage system is planned around it. In the Veneto region we should consider the *via Postumia*, which constituted the DM of the centuriation at *Acelum* (Asolo), and another well-known example is the centuriation system along the *via Æmelia*, between Rimini and Piacenza;

2) an agrarian division could be allocated a different orientation compared with the land surrounding it, in order to distinguish between two centuriation systems (*Et multi, ne proximae coloniae limitibus ordinatos limites mitterent, exacta conversione discreverunt*/"And in order not to orient the boundaries in the same way as those of the neighbouring *colonia*, many were distinguished by making marked changes to their direction": Front., *De limit.*, p. 31, 7-9, Lach.): as examples of this type (among others) we could include the centuriations at *Forum Iulii* (Cividale), and at Aquileia or at Padua and Altino in the *decima regio* (in Campania the *ager Nolensis* and the *ager Campanus*). However it needs to be said that these differences in orientation might also be a result, given the instruments available, of an inability to achieve congruity between measurements taken at different times. On this subject, it is worth drawing attention to work by Guy (1993), where, having considered the various "methods of measuring angles in antiquity", the author affirms that "no conclusions of a historical sort can be drawn as a result of similarities or differences in orientation in the land registers, which are unavoidable, given the system by which they were constructed";

3) above all, however, the morphology and the course of the land had to be taken into account. Indeed, where the land was characterised by very gentle gradients, the surveyor in ancient times could facilitate the flow of water by making the *decumani* follow the lines of the slope. In situations where the gradient was steeper, on the other hand, it was preferable to set the *decumani* at more of an oblique angle so that the force of the water would be restrained somewhat and the flow would be less rapid (Boeth., *Quae fertur geom.*, p. 408 s., Lach.). By way of example, the first of these cases can be encountered in the centuriation at Pavia and *Iulia Concordia*, whilst the second applies at Tortona and again in the so-called "oriental" one at Concordia.

All the *limites* followed the orientation of the two *maximi*, perfectly parallel and perpendicular, and their position in relation to the *decumanus*

maximus would be indicated with the letters DD (*dextra decumanum*, northern sector), SD (*sinistra decumanum*, southern sector), followed by Roman numerals in successive order. According to Dilke, the correct reading of DD and SD ought not to be that indicated above (after Hyginus: *De limit.*, p. 111, Lach.), but *dextra/sinistra decumani*, i.e. on the right hand or left hand of the *decumanus*).¹⁰ In relation to the *kardo maximus*, the letters CK/KK (*citra/kitra kardinem*, eastern sector) and VK (*ultra/vltra kardinem*, western sector) were used; these too would be followed by numerals in succession. According to Frontinus (*De limit.*, p. 29 ff., Lach.), the *limites...qui spectabant in orientem, dicebant prorsos* (i.e. those with an east-west orientation; literally “in a straight line”): *qui dirigebant in meridianum, dicebant transversos* (transversal); however *hi ab incolis variis ac dissimilibus vocabulis a caeli regione aut a loci natura sunt cognominati in alio loco; sicut in Umbria circa Fanum Fortunae qui ad mare spectant maritimos appellant, alibi qui ad montem montanos /* “Elsewhere these *limites* were referred to by local people using a variety of different phrases, following the domain of the heavens or the characteristics of the land; thus in Umbria, close to the *Fanum Fortunae*, the *limites* which faced the sea were called ‘maritime’, whilst in a different context those which faced the mountains were called ‘mountainous’” (cf. also *Liber colon.*, II, p. 256, 13-15, Lach.). Conditioning caused by the morphology of the coastline can be found in the territorial fields at Rimini (where there are two centuriations, one which follows the features of the countryside lying behind, and a second which follows the coast), and at Zara (where the centuriation follows the articulation of the shoreline).

When observing the lines (the *limites*) which intersect with each other, oriented astronomically, i.e. *secundum caelum*, or simply *secundum naturam loci* or *solis*, or following the nature of the land with which one necessarily has to negotiate and somehow come to terms so that the lines may remain in place for as long as possible, it cannot escape our notice that when the surveyor-*agrimensor* was marking out the land, he was nevertheless following a *regula* (rule) (Figure 6). This is a beguiling word, full of meaning in the real sense because “*regula e regio, ma anche rex e rego, hanno una comune e antichissima matrice, la radice indoeuropea ri* (alla base anche del più tardo *directum*, da cui il nostro ‘diritto’). *Regula* è la squadra (we can think of it as the level or the *groma* in our discussion) che serve per tracciare sul terreno linee diritte; ed è pure la norma che

¹⁰ Dilke (1971) 1979, p. 43.

individua la rettitudine dei comportamenti umani e taluni li impone con efficacia obbligatoria per il governo della vita istituzionale all'interno...delle *regiones*...Assolutamente univoca è l'espressione latina *regere fines*: la *regula* è assunta a tracciare i moduli della *rectitudo* dell'*agere* umano: la condotta corretta...i giuristi...assumono il ruolo degli agrimensori nel campo delle relazioni sociali e i *fines* da essi tracciati sono sacri come quelli segnati dai *centuriales lapides*... (al punto che è entrata nel modo comune di dire l'espressione latina *recta regione deflectere*, 'allontanarsi dalla retta via')".¹¹



Fig. 6. The Roman centuriation of the north-eastern *ager Patavinus*, oriented 13° NE (source: Google Earth).

These being the rules that governed the division of the fields, it followed that the buildings which sprang up in the landscape, or rather in that *forma regionis* transformed by human hand (farms, rustic residences, villas in the true sense of the term) – these buildings needed to take orientation into account, aligning themselves in the main with their longest side running east-west, that is to say corresponding with the *decumani*, and

¹¹ Vincenti 2009 (2010). I have made use of these observations by one of my colleagues from the School of Jurisprudence at the University of Padova because they seem to me to link well with the broad spectrum of values which are derivatives from the Romans' agrarian division.

therefore with one of their longest sides facing south.¹² This is an important point, because it had a clear repercussion on the positioning of utilitarian or service rooms within the dwelling. It is consequently not by mere chance that Varro evoked the whole of his astonishment and disappointment in contending that very often a person would be preoccupied with whether to have the dining room in their villa exposed to the cool eastern side in the summer or the sunny western side in the winter, rather than taking care, like the ancients, to have the windows properly aligned in the wine cellars and the rooms where oil was stored, in the sense that in these cases the wine needed a cooler temperature for the *dolia*, whereas the oil needed to be kept at a warmer temperature (*potius quam, ut antiqui, in quam partem cella vinaria aut olearia fenestras haberet, cum fructus in ea vinarius quaerat ad dolia aera frigidiorum, item olearia calidiorum*: Varro, *De re rust.*, I, 13, 7).¹³

This question pertaining to domestic structures takes on a highly relevant importance, and a long *excursus* in Book 6 of Vitruvius's *De architectura* is given over to the necessity of taking full account of geographic and climactic considerations when new buildings are constructed, besides keeping in mind the specific characteristics and peculiarities of the various sites. Or rather: (... *privata aedifica*) *erunt recte disposita, si primo animadversum fuerit quibus regionibus aut quibus inclinationibus mundi constituentur*/ "private buildings will be planned in the appropriate way if, in the first place, one takes account of the region or global latitude in which they are being constructed", since it is necessary to consider *ceteris terrarum et regionum proprietatibus....quod alia parte*

¹² Even today, if one examines aerial photographs of centuriated land which still bears traces of the ancient lineation, one can observe that the majority of examples which draw on a certain historicity (or which, at least, have been in existence for several centuries) still make use of the ancient functional lines in order to benefit as much as possible from the warmth of the sun.

¹³ Another point of controversy which relates to this can be found in Varro, who records that the circus and the theatre are preferred to the sickle and plough (*De re rust.*, II, *Praef.*, 3). But the recollection of the good old days and their various customs can be found in so many Roman authors: among these, if we remain on the subject, it is worthwhile to recall Columella (I, *Praef.*, 3, 14) who sees that one of the causes for a piece of land to lack productivity is to place it in the hands of the worst slaves (*rem rusticam pessimo cuique servorum...dedimus*), whilst the landowners' sole concerns are living a life of luxury and the delights of urban affairs (*luxuriae et deliciae*).

solis cursu premitur tellus, alia longe ab eo distat, alia per medium temperatur. Igitur uti constitutio mundi ad terrae spatium in inclinatione signiferi circuli et solis cursu disparibus qualitatibus naturaliter est conlocata, ad eundem modum etiam ad regionum rationes caelique varietates videntur aedificiorum debere dirigi conlocationes. Sub septentrione aedificia testudinata et maxime conclusa et non patentia sed conversa ad calidas partes oportere fieri videntur. Contra autem sub impetu solis meridianis regionibus, quod premuntur a calore, patentiora conversaque ad septentrionem et aquilonem sunt faciunda. Ita quod ultra natura laedit, arte erit emendandum! “specific features of differing regions or territories ... since one part of the earth is directly beneath the course of the sun, another is at a distance from it, and yet another is somewhere between the two. So, just as the structure of the world is naturally dependent on the inclination of the circle of the zodiac and the sun’s course, in the same way it appears that the placement of buildings must be determined according to the natural characteristics of the regions and the varieties of climate. It therefore seems reasonable that in northern areas buildings ought to be sheltered and covered, not open, and should be constructed to face the warmer spots. On the other hand, in southern parts which are under the glare of the sun and which are apt to become oppressively hot, houses should be more open, and face in a northerly direction, benefitting from the wind which arrives from the north-east. In this way the disasters which Nature may bring can be rendered impotent by Art.” (VI, 1, 1-2).¹⁴ These are considerations that bring to mind the well-known recommendations which the same author made with regard to

¹⁴ Apart from this intervention of the *ars*, it has to be stressed that the Latin source seeks to confirm that “le abitazioni private debbono esser fondate per le loro peculiarità fondamentali sulla *natura* e sul diversificato assetto dell’ordine cosmico, in accordo con la ben nota concezione naturalistica dell’architettura, non diversamente da quella delle altre *videndae artes* più volte espressa da Vitruvio...mentre per i templi e per gli impianti pubblici...non sono previste variazioni determinate dalle specificità latitudinali e climatiche delle diverse regioni...Tale dicotomia...può essere verosimilmente spiegata...per la sua funzionalità alle concrete esigenze del vivere quotidiano, considerato naturalmente più cogente per le case che per qualsiasi impianto pubblico o sacro.” In any case it holds valid in architecture the “criterio della ‘convenienza conforme alla natura’ (*naturae decor*), dalla quale discende la necessità che edifici ed ambienti risultino in accordo con le precondizioni termiche e di luce ottimali per le rispettive funzioni. Il valore del *decor* è inteso come criterio di conformazione dell’architettura alla *natura*” (Corso 1997, II, pp. 872 ff., 942 ff., nn. 38, 167).

the choice of a site intended for the construction of a theatre: ...*si curiosius eligetur locus theatro...Etiamque providendum est nene impetus habeat a meridie. Sol enim cum implet eius rotunditatem, aer conclusus curvatura neque habens potestatem vagandi versando confervescit et candens adurit excoquitque et inminuit e corporibus umores* /“... if the site of a theatre is chosen with greater care ... One must also take care that it does not catch the full force of the heat from the south. Indeed, when the sun falls on the *cavea*, the air is trapped there due to the curve of the building, and fails to escape; turning on itself it becomes heated, red-hot, so that it parches and takes away the humours from the body” (V, 3, 1-2). As we know here too, however, and no differently from the agrarian lines, the morphology of the sites had the final word over the various pieces of advice, and very rarely do we encounter a positioning of the theatre’s *cavea* that conforms fully with the recommendations put forward by Vitruvius.

We have already seen that the so-called “orientation” also becomes fundamental in relation to the various rooms or *membra* of a house or of a *villa rustica perfecta* (Varro, *De re rust.*, III, 2, 1 ff.). Notice now that Vitruvius returns to the argument that “the types of buildings must be arranged according to their functional character and in conformity with the regions of the sky” (...*genera aedificiorum ad usum et caeli regiones acte debeant spectare*), and he continues by advising that “the *triclinia* used in winter and also the bathrooms should face west, in order to profit from the evening light and ... also because the evening sun will supply them with a gentle warmth. Bedchambers and libraries must face east; indeed, the ways in which they are used in the mornings require light; furthermore, books in the library will not deteriorate through dampness and mould ... *Triclinia* used during the spring and autumn should face east... as the daytime sun will warm them whilst they are in use. It is preferable for summer dining rooms to face north... since such a position will ensure that they are not directly under the sun’s rays; they will therefore keep cool and be healthy and pleasant to dine in. The same orientation applies for picture galleries, rooms for embroidery and painting studios: this means that the colours used in the production of artistic works will maintain their qualities through being in a light which remains at a constant level”¹⁵ (*Hiberna triclinia et balnearia uti occidentem spectent, ideo quod vespertino lumine opus est uti...sol...calorem remittens efficit vespertino tempore regionem tepidiorum. Cubicula et bibliothecae ad orientem spectare debent, usus*

¹⁵ Cf. Varro, *De re rust.*, I, 13, 7 and Colum., I, 6, 2)

enim matutinum postulat lumen, item in bibliothecis libri non putrescent...Triclinia verna et autumnalia ad orientem ...enim...solis impetus progrediens ad occidentem efficit ea temperata ad id tempus quo opus solitum est uti. Aestiva ad septentrionem...quod est adversa a solis cursu semper refrigerata et salubritatem et voluptatem in usu praestat. Non minus pinacothecae et plumariorum textrina pictorumque officinae, uti colores eorum in opere propter constantiam luminis inmutata permaneant qualitate: VI, 4, 1-2; cf. also I, 2, 7).

Thus, for Columella, “the best situation for a villa in a salubrious area is facing east or south. In less healthy places, it is better if it faces north” (*Optime autem salubribus...locis ad orientem vel ad meridiem, gravibus ad septentionem villa convertitur.*); moreover, he suggests that “the facade faces the equinoctial east. This position, in fact, is balanced between the winds of winter and summer; therefore the more the orientation of a building is directed towards the east, the better the villa is able to benefit from the summer breezes, the less it is exposed to the storms of winter, and the ice will melt in the morning sunshine while the frost, too, will disappear. If, on the other hand, a site is badly exposed to the winds and the sun, it should be considered thoroughly unhealthy ... ” (*...sic ut frons eius ad orientem aequinoctialem directa sit. Nam eius modi positio medium temperatumque libramentum ventorum hiemalium et aestivorum tenet, quantoque fuerit aedificii solum pronius orienti, tanto et aestate liberius capere perflatus et hiemis procellis minus infestari et matutino regelari ortu poterit, ut concreti rores liquescant, quoniam fere pestilens habetur, quod est remotum ac sinistrum soli et apricis flatibus: I, 5, 7-8).* Further on, the same Columella indicates that in the living quarters of the villa, “the winter bedroom should face east, whilst the dining rooms the equinoctial west. Bedrooms used in the summer, however, should be exposed to the equinoctial south, whilst the dining room should face the wintry east” (*...ut spectent hiemalis temporis cubicula brumalem orientem, cenationes aequinoctialem occidentem. Rursus aestiva cubicula spectent meridiem aequinoctialem, sed cenationes eiusdem temporis prospectent hibernum orientem: I, 6, 1-2).*¹⁶ Other authors (Cato, *De agr.*, 1, 3; Varro, *De re rust.*, I, 4, 4 e cfr. 12, 3; Plin., *Nat. hist.*, XVIII, 33 ff.) then suggest

¹⁶ “For unchained slaves, healthy cells will be prepared facing the equinoctial south; for those in chains the prescription is a subterranean dungeon in which conditions are kept as healthy as possible ...” (*Optime solutis servis cellae meridiem aequinoctialem spectantes fient, vincitis quam saluberrimum subterraneum ergastulum...: Colum., I, 6, 3).*

that, in cold places, porticoes, windows and doors should face south; in more temperate situations they should face east, and in hot areas face north.

As we have said, specific attention was paid to certain environments which, as the so-called *villae rusticae*, were principally involved in the production and conservation of important products (i.e. important in both a material and an economic sense) such as wine and oil. Vitruvius in particular, speaking of location plans and internal structures and considerations in private buildings (Vitr., VI, *Praef.*, 7), suggests that “the room which houses the press needs to connect directly with the cellar, which should have windows facing north. If the room has windows on other sides, the sun will heat any wine kept in the cellar, rendering it *confusum* or cloudy, and therefore *inbecillum*, i.e. without strength” (*torcular...habeatque coniunctam vinariam cellam habentem ab septentrionem lumina fenestrarum. Cum enim alia parte habuerit quae sol calfacere possit, vinum quod erit in ea cella confusum ab calore efficietur inbecillum...: VI, 6, 2*). This is a specification which one encounters frequently in the sources, as in Marcus Terentius Varro Reatinus (*De re rust.*, I, 13, 7), who cites the ancients on the question of the wine-cellar,¹⁷ and on which subject Vitruvius had commented earlier, explaining that “in enclosed wine-cellars the windows must not face south or west; they should face north, since such an orientation will always guarantee a stable temperature which is not subject to marked variations according to the season” (*In cellis...vinariis tectis lumina nemo capit a meridie nec ab occidente sed a septentrione, quod ea regio nullo tempore mutationes recepit sed est firma perpetuo et inmutabilis: I, 2*). Pliny, too, takes up the discussion, recalling that tradition (*tradunt praecepta*) which advises as it being “necessary that one side of the wine cellar, or the windows at least, must face north, or in default, face east” (*latus cellae vinariae aut certe fenestras obverti in aquilonem oportere vel utique in exortum aequinoctialem: Nat. hist.*, XIV, 133). This is a fundamental point because, as Pliny explains, “when the height of summer arrives, the sun’s heat increases ... the seas swell ... wines are no longer stable, pools also and standing waters move” (*...caniculae exortu accendi solis vapores...fervent maria...fluctuant in cellis vina, moventur stagna: Nat. hist.*, II, 107). And

¹⁷ Pliny nevertheless warns that even though *vini natura non gelascit*, cold, too, can produce some imbalance in the wine, even if only slight, as sometimes it will cause a deterioration in flavour and taste (*alias ad frigus stupet tantum: Plin., Nat. hist.*, XIV, 132).

these suggestions were repeated, virtually word for word, in the third and fourth centuries AD both by Faventinus (...*cella vinaria contra frigidissimas caeli plagas conlocetur. Lumen fenestris a septentrione tribuatur, ut undique frigidus aer vina incolumia servet. Vapore enim omnia corrumpuntur. Torcular huius in septentrione ponatur*: 13), and by Palladius (I, 18, 1, who notably takes up the points made by Columella – cf. I, 6, 9). In late antiquity, as has previously been said¹⁸ and according to what we can glean from the sources (*Geoponica*, VI, 2), the orientation of the wine-cellars in villas located in temperate areas remained with their face to the north or north-east, whilst in the cooler regions of central Europe the windows of the cellar faced south.¹⁹ Naturally the attention given to the wine continued after the pressing. “From the time the seals are put in place on the bottles until the spring equinox, the wine must be checked once every thirty-six days; this becomes twice after the spring equinox, although if the wine starts to become active, you will need to do it more often” (*Ab eo tempore, quo primum dolia operculaveris, usque ad aequinoctium vernum semel in diebus XXXVI vinum curare satis est, post aequinoctium vernum bis, aut si vinum florere incipiet, saepius curare oportebit*: Colum., XII, 30, 1).

As can be seen, even today, when we are pondering the necessity of having the cellar appropriately oriented so that it remains cool and enjoys a constant temperature in order that the wine keeps better (lest it “moves” – *non fluctuet*), we are repeating a process which has very distant origins. If this was the advice which was proffered for the purpose of ensuring that wine-cellars were correctly positioned, storage rooms for oil required an almost opposite approach. Indeed, *olearia ... est conlocanda ut habeat a meridie calidisque regionibus lumen. Non enim debet oleum congelari, sed tempore caloris extenuari*. That is to say: “the oil cellar should be positioned in such a way that its entrance looks southwards, and therefore towards a zone which is astronomically warm. Oil must not freeze, but

¹⁸ Corso 1997, II, p. 968 f., n. 199.

¹⁹ Granaries, too, need to have an orientation similar to wine-cellars (i.e. facing north) “because in this way the grain will not become quickly overheated, but will be kept cool by the surrounding air, and it will stay fresh for longer”; similarly, fodder-troughs should face towards the east, away from the kitchen, and stand in an open environment (*Granaria...ad septentrionem aut aquilonem spectantia disponantur, ita enim frumenta non poterint cito concalescere, sed ab flatu refrigerata diu servantur...praesepia quae conlocantur extra culinam in aperto contra orientem*: Vitr., VI, 6, 4-5; see also Colum., I, 6, 9-10).

rather it must refine itself through being kept in a warm temperature” (Vitr., VI, 6, 2-3).²⁰ And Columella adds: “... for this reason the oil presses and cellars need to be positioned where they will least be exposed to cold draughts” (... *quapropter ad eum statum caeli et torcular et cella olearia constituenda est, qui maxime a frigidis ventis aversus est*: XII, 52, 13); he then specifies (I, 6, 18) that “the rooms where the presses are (these in particular) and the oil cellars must be kept warm” (*torcularia praecipue cellaeque oleariae calidae esse debent*), before going on to explain that such a layout is important because “every liquid dilates more easily with heat, and it condenses with the cold; oil, which thaws very slowly, will go rancid if it freezes. But the heat must arrive from a natural source – it must come via a correct astronomical alignment of the rooms, and not through a fire being lit ... For this reason the pressing room needs to take its light from the south ... ” (*quia commodius omnis liquor vapore solvitur ac frigoribus magnis conficitur: oleum, quod minus provenit, si congelatur, fracescit. Sed ut calore naturali est opus, qui contingit positione caeli et declinatione, ita non est opus ignibus aut flammis... Propter quod torcular debet a meridiana parte inlustrari...*).²¹

Naturally, a set of further recommendations extend to the workings of the land. Indeed, “moist fields need to be ploughed after mid-April. If ploughing is effected at this time, it then needs to be repeated twenty days after the solstice, that is to say around 8th or 9th July, and then a third time around the beginning of September” (...*uliginosi campi proscindi debent post Idus mensis Aprilis. Quo tempore cum arati fuerint, viginti diebus interpositis circa solstitium, quod est nonum vel octavum Kalendas Iulias, iteratos esse oportebit ac deinde circa Septembris Kalendas tertiatos...: Colum., II, 4, 3-4*). This has to be done so that a certain dampness is maintained in the soil which would otherwise be compromised by the

²⁰ The danger of frosts has been amply stressed by Cato (*De agr.*, 65, 2) when he states that “if there are frosts at the time when the olives are harvested, wait for three or four days before extracting the oil” (*si gelicidia erunt cum oleam coges, triduum atque quatrimum post oleum facito*), advising at the same time to “keep the pressing-room and the oil cellar as warm as possible” (*quam calidissimum torcularium et cella habeto*).

²¹ The same advice is also offered by Cetus Faventinus (13) and by Palladius (I, 20). These rules therefore seem unanimous, as far as the need for natural heat is concerned, in being at variance with Theophrastus’s assertions cited by Pliny (*Nat. hist.*, XV, 10: ...*ut Theophrasto placet, et olei causa calor est, quare in torcularibus etiam ac cellis multo igni quaeritur* / “as Theophrastus states, warmth is also at the source of oil, and therefore in pressing rooms and cellars an ample fire is called for”).

turning-over of the clods of earth (for this reason it is advised that ploughing can be done in July, in the case of a heavy shower). The sowing of seed, too, has its period: hence barley, for example, “is sown at the time of the second ploughing, after the equinox, overripe at the moment of sowing, if the weather is favourable; if not, the operation should be carried out earlier” (... *hordeum ... Altero sulco seminari debet post aequinoctium media fere sementi, si laeto solo, si gracili, maturius*: Colum., II, 9, 15). To keep faith with the advice on conducting work in the fields according to the seasons, and to the periods recommended, a large part of Columella’s eleventh book on the “art” of agriculture is given over to the “astronomical calendar”, the *dies caelestes*, with all the characteristics of the months and the days contained therein discussed in relation to the various farming procedures to be carried out. Hence, in the days before the ides of March, “appropriate attention should be given to the vegetable gardens ... and the moment has already arrived to tidy up the meadows and keep farm animals away from them ...”; before the ides of May “you need to have the fodder mown and begin to cut the hay”; “at the kalends of September there is hot weather; ... in warm places and in coastal areas it is prudent to harvest at this time ... The twelfth day before the kalends of December ... a cold north wind accompanied by rain... Seven days before ... the weather is cold... In these days all the work which has not already been done will need to be completed” (*His diebus commode instruuntur horti...Prata purgare et a pecore defendere iam tempestivum est...Per hos dies runcandae segetes sunt, faenisciae instituenda...Kal. Sept. calor...His diebus locis maritimis et calidis vindemia et cetera...commode administrantur...XII Kal. Dec....Aquilo frigidus et pluvia...VII Kal. Dec....hiemat...His diebus, quae praeterita erunt superioribus, opera consequi oportebit...: Colum., XI, 2, 25, 27, 40, 62, 64, 88-90).²²*

There are also precise suggestions for the positioning of vegetable gardens, and for supplying them with water. “The first thing to do as regards a vegetable plot is to choose a site near the villa where there is fertile soil irrigated by a stream or, if there is no running water, there is at least the possibility of digging a well. To ensure that the well is a perennial source of water, it needs to be dug when the sun reaches the last part of the

²² In his book on trees, (*De arb.*, VIII, 1), Columella also considers the best time for grafting vines: “When you wish to graft vines, cut the best fruit-bearing shoots away from the mother plant at the moment when the buds begin to open and when a southerly breeze is blowing” (*Cum vitem inserere voles, optimi generis sarmenta fructuaria tum, cum gemmas agere incipient, vento Austro a matre praecidito*).

Virgin, that is to say in September, before the autumn equinox, when one can gauge the consistency of the springs in the period when the long drought of summer has caused the land to lack the dampness brought by rain” (*Locum autem eligi convenient ... iuxta villam praecipue pinguem quique adveniente rivo vel, si non sit fluens aqua, fonte puteali possit rigari. Sed ut certam perennitatis puteus habeat fidem, tum demum effodiendus est, cum sol ultimas partes Virginis obtinebit, id est mense Septembri ante aequinoctium autumnale, siquidem maxime explorantur vires fontium, cum ex longa siccitate aestatis terra caret umore pluviatili.* Colum., XI, 3, 8).

In conclusion, among so many other considerations that are brought to bear on this interplay between the actions of man, nature, earth, and sky, we note how the close attention and thoughtful advice extends also to the positioning of beehives, which should be placed in the lower part of a valley from which it is easy for the bees to reach the higher ground, so that they can return laden with pollen and nectar to the hive with less physical exertion. The hive “should be put in a place exposed to the winter south, far from any commotion or the presence of large groups of people or animals; it should be neither too warm nor too cold, since both of these excessive conditions can harm the bees” (*Sedes apium collocanda est contra brumalem meridiem procul a tumultu et coetu hominum ac pecudum, nec calido loco, nec frigido: nam utraque re infenstantur.* Colum., IX, 5, 1).

The typology of places and sites, their forms and their situation were therefore also of relevance to the bees, since even in antiquity it was very important not to lose one’s bearings, or, “non perdere la trebisonda”.

However, to conclude this brief note, it should be highlighted that, in any case, the punctual precepts that can be read in the sources, precisely with reference to the orientations of lands and functional structures, were rarely followed and put into practice both in the public and private sectors. One can say, in this regard and again, that in the Roman times the concrete reality of the *natura loci* prevailed over the sky.²³

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²³ For a series of examples confirming these considerations, cf. Rosada (2007).

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