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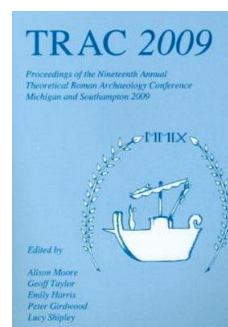
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# Did Cadastres Exist in the Roman Northwest?

*Rick Bonnie*

## *Introduction*

‘As far as centuriation is concerned, aerial photographs have formed the basis for some scholars to suggest that many hitherto unsuspected areas in Gaul were regularly laid out. The [native] land allotments were apparently swept away in favour of a new, regulated Roman system. However, [...] many of the proposed centuriations seem to owe more to faith than reality.’(King 1990: 99)

It was with these words that Anthony King began his argument for the absence of centuriation, also known as cadastres, in the north-western Roman provinces. He was not alone in stressing this, since other scholars in the last two decades have argued the same (Willems 1987: 50; Jones 1989: 129; Hart 1998: 112–113; Heimberg 2003: 127; van Enkevort *et al.* 2005: 3). Apart from a tendency to question the use of aerial photographs, the absence of centuriation in these areas also conforms to the evidence of ‘continuity’ since, in the Roman Northwest, life appeared in many ways to be a continuation of earlier times (see Millett 1990; Slofstra 1991; Roymans 1996; Woolf 1998). These arguments have given scholars a reason to doubt the existence of centuriation in the Roman Northwest.

It was not only the aforementioned arguments which contributed to the dismissal of proposals in favour of Roman cadastres in the north-western provinces, but also the pre-existing ideas of scholars (most notably archaeologists) about ‘static’ cadastres. Their convictions led to the interpretation of cadastres as a visible colonial symbol of Rome’s power over natives (e.g. Alcock 2002: 40–50; Ando 2006), an interpretation that appears to conflict with evidence of ‘continuity’.

I argue here that scholars have rejected the existence of Roman cadastres in the north-western provinces too rapidly and on the basis of unsound assumptions. This paper aims to evaluate and deconstruct the arguments used by scholars to reject their existence. Firstly, although aerial photography had its limitations in the past, it is actually a valid study tool. Secondly, the argument in favour of ‘continuity’ by which scholars have rejected the existence of Roman cadastres in the Northwest will be deconstructed. Finally, the idea of a ‘static’ cadastre will be questioned. The result and implications of my arguments will be shown by a case study from the region around the Roman provincial city of Tongres (Belgium). However, I will start by giving a brief overview of the history of research on Roman cadastres.

## *Roman Cadastre Studies*

It was a Danish naval captain who, in 1833, identified the chequered landscape around Carthage as a Roman cadastre (see Dilke 1971; Chouquer and Favory 2001). In the following years, other scholars recognised ancient cadastres in such countries as Italy, Croatia and Tunisia. Such discoveries raised the question of why the Romans introduced such a system. It was also around this time that the *Corpus Agrimensorum*, a now fragmentary collection of Roman land-surveyor manuals which described the laws, techniques and methods involved in the implementation and maintenance of cadastres, was first being published (Blume *et al.* 1848; see also Campbell 2000). From this *Corpus*, it was clear that the implementation of the

system related to strategies of defence and taxation (Dilke 1971: 178–181; Broadhead 2007: 160–161).

During the early-20th century, Roman cadastre studies were expanded by the introduction of aerial photography into archaeology. This technology was primarily used within cadastre studies to identify remains of linear features which may have related to a cadastre (e.g. Bradford 1957; Chevallier 1957). However, the argument that these linear features were indeed the remains of a former Roman cadastre was often rather subjective, non-verifiable and not related to any Roman context (e.g. King 1990: 99; Quilici 1994: 130–131).

### *Questioning the use of aerial photographs*

In the 1950s a possible cadastre was identified in Belgium centred on the Roman road between Tongres, the capital city of the *civitas Tungrorum*, and the small military settlement at Maastricht (Mertens 1958). Several roads, land boundaries and agricultural fields ran parallel to and diagonally from the Roman road on the same orientation, creating a grid pattern (Fig. 1).

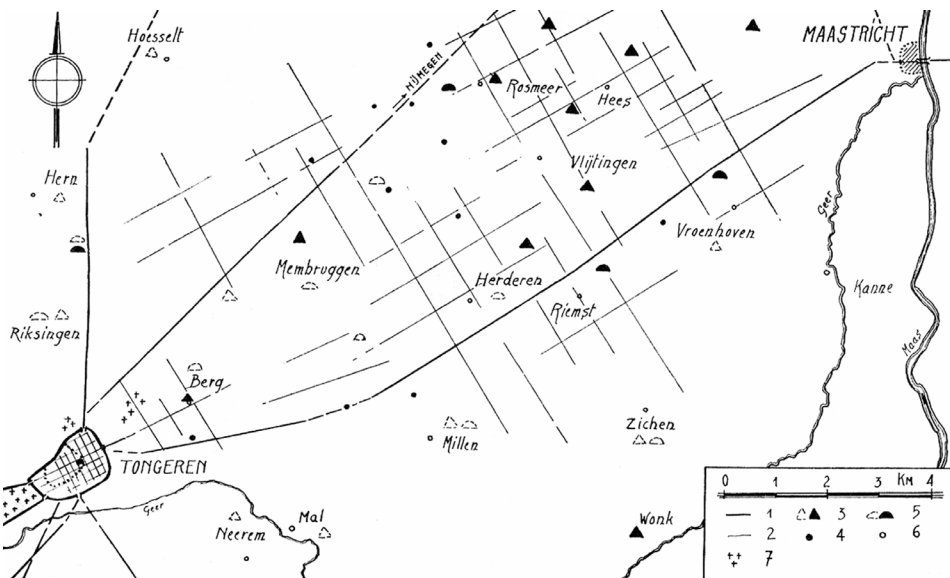


Figure 1: The proposed cadastre to the east of Tongres (Mertens 1958: 258). Legend description: 1) Roman roads; 2) Limites; 3) Villae; 4) Roman finds; 5) Tumuli; 6) Present village; 7) Grave fields.

However, this interpretation was problematic. The lines in the modern landscape that were argued to be Roman cadastre boundaries appeared to be randomly selected and there were no reasons given why certain modern linear features with the same orientation as the road, as well as those with a different orientation, were not taken into account. Furthermore, the proposed cadastre did not correspond with any Roman measurement unit used in land-surveying (such as the *pes* or *actus*). In Mertens' study the historical and spatial association of modern linear features like roads, ditches and boundaries with Roman cadastres was assumed.

The reliance on this assumption in other cadastre studies (e.g. Klinkenberg 1936; Chevallier 1957; Edelman and Eeuwens 1959; Ulrix 1959) led to two main points of criticism regarding the use of aerial photography. First, there was no consistency in the analysis, as the inclusion or

exclusion of certain linear features seemed to have been assessed on an intuitive, arbitrary basis rather than on substantial, verifiable evidence. Secondly, scholars often dated their proposed cadastres by a circular reasoning. If a 'recognized' cadastre corresponded to a particular size that was used in Roman land-surveying, then the cadastre had to be of Roman date, if it did not correspond, it was not Roman. Other archaeological evidence rarely corroborated this circular dating argument.

### *The assumed clash between 'continuity' and Roman cadastres*

Apart from their concerns over the use of aerial photography, scholars also question the existence of Roman cadastres in the north-western provinces because of their assumed clash with the archaeological evidence of continuity. As cadastres would transform the landscape, scholars assume that Roman cadastres imply a major break with the past. The implementation of Roman cadastres implied that not only were the native land boundaries swept away (e.g. King 1990), but that cadastres also brought socio-political and cultural change (see Alcock 2002: 40–50; Ando 2006). However, it has been demonstrated that such a major break did not occur in the north-western provinces; rather, changes happened more gradually (Millett 1990; Slofstra 1991; Roymans 1996; Woolf 1998). Hence, the implementation of cadastres is dismissed, and any evidence for the existence of cadastres in the region is overlooked (e.g. Willems 1987: 50; Fulford 1990: 26).

This is, of course, a circular argument. Because it has been argued that the indigenous peoples during the Roman period lived in essentially the same manner as they had prior to the Romans, there seems to be a fear of acknowledging any Roman influence on the landscape. However, there seems to be no direct causality between a decline in the continuity of indigenous ways of life and the implementation of a Roman cadastre. Native land-holdings, as well as the landscape, were not diminished by the establishment of a Roman cadastre. As texts and official tablets relating to the Orange cadastre in France and to other cadastres across the Empire show, the indigenous people were assigned land plots within the newly implemented cadastres (see Piganiol 1962; Dilke 1971; Peterson 1993; Chouquer 1996).

### *Pre-existing concepts of a 'static' Roman cadastre*

A further academic argument employed to deny the existence of Roman cadastres in the north-western provinces concerns their visibility, based on pre-existing concepts of a 'static' cadastre. Often, this has led to an immediate rejection of proposals.

Scholars have equated Roman cadastres with a visible and obvious chequerboard of lines in the landscape, an equation supported by aerial photography, where the clearest examples tend to make the strongest impression. Yet the presumption that cadastres are visible as a chequerboard of lines is not true in all cases, and has led scholars to ignore the less obvious, but perhaps more typical, evidence for Roman cadastres. For example, the cadastres identified around Orange, Lacimurga and in Tunisia did not have linear features that could be detected by aerial photography. At first, the existence of these cadastres was only known through inscribed official tablets (Fig. 2) and, in the case of Tunisia, by boundary stones that were placed on each corner of the cadastre grid (Anon. 1954; Dilke 1971).

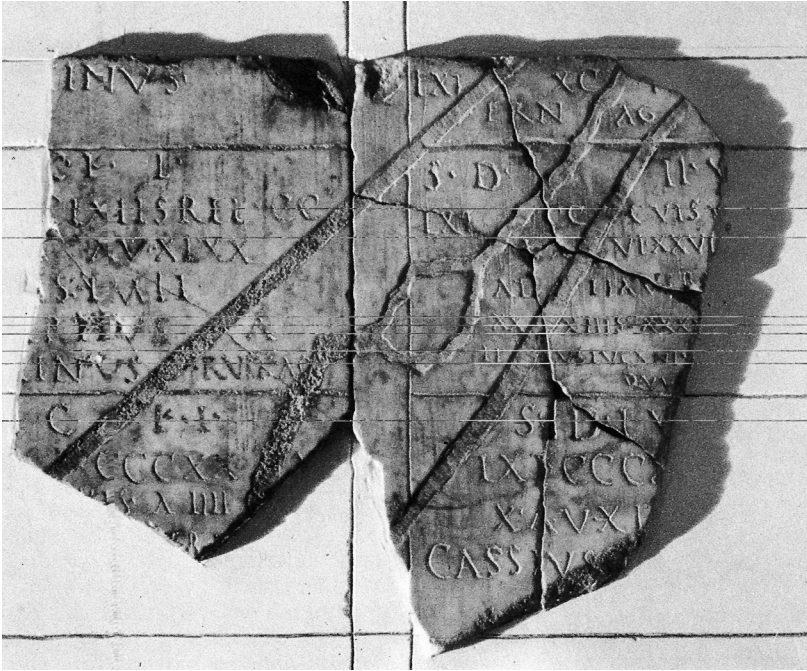


Figure 2: Fragment no. 7 of the Orange tablet of cadastre A, exhibited in the Musée d'Orange (Anon. 1983: Fig. 237).

The idea that Roman cadastres needed to be visible and obvious may have been caused by an oversimplification of the Latin word for 'boundary' (*limes*) as 'road' or 'path'. However, as has been shown, there are only two different meanings for *limes*, i.e. 'military road' or 'boundary' (Isaac 1988: 128). The latter meaning derived from the vocabulary of land-surveyors and was used in the majority of cases as a purely *conceptual* line; it did not necessarily have to be associated with visible roads or paths. Also, the *Corpus Agrimensorum* suggests that a boundary did not necessarily have to be visible. The land-surveyor Siculus Flaccus, for example, mentions cases in which villas could be placed right on top of boundaries (Blume *et al.* 1848: 153.7), which could not happen were these boundaries visible and physical features in the landscape. Therefore, a *limes* was primarily a conceptual boundary, which was made visible in some cases by the construction of a wall or road, but could equally remain invisible (see Terrenato 2007: 153).

### *The similarity of Roman cadastres*

Associated with the concept of the visibility of cadastres is the assumption that Roman cadastres were all quite similar in respect to size, orientation and location (e.g. Rackham 1986: 159; Heimberg 2003: 127; Ando 2006: 127; Mattingly 2006: 288; Van Londen 2006: 188). The 'typical' cadastre was orientated exactly north-south and east-west, was implemented only around Roman *coloniae*, and one square of a cadastre was always 20 by 20 actus (around 708 by 708 metres).

The idea that cadastres were similar in size may be a result of equating the Latin term *centuriatio* with regular Roman land planning. In theory, a *centuriatio* had squares sized at 20 by 20 Roman *actus*, parcelled out to people as 1 *heredium* (5000 m<sup>2</sup>) of land. However, over time the size of the plots of land given to people changed. Written sources indicated that, in certain regions and during certain periods, people could receive allotment sizes such as 10, 30, 50 or even 100 *heredia* (Dilke 1971: 179, 184; Broadhead 2007: 155). Consequently, differences may also be expected in regard to the size of squares and, indeed, archaeological studies have found evidence for divergent sizes (e.g. Legros 1970; Chouquer and Favory 1980; Peterson 1993; Chouquer 1996). The problem, however, is that the conclusions reached in these archaeological studies are often rejected for the reason that they do not conform to the theoretical model in the historical sources.

The idea that the cadastres had a static orientation may have been influenced by cadastral drawings in the *Corpus Agrimensorum* and on official tablets. These drawings always appear as straight horizontal and vertical lines, easily relating to north-south and east-west (Peterson 1993: 8–9). Yet, in reality, most of the north-south and east-west orientations were depicted for purposes of legibility. For instance, the cadastres at Orange had, in reality, a different orientation to the north-south east-west direction portrayed on the official tablets on display at the museum in Orange (Piganiol 1962; Peterson 1993: 9). The *Corpus Agrimensorum* contains nine different factors which could determine the orientation of a cadastre (Le Gall 1975), and the factor(s) which Roman surveyors used would vary from case to case and over time.

Similarly, the idea that cadastres were only associated with *coloniae* may have been a misunderstanding of the written source. The *Corpus Agrimensorum* states that ‘if the land is divided and assigned [e.g. centuriated], it is the land of a *colonia*’ (Blume *et al.* 1848: 2.1). However, historians have argued that this phrase may have a more complex meaning, since the more elementary texts in the *Corpus Agrimensorum* seem to have been simplified (Dilke 1971: 88, 178; Peterson 1993: 7–8). Detail was only added in later passages of the book by the inclusion of examples from real life, which could introduce apparent contradictions (Hinrichs 1974: 172–173). For example, a Roman land-surveyor records one such contradiction in regards to centuriated, but *non-colonial*, land in the province of Pannonia (*c.f.* Favory 1983: 126). Therefore, as Dilke (1971: 178) states, ‘the territory centuriated could [...] also be that of a *municipium*’.

### *Case study: a Roman cadastre around Tongres*

Above, I have evaluated and criticized the arguments on which scholars have rejected the presence of cadastres in the Roman Northwest. The implication of this critique is to open up the possibility of cadastres in the north-western provinces of the Roman Empire. This will be illustrated by a case study from the region around the Roman provincial city of Tongres (see also Bonnie 2009); the same region covered by Mertens (1958) fifty years ago (see above). Of course, one cannot compare a Roman cadastre from the Roman Northwest with one from Tunisia or Italy. While cadastres from the latter region can be reconstructed on the basis of boundary stones, inscriptions and literary sources, such evidence is lacking for cadastres from the Roman Northwest so that a different approach is needed. However, this case study shows that through a consistent and critical analysis of archaeological remains, together with historical-geographical evidence, a reconstruction of a cadastre is possible.

Typically, the landscape around Tongres is sloping and is covered with loess soil, which although very fertile is also susceptible to erosion. The fertility of the soil made it an ideal

region for the Romans to settle. This is attested by archaeological evidence of their occupation and influence in this area from the late first century A.D. The provincial capital of Tongres, the military presence at Maastricht, Roman *villae*, burial mounds and artefacts show a strongly Roman element (see Vanvinckenroye 1985; Panhuysen 1996; Vanderhoeven 1996). Considering this powerful Roman influence at the periphery of the Empire, a Roman cadastre may have been implemented here. To examine this hypothesis, I have focused on a phenomenon relating to the sloping, loess-covered landscape around Tongres: the escarpment.

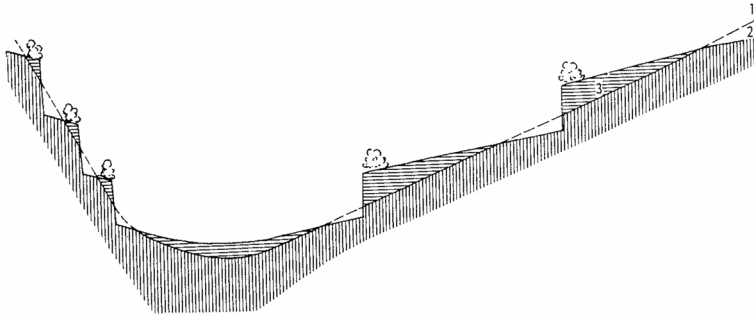


Figure 3: Schematic representation of the formation of an escarpment (Breteler and van den Broek 1968: Fig. 1). Legend description: 1) Original slope; 2) Slope affected by erosion; 3) Overgrown escarpment, sedimentation (colluvia) on the valley side of the slope

An escarpment is a long steep slope or cliff at the edge of a ridge, which was originally formed by erosion (Fig. 3). As escarpments prevent further erosion, and protect against flooding of valley settlements and decreasing fertility of agricultural soils, they were (and are) important linear features in the landscape, with a high economic and social value to the community in the region (see Breteler and van den Broek 1968).

In order to detect distinct orientation clusters, the orientation of each escarpment was classified into eight groups between  $0^\circ$  and  $90^\circ$  from north, i.e. covering  $180^\circ$  (see also Vermeulen and Antrop 2001: 117–118). Normally, an orientation can vary through  $360^\circ$ , but this would involve double counting as each escarpment clearly points in two directions. For example, a north-east escarpment also points to the south-west. Since Roman cadastrals were always square or rectangular, the existence of cadastrals requires evidence of linear features at right angles.

In the region around Tongres, the largest group of escarpments are oriented between  $45^\circ$  and  $56^\circ$  from north (Fig. 4), caused in part by the north-easterly inclination of the loess plateau around Tongres. However, assuming that the escarpments are directly related to the boundaries of a cadastre, escarpments perpendicular to the inclination of the loess plateau would also be expected. Of all the escarpments belonging to the group of  $45^\circ$  to  $56^\circ$  from north, 69 escarpments are running north-east, while 52 are actually running perpendicular in a north-westerly direction. This suggests that these escarpments formed part of land plots running along the loess plateau, representing fields whose orientation was shaped by the plateau's north-easterly inclination (see Le Gall 1975).

This raises the question whether these escarpments are related to the Roman period? In order to answer this question, the orientation of the archaeological features was examined. Additionally, the archaeological features were dated and classified into four consecutive

periods: Late Iron Age (250–50 B.C.), Early Roman (50 B.C.–A.D. 70), Middle Roman (A.D. 70–270) and Late Roman (A.D. 270–450).

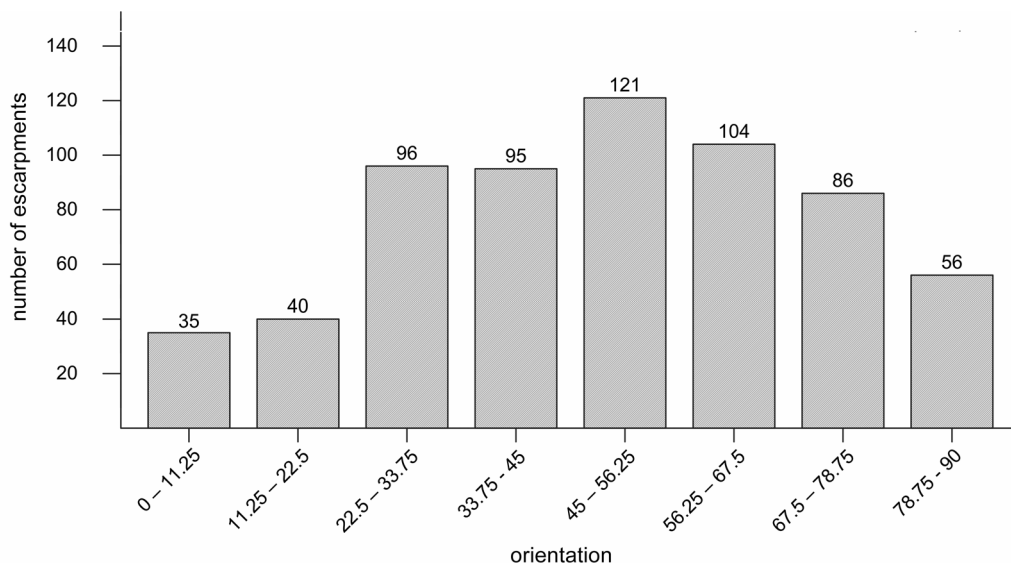


Figure 4: Chart of the orientation of the escarpments in the region around Tongres (Total escarpments=633).

This was done because, as Peterson (1993: 67) has stated, ‘there is no doubt that features of all periods, starting from the period when a [Roman] cadastre is first established, tend to be influenced by [...] its *limites*’. In the ancient and modern world it is common for features like buildings, burials, fences and ditches to be aligned to boundary features like roads, field boundaries and hedges. This also applies to Roman cadastres. One of the clearest examples to illustrate this is from the countryside around the Roman town of Collatia, close to Rome. Here the central part of the *ager collatinus* shows that the orientation of the individual Roman houses conforms to the orientation of the 15 *actus* Roman cadastre that has been identified there (Fig. 5) (Chouquer *et al.* 1987: 286–288).

Dating and studying the orientation of the archaeological features in the region around Tongres showed a remarkable change in the orientation of the features from the Late Iron Age to the Late Roman period, and there appears to be a correlation between the orientation of an archaeological feature and its date. When the general orientation of the archaeological features is related to that of the escarpments, the Middle Roman period stands out (Table 1). During this period, 46% of all the archaeological features had an orientation between 45° and 56° from north.

There also appears to be discontinuity between the Early and Middle Roman period. While it has been shown that Early Roman sites tended to remain occupied during the Middle Roman period (see Slofstra 1991; Roymans 1996), the archaeological features found around Tongres show a major break in occupation during this transition, with only 6% of the Early Roman features continuing to be used. Furthermore, the features orientated between 45° and 56° show



even less continuity. From the 17 Middle Roman features, from eight different sites, only one had been in use during the Early Roman period.

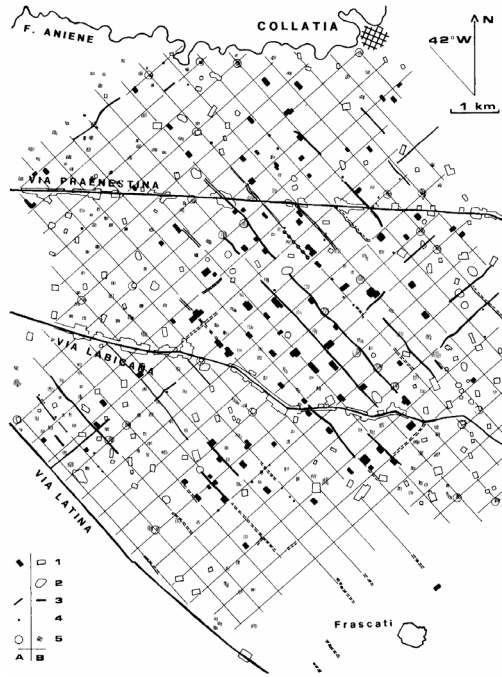


Figure 5: The ager collatinus at Collatia (Chouquer et al. 1987: Fig. 104). Legend description: 1) Sites whose boundary is known; 2) Sites whose boundary is unknown; 3) Ancient roads and lines; 4) Burial; 5) Small rural deposit; A) Sites orientated according to the cadastre; B) sites not orientated according to the cadastre.

	0°– 11.25°	11.25°– 22.5°	22.5°– 33.75°	33.75°– 45°	45°– 56.25°	56.25°– 67.5°	67.5°– 78.75°	78.75°– 90°
<b>Late Iron Age (n=19 s=3)</b>	7 (36.8%)	4 (21.1%)	3 (15.8%)	1 (5.3%)	0 (0%)	0 (0%)	1 (5.3%)	3 (15.8%)
<b>Early Roman (n=52 s=10)</b>	9 (17.3%)	5 (9.6%)	9 (17.3%)	12 (23.1%)	2 (3.8%)	10 (19.2%)	2 (3.8%)	3 (5.8%)
<b>Middle Roman (n=37 s=12)</b>	5 (13.5%)	4 (10.8%)	6 (16.2%)	1 (2.7%)	17 (46%)	3 (8.1%)	0 (0%)	1 (2.7%)
<b>Late Roman (n=32 s=5)</b>	2 (6.3%)	0 (0%)	5 (15.6%)	0 (0%)	2 (6.3%)	0 (0%)	2 (6.3%)	21 (65.6%)

Table 1: The orientation of archaeological features (incl. houses, ditches, fences etc) from the region around Tongres ('n' is the number of archaeological features, while 's' is the number of different sites from which these archaeological features were taken). Note that the Late Roman period is overrepresented by one site, Neerharen-Rekem (see De Boe 1983).

In addition, Tongres' 60° north-east oriented Augustan city plan does not fit with an Early Roman date for an assumed cadastre. If there had been an Early Roman cadastre, it is probable that it would have had the same orientation as Tongres' city plan. A cadastre established contemporaneously with its associated city or military camp would follow the same orientation, as shown by examples at Lugo, Orange, Corinth and Nicopolis (Dilke 1971; Rizakis 1996; Romano 2006).

Therefore it may be argued that, for the landscape around Tongres, the orientation of 45° to 56° from north was introduced during the Middle Roman period. In light of these observations, it seems reasonable to consider that the aftermath of the Batavian Revolt (A.D. 69–70) may have acted as a context for the cadastre's implementation. It has been argued that the Batavian Revolt had a large impact upon the Roman town of Tongres and its hinterland (Vanvinckenroye 1985: 40). Its aftermath was a period of rapid socio-cultural change with the emergence of reinforced hierarchical relationships between the people, demonstrated by the stone-built Roman *villae*, burial mounds and Roman artefacts. As Dyson (1975: 161) stated,

‘With the Flavian period, the evidence for major social discontent in Gaul disappears [...]. The Flavians seem to have perceived the problems of Gaul and taken long range steps to improve conditions. Considerable investment was made in the Gallic countryside [...]. These actions laid the foundations of the new prosperity in Gaul.’

In the light of this it must also be noted that, during the Flavian period, many Roman cadastres were either re-surveyed (and re-established) or newly founded, as has been attested for Corinth, Orange, Béziers and North Africa (Piganiol 1962: 77–90; Clavel-Lévêque 1989: 276–278; Peterson 1993: 239; Romano 2006: 71–81). The implementation of a Roman cadastre in the region around Tongres thus coincides with these other cadastres, and may represent Roman interference in local affairs to re-establish order, loyalty and economic activity in the region after the Batavian revolt.

To reconstruct the Middle Roman period cadastre, the premise was that Roman sites, whether cemeteries or settlement sites (and even post-Roman churches), tend to be located near a cadastre boundary (Fig. 6 for a modern example of this premise). This was a result of the religious and symbolic continuity which followed the demarcation of social space through the implementation of cadastres (see Peterson 1993). The distribution of Middle Roman sites in the region around Tongres was tested by using cadastres with different sizes ranging from 15 *actus* (531 meters) to 22 *actus* (780 meters), within the 45° to 56° orientations above.

The result showed that 65% of all the Middle Roman sites sited on the loess soil were distributed closely to the boundaries of an 18 *actus* cadastre. This percentage is the highest of all the tests with cadastres of different sizes, and is even higher than, for instance, for the cadastre around Collatia in Italy (see Chouquer *et al.* 1987: 286–288). The study also showed that the Middle Roman sites were not distributed randomly, and that even the Medieval churches in the region tended to be located near to the boundaries of the cadastre. From all the churches located on the loess soil that date before A.D. 1050, 77% were distributed adjacent to the cadastre boundaries. It appears that 18 *actus* is the most plausible size for the Middle Roman cadastre around Tongres (Fig. 7).

However, the results for Middle Roman sites not sited on the loess, but on the sand in the north of the study area, were remarkably different. First, the percentage of sites distributed

closely to the boundaries of an 18 *actus* cadastre was only 45%. Second, in contrast to those on the loess, the Middle Roman sites sited on the sand seem to have been distributed randomly. Thus, it seems that the region covered with sand in the north of the study area was not part of the Roman cadastre around Tongres (Fig. 7). This regional difference between the loess and sand region ties in with the other evidence of socio-cultural and economic differences between these regions (Slofstra 1991; Roymans 1996).

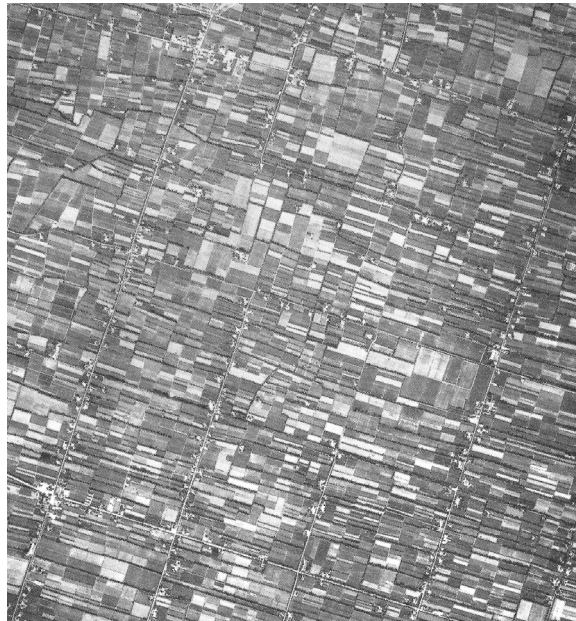


Figure 6: An aerial photograph from the region around Venice, Italy, in which the lines of a Roman cadastre are still visible. Although not easily visible, the original photograph shows that large numbers of modern houses are near cadastre boundaries (Anon. 1984: Fig. 136).

## Conclusion

The aim of this paper was to evaluate and deconstruct the arguments by which scholars have rejected the existence of Roman cadastres in the north-western Roman provinces of *Gallia Belgica* and *Germania Inferior*. Scholars have doubted the existence of cadastres based on three arguments, i.e. concerns with the subjective nature of aerial photographic studies, the theoretical contradiction of cadastres with evidence for archaeological continuity, and the assumption that cadastres would be highly visible and unchanging over time. However, as this paper shows, these arguments can be deconstructed. Aerial photography remains a valid method of study if interpreted objectively and within historical and archaeological frameworks. The argument of ‘continuity’ does not take into account the measured pace of change in the north-western provinces, whilst the implementation of a Roman cadastre may not have substantially altered indigenous habits. Finally, Roman cadastres may have been more flexible and dynamic in layout and size than has been assumed.

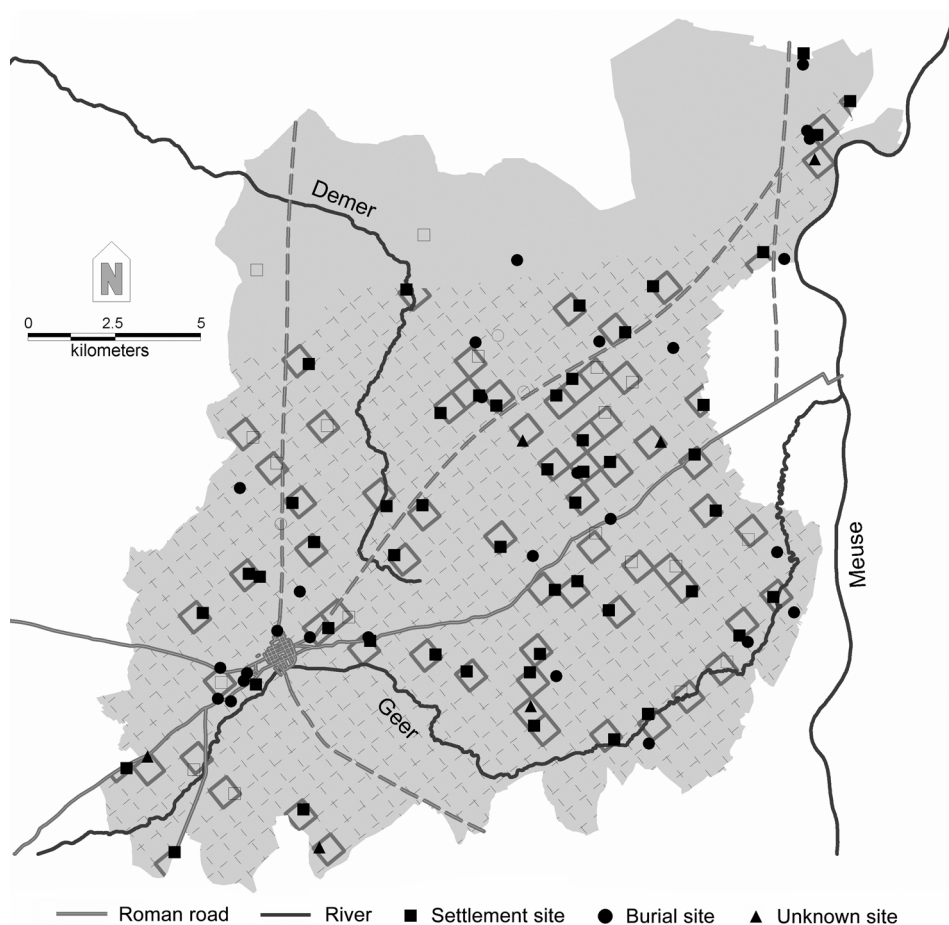


Figure 7: A schematic reconstruction of the Roman cadastre of 18 by 18 actus around Tongres.

However, the problems with Roman cadastre studies have not been created solely by those who have been critical of its results; the discipline of Roman cadastre studies has itself played a role. For too long, this has remained an introspective discipline, rarely interacting with other fields of study in Roman archaeology. Therefore, specific knowledge of the historical and archaeological data relating to Roman cadastres and land-surveying has remained outside of mainstream discourse. Recently, however, the discussion has begun to open out and, consequently, is becoming more fruitful. It is to be hoped that the next few years will see a more positive consideration of the existence and role of cadastres in the north-western Roman provinces.

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