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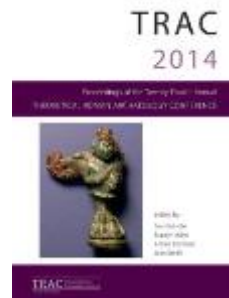
Roman Military Base

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# An Integrated Cognitive and Epigraphic Approach to Social Networks within the Community of a Roman Military Base

*Anna H. Walas*

## *Introduction*

This paper discusses Roman military communities from the perspective of models for human capacity to create social networks. The adopted approach applies these models to consider how the scale of a military base impacted on the experience of being stationed there, and critiques them in the light of the available epigraphic data regarding professional associations in the Roman army. Each military base was a locale for a unique, web-like array of social bonds of different strength, formed in a variety of official and un-official contexts. From the perspective of a printed site plan, an auxiliary base is a miniature version of a legionary base, but in social terms the experiences of occupants at the different types of base would probably have been very different. A legionary would certainly know a fair number of people by name and visually recognise even more, but clearly not all of the five to ten thousand soldiers and dependants who made up a full legionary community. The discussion of social networks within the army has seen considerable interest: notably Greene's (2013a; 2013b; 2012) papers on female social networks in the light of evidence from Vindolanda, Haynes' (2013) and Pegler's (2000) work on *genii* and *collegia* and Collar's (2013) work on networks of worshippers of Jupiter Dolichenus. This paper aims to contribute to the discussion by considering the fort environment as the spatial underpinning for relationships within the military community and the interplay between physical and social distance. The applicability of models developed by social psychologists such as Robin Dunbar and H. Russell Bernard are tested and the results compared with modern military cohesion studies.

## *Psychological prediction for the size of social networks*

In social psychology there has been considerable debate on the human capacity to produce social networks, partially reflecting a surge in social networking technology. Two major models for understanding local networks are of particular relevance to this study: the work of Dunbar (1998) and Bernard (McCarty *et al.* 2001), discussed in detail below. Dunbar, for instance, incorporated discussion of both modern and ancient armies in his work on the size of social groups, noting that the sizes of military units conformed to his wider findings, and speculated about the relevance of this for finding the optimum between the largest possible size of a unit and its internal social cohesion (Dunbar 1993: 689). The models find support in studies of cohesion

and bonding in modern military units, which propose similar numbers in terms of peer group bonding within units (Siebold 2007).

Dunbar's number (1993) is a suggested cognitive limit to the number of people with whom one can maintain regular (monthly to yearly) personal contact. These are relationships in which an individual knows who other people in the group are and the nature of relations between others in the group (Dunbar 2010: 31). The number does not include ceased social relationships, nor people one simply is able to recognise. The estimated value is around 150 individuals and is based on studies from a number of social contexts including academic networks and businesses (Hill and Dunbar 2003: 187; Price and Beaver 1966). As examples drawn on by Dunbar often describe workplaces (and military units) rather than casual social networks, the number is especially suited to institutionalised contexts, suggesting the maximum size of a command chain, which, while hierarchically structured, still allows for personal knowledge of members of the group (Dunbar 2010: 27–29).

A Roman military base was a type of institutionalised environment, as life within the complex was clearly structured by an organisation (the army). Furthermore, only groups under intense survival pressure are believed to achieve Dunbar's membership number of 150 (Hill and Dunbar 2003: 187). Dunbar discusses groups that are often physically close, suggesting that the size of a network depends partially on the amount of time people spend together (Dunbar 1993: 686–688, 691). Being part of an occupying military force stationed in a cramped base would arguably meet these conditions. Similarly, the importance of close proximity, time spent together and shared intense experiences of war are recognised as building blocks of unit cohesion in modern armies (Granovetter 1973: 1361; Bartone 1998: 87; Vaitkus 1990: 224) with, for example, the size of a company in the British Army being roughly equal to Dunbar's number. Dunbar's criterion suggests a roughly constant upper limit on the size of social networks, which permits the network to work effectively as a social unit.

The other model (Bernard *et al.* 2001: 21) draws on much looser criteria for defining a network - contact in the last two years requiring only knowledge by name or by sight (McCarty *et al.* 2001: 29). Instead of describing a coherent social network, this estimation reflects the predicted maximum number of an individual's contacts, where the people known by a given person may not know each other. The suggested value approaches around 300 and was estimated by calculating the relative proportions of individuals of pre-defined categories (e.g. of Polish nationality) that a given person should statistically know in relation to the gross population size of the USA (McCarty *et al.* 2001; Zheng *et al.* 2006). Given the large size of the present-day USA population, a looser definition of network and the influence of modern technology on communication patterns probably make this estimate too high for the context of regular contacts in the Roman era, or at best a generous estimate.

### *Thinking to scale*

Being one of a community of 500 in an auxiliary base must have been significantly different to living within a group of up to 5,000 in a legionary base in terms of the number and nature of encounters between people. We can use the above discussed psychological estimates to hypothesise about the proportion that one's predicted social network would constitute in the context of our knowledge of the size and structure of Roman army units, as well as the wider estimated extended community of a garrison. Using this method it is possible to explore how groups of people within the military community, including centuries, cohorts and different strata

within the extended community, may have interacted in the context of the social environment of the fort, rather than study the fort itself.

Since we are working with communities for which there are significant limitations for proposing a reconstruction of their size and composition, we will be operating in the order of general proportions. The maximum strength of a unit does not include non-fighting personnel and the extended community who did not feature in the formal structure of the unit, but who were likely to have been present on site and in any associated extramural settlement, for example, slaves, servants, traders and soldiers' dependants. Magnetometer surveys have revealed that some extramural settlements could be up to two to three times larger than the garrison itself. The *vicus* at Newstead is illustrative, with the total street frontage amounting to one kilometre (Clarke 1996:7). As a rough and rather conservative estimate of one dependant per soldier, we can imagine an 'extended community' of maybe around 1,000 people for an auxiliary base, and perhaps 10,000 for a legionary base. There were also periods when the base was not full. This could amount to around half of the unit, as Vindolanda duty rosters reveal (Tab. Vindol. 154). Soldiers may have been away from base for a variety of reasons, including duties outside the fort, leave or for illicit purposes (James 2001: 82). The barracks may not always have been full; some *contubernia* were used as store rooms or went out of use and some of the attached personnel (for example women, as suggested by evidence from shoes) shared accommodation with the soldiers (Greene 2013a). These issues have implications for the application of Dunbar's number and fuller consideration is given to these in the case studies below.

The consequences of thinking in terms of psychological models are interesting in the context of the old paradigm which tended to view a legion as a monolithic entity (James 1999: 19). According to the numbers proposed above, in a 5,000 strong legionary base an individual is likely to have kept regular contact with a maximum of between three and six percent of the population. Following the estimates, even within a fairly small auxiliary base, an individual was likely to have maintained regular contact with between quarter and half of a fully occupied base (counting military personnel only). This suggestion has significance for our understanding of personal familiarity and unfamiliarity within a garrison and social networks at the scale of the periphery of regular contacts. Building on this, a more nuanced picture is developed here through two case studies, focussing on the military communities of Inchtuthil and Vindolanda, selected because of the epigraphic and sub-literary sources produced by units associated with them. Such nuances allow recognition of the limitations of the approach and provide the opportunity to move from abstract numbers to specifics, as revealed by the archaeological and epigraphic record, in order to give a clearer picture of social distance and propose how psychological estimations could work in relation to the social space of a Roman military base.

Social relations operate on a fluid spectrum, where both smaller and larger scales of interaction are fundamental to a sense of community. In order to play a fully functional role in something as big as a military unit it would have been necessary to participate in the community at various scales, from a loose level of being known only by association with somebody, to smaller and tighter groups. Dunbar (1998: 67) termed these different scales 'support cliques' (around five individuals), 'sympathy groups' (12–15) and 'bands' (around 35). Bonding in modern military units occurs primarily within such smaller networks, identified at the level of either a squad or section (7–12) or a platoon (15–30). These are found to be the primary social matrix within which the experience of an individual's service is framed (Siebold 2007: 286). In the latter part of this article I consider how epigraphic data recording voluntary associations in the Roman army and dedications to *genii* may be indicative of the prevailing identities within military sub-

units. It is possible to discuss the sorts of bonds these associations perhaps represented and the tensions between theory and data.

### *Inchtuthil – A legionary base*

The implications of thinking about military bases in the context of social networks are clear when we consider the legionary base as the hub of a population of 5,000–10,000 people. The legionary base at Inchtuthil, Scotland, has the best understood plan and the legion it hosted (*Legio XX*) is one of the better attested epigraphically in Britain. While designed as a permanent military fortress, the site was occupied only between A.D. 83 and 86 (Pitts and Joseph 1985: 31). A series of pits outside the main perimeter have been identified as the remains of rubbish pits related to the presence of an extended community (Pitts and Joseph 1985: 229). In a place like Inchtuthil, in relation to the size of the complex, all personal networks would have seemed very localised, as based on the models an individual was likely to maintain regular contact with only a minimal proportion of the total population.

The huge number of people in the base and the highly complex nature of military communities had implications for the ability of individuals to assess one another's personal patronage and status within the military hierarchy. Here we need to make a distinction between the ability to recognise an impersonal figure of authority (through dress), as opposed to knowing personally or having knowledge about the individual behind that authority. Based on the psychological estimates and by comparison with modern military units, where the primary networks (i.e. fitting Dunbar's criteria) rarely exceed that of a platoon in size and the secondary network (knowledge by name, face, position in the organisation, with no personal knowledge) rarely exceeds a company (80–250 individuals) (Siebold 2007: 289), one can propose that an ordinary legionary soldier probably knew the officers under whom he served, but did not necessarily recognise the faces of, or know personally, all of the officers in the legionary base. Conversely, it is a reasonable hypothesis to suggest that the degree to which officers were familiar with soldiers serving in other centuries was likely to be limited too; one probably knew the people serving under him or the *centuriae* based next to his, but was unlikely to have known in person many other ordinary soldiers within a community of 5,000. One way for an ordinary soldier to gain more recognition within a legion was by showing special bravery in combat (Lendon 2001: 244–245). The difficulty of having one's face remembered by superiors brings an interesting insight into the desire by Roman soldiers to strive for military glory, recognition and ultimately career-boosting patronage.

The small proportion of known individuals in comparison with the total population of a legionary base suggested by the models raises the question of anonymity among ordinary soldiers within a legion. Due to the high number of unfamiliar people in a large base one would need to be quite careful about what one said and to whom one said it. Although sociological studies of modern militaries provide evidence indicating that gossip about other soldiers is the easiest icebreaker and a great way to deal with boredom (Caforio 2006: 167–186), concern for watching one's mouth must have been vital in the Roman armies. These were highly competitive communities (Lendon 2001: 239–241) in which the respect or disapproval of peers and superiors was crucial (Caes. *BG* 7.80) and where status was based on the amount of power one had over another. Here, the psychological pressure to have a good reputation and the consequences of undermining somebody else's good name were severe (see for example Tac. *Hist.* 2.88 on the loss of a sword and Tac. *Hist.* 2. 68 on the consequences of mocking). With an ethos placing

emphasis on collective responsibility and ‘one for all, all for one’ punishment measures, mutual surveillance among the soldiers, as well as discipline-induced self-surveillance (James 2011: 171) would have contributed to the potential stress of a busy legionary base.

There may have been places, such as areas around barracks at the other end of the legionary base, where one would have been a stranger, even though technically one belonged to the same unit. The legionary base is unlikely to have been openly dangerous, particularly to soldiers and especially in main streets during daylight. However, occasionally there might have been times when one would prefer to avoid certain areas, such as back alleys at night in an area where one owed money, or where involved in some personal or group tensions. A case in point might be that of *cohortes equitatae*, which had a mixture of infantry and cavalry within the same unit, and which in literary tradition did not get along (Vegetius II.21). We can perhaps infer this from attested clashes between units (Tac. Hist. 2.68) and a tendency for rivalry and jealousy among soldiers (Lendon 2001: 244).

Frequenting the same functional facilities, ovens for example, would be a factor in structuring social networks. At Inchtuthil the area of the *via sagularis*, if all four sides are added together, stretched for around 1.8 kilometres. The excavated stretch of the route way suggests that it was dotted with groups of ovens spaced some distance apart, placed near to corresponding century barracks. This arrangement evokes an image of small groups of soldiers scattered along the road during meal preparation, perhaps within their own centuries, as inscriptions on utensils denoting century ownership (RIB 2449.8, RIB 2496.2, RIB 2501.3) and *contubernium* ownership (RIB 2496.3) indicate. Similarly, the distribution of food rations may also have happened locally, with granaries located in four different parts of the base, reducing the need to visit its distant parts.

Anonymity would diminish as one built one’s immediate and extended networks. The outer periphery of an extended network would have been demarcated by the ability to recognise faces. Even if individuals are not known personally, knowledge of someone through peers or being able to recall an individual’s face provides a sense of familiarity with one’s environment. This time-consuming process would have been especially important on enlistment, when one’s connections were not yet established. Here, time must have played a role. In open-ended question interviews I carried out with an ex-RAF driver and an ex-infantry soldier they both indicated that whilst on campaign within a contingent of 2,000 soldiers, over a nine month tour, it would be impossible to meet everybody with whom one was stationed (pers. comm. Chris Panteli). In contrast, individuals in a unit rooted in place over several generations would accumulate contacts, especially in the context of the attached extramural settlement.

There also would have been individuals with larger networks than Dunbar’s proposed average of 150 (Dunbar 2010: 22), for example long-serving soldiers such as centurions. Their contacts would have spanned different centuries and across units, with considerable insider knowledge of relations between other soldiers. Particularly notable in this regard are inscriptions from three tombstones, which provide information about the careers of soldiers of the XXth legion, dating from the late first century and early second century A.D. These include Claudius Fatalis (AE 1939.157), whose service in the XXth fell around the time it was stationed in Chester (after 83 AD) and who had served in six different legions (Malone 2006: 112); L. Valerius Proculus (CIL III 12411), whose career lies in either the Flavian or Hadrianic period (Malone 2006: 131), with service across five different legions; and an anonymous centurion (RIB 509) buried in Chester in the Flavian period who had served in four different legions. Familial networks would also have added to the complexity; tablets from Vindonissa, Switzerland (Tab. Vindon 28), reveal

two brothers, or otherwise closely related men, serving in the XIth Legion, but most likely in different centuries (Speidel 1996: 53).

### *Vindolanda – A small community*

Dynamics within smaller, tight knit communities where people know each other, are different to those in large population hubs. Vindolanda, with its sub-literary evidence, provides a useful case study. Here, we can expect something akin to ‘small town syndrome’. Secrets and mistakes are hard to keep private in tight-knit communities, as modern mining community parallels indicate (Robinson and Wilkinson 1995:139). Like ancient Roman military units, mining communities share potential danger, risk to life, the provision of subsistence and housing by an institution, close comradeship and a sense of special pride in their profession (Stone 2007). Intuitively, both of the above psychological predictions seem rather small in the context of such tight-knit and settled in one place communities. Members of small village communities which have developed over years of living in one place learn to recognise each other by sight, name or by association, with family formation processes playing a part. We can expect this sort of contextual knowledge of local people in the small and remote community of an auxiliary base such as Vindolanda. For the majority of ordinary soldiers before the third century A.D., their dependants would have lived in the extramural settlement (Hodgson and Bidwell 2004: 153–154), though members of the extended military community would have entered the base, as research into the distribution of gendered finds, suggests areas of probable female activity (i.e. dress accessories, textile working, footwear) (Allison 2006). However, their business in the base is likely to have been different to that of the soldiers, meaning that their social networks might not have contained as many soldiers as the networks of the serving personnel did, with more extensive relationships within the extramural community instead.

Slaves may have maintained more contacts with the paramilitary personnel. This would have been facilitated by the tasks they needed to complete for their masters. The chores that needed to be done, especially in cavalry units, where horses needed to be groomed and equipment kept from rust, would have taken a considerable number of hours (Ian Haynes pers. comm.). Similarly, servants in the *praetorium* at Vindolanda would have been busy running the household (Tab. Vindol. 302). Evers (2011: 41) showed how Vindolanda slaves called on their social contacts among other slaves for the purpose of securing good deals on transactions for running their masters’ households. The slaves were part of a wider system of ‘social economy’, functioning along the lines of social stratification. Vindolanda tablets provide evidence for slaves forming very close bonds, referring to each other, for example, as *frater* and asking for favours (Tab. Vindol. 347). Another letter records correspondence, probably between two slaves, although the content is obscured (Tabl. Vindol. 303). Some of these men, especially those attached to the household of a commanding officer, could have been quite powerful within their own networks (Tab. Vindol. 311; Tab. Vindol. 301). During daytime in the summer, when the soldiers were training, parts of the base may temporarily have predominantly been occupied by such attached personnel.

For some of the soldiers’ dependant women, developing an association with one soldier could potentially have an impact on their ability to create contacts with other male members of the military community, rendering them inappropriate. Others, such as Belica, the inn keeper at Vindonissa (Tab. Vindon. 41), due to their profession, would presumably have been familiar with a significant number of people, exceeding the average maximum proposed by psychological

studies and perhaps knowing more soldiers than other members of the extended community would. Differences also probably existed, depending on a woman's status. For example, a commanding officer's wife, such as Sulpicia Lepidina (Tabl. Vindol. 291), was likely to be part of a larger on regional scale and more influential network than a woman associated with an ordinary soldier. At the same time one can imagine Sulpicia's status might have been restrictive too, in the sense that she may have had limited freedom of movement around the fort. Evidence from Vindolanda tablets referring to women as *soror* - sister (Tabl. Vindol. 310; 335; 389) indicates that women could also enjoy esteem and were an integral part of the soldiers' immediate communities. However, whilst some modern armies have introduced programs aimed at integrating military families, it is unlikely that such initiatives would have existed in the Roman period.

Extramural settlements under military jurisdiction could be dangerous places for traders (e.g. Tab. Vindol. 344), servants, women and children, especially during an encounter with an unfamiliar drunken soldier. The example of a child burial from Vindolanda, deposited beneath a floor layer in a barrack room suggests that they could sometimes become the subject of attacks, for example, as an attempt to cause economic harm as revenge for an unpaid loan (Chapman *et al.* 2011: 343). A similar discovery was made in the extramural settlement at Housesteads, where, in Building VIII, the bodies of a man and of a woman were found under a thick, undisturbed layer of clean clay (Birley *et al.* 1933). A tip of the knife *in situ* in the spine of the male suggests that even large and robust men may not always have been safe in the extramural settlement. Both in the case of Vindolanda and Housesteads, the most likely reason why the bodies stayed in the buildings and within the settlement (where burials were not allowed officially), was probably the difficulty associated with removing the bodies without being seen.

### *Smaller networks within a unit*

The findings discussed above are suggestive in terms of numbers, but perhaps also to an extent in terms of mapping social networks on the ground. Dunbar's findings are interesting on the one hand in the context of the tradition of working in maniples (two centuries) (Vegetius 2.13, but see Speidel 2005 and Mann 1997) as roughly equal with the extent of the predicted size of a social network; and on the other hand, of a century and its dependants in light of the previous estimate of one dependant per soldier. A couple of *centuriae* could have been a fairly real cognitive boundary. This suggests that two facing barracks did not only delimit unit structure on the ground, but also defined it as a socio-spatial unit within the base, the outer periphery of a network based on regular personal knowledge. Networks of barracks could well have been the most important reality of day-to-day life for ordinary *milites caligati* as well as for junior officers, also encouraged by the communal space in between the barracks and access to light afforded there. Work by Lendon (2006) suggests that variation in the language used by soldiers reflected social differentiation, with soldiers using the term *commanipularis* to refer to those belonging to the same infantry century and *commilito* to others.

The cult of *genii* provides epigraphic material recording associations below the level of a unit, further strengthening the importance of centurial networks. *Genii* are spirits of either a community or a place, embodying its vitality and energy and ensuring good fortune (Haynes 2013: 3:19, Speidel and Dimitrova 1978: 1550). While many *genii* watched over the whole unit, one also finds dedications from individuals who sought protection in the name of their more immediate networks. The popularity of *genii* of certain sub-units over others can be taken to reflect the prevalent forms of sub-unit identity (Haynes 2013: 319). At least within the legions,



the strongest associations visible in the dedications to *genii* are those of *centuriae* (Speidel and Dimitrova 1978: 1546). The importance of centurial networks for daily practices within the army (rather than the wider community of the whole legion, which would be largely intangible on a day-to-day basis of working in small subdivisions), is underlined by dedications to centurial *genii* outnumbering those to *genius legionis*. A century's officers often chose to refer back to their immediate community, around whom they would presumably spend most time on a daily basis and felt the strongest association with. Q. Caeclius Kalendius (ILS 2290) set up separately a dedication to his legion and to his best fellow soldiers from the century (*commanipulorum bonorum*). In some cases spatial association between the dedications to *genii* of *centuriae* and the barracks, as the areas where the community was most likely to reside, is visible. The chapels to the *genii* of the *centuriae* at legionary Laembsis were placed by the unit's barracks (Cagnat, 1908: 55). At Niederbieber too, dedications to centurial *genii* appeared exclusively in the accommodation areas (Stoll 2001: 167, e.g. CIL XIII 7750).

Speidel and Dimitrova (1978: 1544) observed a paucity of dedications from legionary cohorts and explained it by the lack of officers at the cohort level and the resultant lack of collective cohort identity. In a legion this points towards a multitude of smaller centurial networks, for which membership in a cohort did not play a significant role. The small number of cohort *genii* reminds us of the extent to which the figure of a powerful leader provided an embodied marker of identity for the group. Incidentally, based on the psychological predictions, the 500 strong cohort (also equal in size to an auxiliary regiment) would also seem too large a group to form a coherent and functional social network. The epigraphic medium, however, may not always reflect the reality of social bonds. Even though the *contubernium* (the smallest unit composed of eight men) was likely to be the strongest social sub-unit, no dedications to *genii* of *contubernia* have been attested (Haynes 2013: 321). A likely reason is that the *contubernium* as a grouping of ordinary soldiers may not have been deemed appropriate to receive patronage of a *genius* (Haynes 2013: 321). Another contributing factor may be the very small number within the group, resulting in its limited financial capability to set up an inscribed monument. The general Empire-wide pattern is repeated in Britain, with two dedications to *genius legionis*, including one from *Legio XX* (RIB 449), and four *genii* of *centuriae*. These included three legionary examples from *Legio XX* (RIB 446, RIB 447, RIB 448) and one auxiliary example from Carlisle (RIB 944). The dedications to *genii* so far have helped us to understand which networks based on unit structure were more meaningful in social terms than others, confirming that these fell within the brackets of 150 individuals proposed by the psychological models and providing support for the idea of *centuriae* being the strongest socio-spatial units.

There are limitations in applying psychological models to try to determine the threshold of what constitutes a social network, particularly with regard to the issue of smaller groups working across sub-unit divisions. The lower stratum of officers at the century-level within a legionary base is a good example. Through their position in the career ladder the junior officers constituted a separate base-wide interest group. For a large part of the day they were presumably spatially dispersed, working in different areas of the base. A large proportion of their daily business would have been within their own *centuriae*, with their networks overlapping with those of ordinary soldiers. Junior officers would have had the capacity to recognise each other's identity through dress and, over time, would remember faces of fellow *duplicarii* and *sesquuplicarii*, but would they constitute a coherent sub-group based on personal knowledge in Dunbar's sense? There were occasions on which they gathered in large groups on official business, such as all centurions during morning order taking (*salutatio*) (Jos. *BJ* 3.5), but if we add up all centurions,

*optiones*, *signiferii*, *tesserarii* and *cornicines* from all sixty centuries we achieve a number of 250 junior officers. The social experience of the military base was fragmented into a multitude of smaller, yet no doubt, partially overlapping networks. To explore these further we need to turn towards the epigraphic evidence for smaller social networks within the army - inscriptions carrying information about the group with whom one identified, ideally also listing the names and ranks of the dedicants.

Dedications to *genii* of specific ranks and inscriptions set up by associations of specialists (*collegia*) provide appropriate evidence for small networks operating across unit subdivisions (Haynes 2013: 321). Together it seems that all groups of ranking officers and specialists worshipped their *genii* (Speidel and Dimitrova 1978: 1548). The cult of the *genii* served to distinguish them from the common soldiers (Haynes 2013: 320). Inscriptions set up by *collegia* provide evidence for associations of *duplicarii*, *beneficarii*, *tesserarii*, *cornicularii*, *optiones*, musicians, decurions, hospital staff, accountants, *librarii* and armoury wardens among others (Tudor 1963: 248). Epigraphic evidence records two specialist networks in the XXth legion, including the dedication to *genius* of *signiferii* (RIB 451) and the funding of a funeral by the *collegium* of armourers (RIB 156). The dedications do not reveal anything of the composition of the groups, and in any case the *collegium* inscription is of first century date (Malone 2006: 165), from the period before *collegia* were permitted to perform social functions beyond that of providing a burial fund.

Particularly good evidence in regard to the social fabric of *collegia* comes from Niederbieber, a site destroyed during a Germanic attack in A.D 259/260, preserving material *in situ* (Stoll 2001: 169). A group of dedications to *genii* of *collegia* sheds light on the social fabric of the two *numeri* units, together amounting to around 1,000 men. The inscriptions reveal an array of small specialist groups of mid-ranking officers networking together under the umbrella of one *collegium*. Counting the maximum number of officers in a given rank in the two units combined, each specialist group would consist of no more than 10–15 men. Members of at least three such groups joined forces in the *Collegium Victorensium Signiferorum*, whose meeting room was in the *principia* which both units shared (Stoll 2001: 170). From the room comes a dedication to a *genius* watching over both the *Vexillarii* and the *Imaginiferii* (CIL XIII 07753) founded in A.D. 239 (Stoll 2001: 169). A later dedication (246 A.D.) to the *genius* of the same *collegium* (CIL XIII 07754) reveals that in the *collegium* were included also the *baioli* (couriers, or dispatch riders) who jointly with *vexillarii* founded the dedication. Fourteen names of men of varying origins dedicating the monument are listed on the sides of the base. *Collegium Victorensium Signiferorum* joined together people of different origins and specialisations. The relatively small number of men in each profession caused them to work together in a bigger group, perhaps of a few dozen in total. Since there is no reference to any particular unit, likely the *collegium* was open to men from both units, similar to the legionary *collegium* of scouts at Aquincum (CIL III 3524). Through the *collegium* smaller interest groups came together for mutual benefit. The *collegium* as a bigger group no doubt enjoyed prestige and held a degree of power (Haynes 2013: 313). A separate snapshot of networking within the same unit, potentially at a level higher than the *collegium* (that of high ranking officers), is preserved in a dedication to the *genius* of *capsarii* (medics or bandage carriers) (CIL XIII 11979). This was erected by the *medicus ordinatus*, the highest ranking doctor, consecrated under the authority of the *praefectus* of the unit (Stoll 2001: 170), providing a window to a more exclusive interest group.

In contrast to smaller auxiliary units, associations within the legions could potentially be fairly big communities; *collegia* of officers of whom there was one for each century, or *collegia*

open to men of different specialisations. A good example of the size of such communities is provided by a list of 205 *duplicarii* of *Legio III Augusta* who set up a monument on their return from Parthia (CIL VIII 2564). The group does not identify itself specifically as a *collegium*, but it was very diverse, encompassing men of various titles, including *tesserarii*, *tubicinii*, *cornicenes*, *bucinatores*, *mensores*, *scutores*, among others. Within the same legion a *collegium* of *optiones* consisted of at least 64 members, whose names are preserved on an inscription commemorating the establishment of their meeting hall (CIL VIII 2554). A club of horn players consisted of at least 36 men recorded on the club's list of fiscal regulations (CIL VIII 2557). All of these clubs would have worked across centurial divisions as well as between cohorts; men from six cohorts are named in one fragmentary dedication (CIL VIII 2536–2541). Some men were clearly very active in their participation in *collegia*; Cattianus and Surus appear on dedications set up by the *optiones* (CIL VIII 2554) and in another *collegium* inscription (ILS 9100) dedicated by clerks; *librarii*, *exacti* and an *actarius*. Similarly to Niederbieber, there is also evidence for more exclusive networks including officers higher up within the hierarchy, such as the group of *optiones* and *adiutores* of the first cohort dedicating an inscription in the *tabularium* (CIL VIII 2555).

A question remains as to what sort of bonds the *collegia* represented. The fairly small group at the base at Niederbieber is likely to have been a tight-knit community. In a similar setting of an auxiliary unit at Slaveni, Haynes (2013: 224) observes that Marinus, who set up a dedication to *collegium duplariorum*, provided little detail about himself, probably because it was unnecessary; within a group of a couple of dozen his identity would be obvious. In sociology a *collegium* of this size would parallel a sympathy group (Buys 1992; Zhou *et al.* 2005) – bound with special ties, but typically contacted on a less regular, perhaps monthly basis. In military cohesion studies the sizes of the *collegia* at Niederbieber and Slaveni indicate that they were potentially the soldiers' 'primary networks', alongside their *centuriae*, capable of providing substantial support and a meaningful identity marker. However, in the context of the list of over 200 names, membership of such a vast association in defence of one's professional interest may not be equivalent to a social network in Dunbar's sense. Participating in a dedication alongside two hundred other men would have been a fairly formalised matter, with considerable effort needed to collect funds and carry out the initiative. Unity within such a large group would presumably have been achieved through administration. Association with such a large community may not have extended beyond semi-official realms, in terms of military cohesion comparable to a 'secondary group', where the knowledge of other individuals rests primarily on their position within the institution rather than a personal bond, with the group providing little escape from the anonymity of a vast organisation. In practical terms, feasts evidenced in civilian *collegia* (Pegler 2000: 38) would have been difficult to execute for such a large group in a military setting due to a lack of an appropriate venue.

There also would have been an array of deeply complex variables, with many affiliations formed based on those with whom one was associating by the virtue of situational circumstances; duty distribution, frequenting the same functional facilities such as ovens, gambling dens, leisure habits, social venues such as bars and cultural affiliations, many of which would never be suitable for commemoration via an inscription. There also would have been groups formed not only of military personnel but also consisting of women, freedmen, veterans and civilians. One such sympathy group is alluded to in the Vindolanda tablets (Tab. Vindol. 310), which included a woman, a veterinary doctor and two soldiers; one of 'Celtic' and the other of 'Germanic' origin. This was perhaps an informal group working across gender and status categories.

Eighteen religious dedications from within and around the third *Mithraeum* at Poitovio, Slovenia, near the base of a legion are another good example. The inscriptions reveal that the group worshipping the deity included people from all walks of life; an imperial slave (AIJ 311), a freedman, civilians (AIJ 312; AIJ 318), an equestrian commander from a legion (AIJ 313), joint groups of minor officers such as *tesserarii* and *custodes armorum* from both *Legio V Macedonica* and *Legio XIII Gemina* (AIJ 315) and a group of clerks from both legions (AIJ 314). A shared dedication like this differed from the network-forming activities of the informal friendship group from Vindolanda. Participation in a Mithraic community was formal, structured, hierarchical: and a strong religious focus provided an opportunity to become part of an exclusive social organisation, one which could also be a useful tool in terms of getting ahead in the military society.

### *Conclusions*

Thinking about the experience of being part of the community of a military base in the context of the predicted extent of social networks has largely been an experiment based on comparative information on human groups and military units. However, it has been possible to identify some distinctions between the experiences of individuals stationed at legionary and auxiliary bases. The case study focusing on a legionary base pointed towards anonymity and unfamiliarity in a large legionary hub and the way in which the institutionalised nature of the establishment was likely to influence the structuring of social networks. The small settled community of Vindolanda provided information for how, within a spatially small place, there would have been enough room for significant social distance. The tension between theoretical proposals and the archaeological data is most visible in the epigraphic record. The limitations of the approach are particularly recognisable at the level of smaller groups (i.e. *contubernium*), which, while likely to represent the strongest bond between individuals, are not attested epigraphically. This demonstrates that the available data is partial in that it is only useful for revealing networks formal enough to set up an inscription. *Centuriae* are the most prevalent sub-unit identity forms visible in the epigraphic record, but they are also, according to the psychological models incorporated in this study apparently real socio-spatial units which defined a periphery of regular personal contacts. The *collegia* in auxiliary units recall modern military ‘primary groups’, with strong personal bonds, including an example visible in the dedication at Slaveni. The large *collegia* at Laembsis, on the other hand, are likely to have been fairly formal affairs. Our knowledge of informal groups cutting across gender and status categories is perhaps the most limited. The findings indicate that Roman military unit identity was not nested in personal knowledge of all people within it, but instead within abstract values of social identity at varying scales.

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### Abbreviations

<i>AE</i>	<i>L'Anné Epigraphique</i> , 1881–
<i>AIJ</i>	Hoffiller, V. and Saria, B. (eds). (1938) <i>Antike Inschriften aus Jugoslawien. Noricum und Pannonia Superior</i> . Zagreb: Druck der Fondsdruckerei der “Narodne novine”.
<i>Caes. BG</i>	Caesar (see Ancient Sources, below).
<i>Jos. BJ</i>	<i>Josephus</i> (see Ancient Sources, below).
<i>CIL</i>	<i>Corpus Inscriptionum Latinarum</i> , 1863–
<i>ILS</i>	Dessau, H. (ed.) <i>Inscriptiones Latinae Selectae</i> , Berlin: Wiedmann.
<i>RIB</i>	<i>Roman Inscriptions of Britain</i> , 1965–
<i>Tab. Vindol.</i>	Vindolanda Writing Tablets (see Ancient Sources, below).
<i>Tab. Vindon.</i>	Vindonissa Writing Tablets (see Ancient Sources, below).
<i>Tac. Hist</i>	Tacitus (see Ancient Sources, below).

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