Tractoriae and the logistics of Carolingian entourages

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Entourages played a central role in Carolingian politics and military organization. Yet historians have neglected the important question of how kings and magnates supplied their retinues. This article investigates that topic by examining an overlooked genre of evidence: tractoriae *or royal letters of requisition. Louis the Pious revived the use of these late Roman and Merovingian documents to authorize magnates to collect supplies for their followers and horses. The provisions enumerated in* tractoriae *give us rare insight into the composition and scale of ninth-century retinues and armies. Their disappearance during the reign of Charles the Bald was bound up with larger transformations of late Carolingian politics.*

In the seventh chapter of his *Life of Emperor Louis*, the Astronomer offered some rare comments about the logistics that supplied Carolingian entourages.[1] In that passage, the Astronomer recalled steps

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[1] Abbreviations used in this article: *MGH Capit.* 1/2 = *MGH Capitularia* 1, ed. A. Boretius (Hanover, 1883); 2, ed. A. Boretius and V. Krause (Hanover and Leipzig, 1897); *MGH Capit. N. S.* 4.1–2 = *MGH Capitularia regum Francorum, nova series* 4.1–2, ed. and trans. S. Esders, S. Kaschke, B. Mischke, S. Patzold, D. Trump and K. Ubl (Wiesbaden, 2024); *MGH DD. Karol.* 1/2.1–3 = *MGH Diplomata Karolinorum* 1, ed. E. Mühlbacher, A. Dopsch, J. Lechner and M. Tangl; 2.1–3, ed. T. Kölzer, J.P. Clausen, D. Eichler, B. Mischke, S. Patt and S. Zwierlein (Wiesbaden, 2016); *MGH DD Merov.* 1–2 = *MGH Diplomata regum Francorum ex stirpe Merovingica* 1–2, ed. T. Kölzer (Hanover, 2001); *MGH Formulae* = *MGH Formulae Merovingici et Karolini aevi*, ed. K. Zeumer (Hanover, 1886); *MLLM* 1–2 = J.F. Niermeyer, C. Van de Kieft and J.W.J. Burgers, *Mediae Latinitatis Lexicon Minus*, 2nd edn, 2 vols (Leiden and Boston, 2002).

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Louis the Pious (814–40) had taken, while king of Aquitaine under his father Charlemagne (768–814), to reduce the demands of his court and soldiers on the common people. He reported that Louis decided to rotate his winter residence among four palaces so that no one district would be over-burdened with the heavy costs of provisioning the royal household. Related to these efforts, Louis freed the town of Albi from paying its customary tribute of food and wine. Louis also prohibited his soldiers from exacting from the common people the 'military provisions they commonly call "fodder"' (*annonae militares quas vulgo foderum vocant*). Louis's soldiers were angry about this decision because it deprived them of the hay and grain for their horses previously paid at public expense. But Louis carried out these measures because he feared that such renders harmed everyone – nobles and commoners alike:

> This merciful man worried about the poverty of those making these payments, the cruelty of those exacting them, and the harm suffered by both sides. He therefore judged it preferable that his men be provisioned from their own possessions rather than allowing [his men] to fall into perdition on account of grain supplies.[2]

The Astronomer added that Louis's measures proved so beneficial for Aquitaine that Charlemagne adopted them in Francia as well.

Historians disagree on the veracity of the Astronomer's report. Some scholars accept this passage at face value.[3] Carlrichard Brühl, however, expressed doubt that Charlemagne or Louis ever truly abolished the payment of fodder in the Frankish heartlands.[4] I hope to solve this

[2] Astronomer, *Vita Hludowici*, c. 7, ed. E. Tremp, *MGH Scriptores rerum Germanicarum in usum scholarum separatim editi* (*SS rer. Germ.*) 64 (Hanover, 1995), pp. 304–7: 'Et licet viri militares egre tulerint, tamen ille vir misericordiae considerans et prebentium penuriam et exigentium crudelitatem simul et utrorumque perditionem, satius iudicavit de suo subministrare suis, quam sic permittendo copiam rei frumentariae suos inretiri periculis.' All translations are my own. I interpret *de suo* to refer to the possessions of Louis's *viri militares*, which is supported by the capitulary evidence examined in this article and Tremp's translation. B.S. Bachrach and D.S. Bachrach, *Warfare in Medieval Europe, c.400–c.1453* (London, 2017), p. 180, take *de suo* to refer to Louis's lands.

[3] E.g., F.L. Ganshof, *Frankish Institutions under Charlemagne*, trans. B. Lyon and M. Lyon (Providence, 1968), p. 66 and n. 56; R. McKitterick, *Charlemagne: The Formation of a European Identity* (Cambridge, 2008), pp. 153–4; Bachrach and Bachrach, *Warfare*, pp. 179–80.

[4] C. Brühl, *Fodrum, gistum, servitium regis. Studien zu den wirtschaftlichen Grundlagen des Königtums im Frankenreich und in den fränkischen Nachfolgestaaten Deutschland, Frankreich und Italien vom 6. bis zur Mitte des 14. Jarhhunderts*, Kölner Historische Abhandlungen 14 (Cologne and Graz, 1968), vol. 1, p. 76 n. 292; accepted by Tremp (*MGH SS rer. Germ.* 64, pp. 306–7 n. 110). See also C. Brühl, 'Das fränkische Fodrum', *Zeitschrift der Savigny-Stiftung für Rechtsgeschichte, Germanistische Abteilung* 76 (1959), pp. 53–81, esp. pp. 72–4 and n. 85. Brühl noted that only two charters of Charlemagne and Louis explicitly freed recipients from rendering *foderum*: *Die Urkunden Karls des Grossen*, no. 88, *MGH DD Karol.* 1, p. 234 (for Aquileia in 792); *Die Urkunden Ludwigs des Frommen*, nos. 284 (for Saint-Bertin in 830), 356 (confirmation), *MGH DD Karol.* 2.2, pp. 706–9, 885–8.

puzzle in the course of this article. But for the moment, the Astronomer's statement is valuable because it gives us a glimpse into the complexity of Carolingian logistics: that is, the provisioning of entourages, soldiers, and horses with food, wine, grain, and other supplies. As Janet Nelson and Charles West have emphasized, retinues played a central role in the exercise of lordship and power in the Carolingian world.[5] Kings, bishops, counts, and other potentates travelled with substantial entourages of soldiers, clerics, and other companions. A lord's retinue functioned as his bodyguard and 'muscle', counsellors and messengers, and, in times of war, elite troops in the army. Despite the centrality of entourages to Carolingian government and military organization, historians – with the notable exception of Bernard Bachrach and David Bachrach[6] – have neglected the question of how they were supplied. Guy Halsall, for example, dedicated less than three pages to a discussion of logistics in his important book on early medieval warfare, justifying this decision on a dearth of evidence.[7] Halsall summarized Charlemagne's capitulary decrees concerning food, wagons, and other logistical preparations to supply soldiers, yet he interpreted the first Frankish emperor as unusual in his attention to such matters. Similarly, two recent collections of essays on the topic of early medieval warfare do not contain a single discussion of how retinues and armies were fed.[8]

One reason scholars have neglected the question of how entourages and soldiers were supplied arises from the influential scholarship of Timothy Reuter.[9] Inspired by cultural anthropology, Reuter argued that Carolingian warfare was 'archaic' and 'heroic', consisting chiefly of small-scale raids by aristocratic warbands in search of plunder that

[5] J.L. Nelson, 'The Church's Military Service in the Ninth Century: A Contemporary Comparative View?', reprinted in J.L. Nelson, *Politics and Ritual in Early Medieval Europe* (London, 1986), pp. 117–32; C. West, 'Lordship in Ninth-Century Francia: The Case of Bishop Hincmar of Laon and His Followers', *Past and Present* 226 (2015), pp. 3–40.

[6] B.S. Bachrach, 'Logistics in Pre-Crusade Europe', in J.A. Lynn (ed.), *Feeding Mars. Logistics in Western Warfare from the Middle Ages to the Present* (Boulder, San Francisco and Oxford, 1993), pp. 57–78; Bachrach and Bachrach, *Warfare*, pp. 154–212; B.S. Bachrach and D.S. Bachrach, 'Military Intelligence and Long-Term Planning in the Ninth Century. The Carolingians and their Adversaries', *Mediaevistik* 33 (2020), pp. 89–111.

[7] G. Halsall, *Warfare and Society in the Barbarian West, 450–900* (London and New York, 2003), pp. 149–51. See also Ganshof, *Frankish Institutions*, p. 66.

[8] R. Keller and L. Sarti (eds), *Pillages, tributs, captifs. Prédation et sociétés de l'Antiquité tardive au haut Moyen Âge*, Histoire ancienne et médiévale 153 (London, 2018); E. Bennett, G.M. Berendt, S. Esders and L. Sarti (eds), *Early Medieval Militarisation* (Manchester, 2021).

[9] T. Reuter, 'Plunder and Tribute in the Carolingian Empire', *Transactions of the Royal Historical Society*, 5th ser. 35 (1985), pp. 75–94; *idem*, 'The End of Military Expansion', in P. Godman and R. Collins (eds), *Charlemagne's Heir. New Perspectives on the Reign of Louis the Pious* (Oxford, 1990), pp. 391–405; *idem*, 'The Recruitment of Armies in the Early Middle Ages', in A. Nørgård Jørgensen and B.L. Clausen (eds), *Military Aspects of Scandinavian Society in a European Perspective, AD 1–1300* (Copenhagen, 1997), pp. 32–7; *idem*, 'Carolingian and Ottonian Warfare', in M. Keen (ed.), *Medieval Warfare: A History* (Oxford, 1999), pp. 13–35.

kings circulated through ceremonial gift-giving. In Reuter's view, such 'fast punitive raids of destruction' did not involve significant logistical infrastructure, military taxes, or the 'more expensive and intensive forms of warfare' that he believed emerged only after the year 1000. He therefore concluded that Carolingian armies tended to be quite small, numbering in the dozens or hundreds of warriors, and that lords supplied their military retinues simply by 'living off the land'.[10] Some scholars have called attention to problematic assumptions and interpretations upon which Reuter based his picture of Carolingian warfare.[11] Nevertheless, many historians of Carolingian Europe still largely accept, either implicitly or explicitly, Reuter's model of small plundering raids, including his assumptions about the absence of substantial logistical organization.[12]

This article reconsiders how Carolingians supplied their retinues by examining an important yet neglected category of evidence: administrative documents called *tractoriae*. François Louis Ganshof published the only article on this subject in 1928.[13] He defined a *tractoria* as 'a royal diploma belonging to the writ category, ordering all agents of the king to provide the bearer with food, means of transport and lodging'.[14] Ganshof traced the history of these documents from the late Roman empire to their last appearance in an 865 capitulary of Charles the Bald (840–77). Yet Ganshof approached this subject through the lenses of legal and institutional history and historical positivism, with the result that he focused more on defining *tractoriae*

[10] Reuter, 'Plunder', pp. 76–7 (living off the land), 82 and 84 (continuation of ancient Germanic *comitatus*), 91 (archaic and heroic); *idem*, 'Carolingian and Ottonian Warfare', pp. 30 (archaic and without significant baggage trains), 35 (military taxes and more intensive warfare only after 1000).

[11] J. France, 'The Composition and Raising of the Armies of Charlemagne', *Journal of Military History* 1 (2002), pp. 61–82; W. Goffart, 'Frankish Military Duty and the Fate of Roman Taxation', *Early Medieval Europe* 16 (2008), pp. 166–90; *idem*, '"Defensio Patriae" as a Carolingian Military Obligation', *Francia* 43 (2016), pp. 21–39; *idem*, 'The Recruitment of Freemen into the Carolingian Army, or, How Far may One Argue from Silence', *Journal of Medieval Military History* 16 (2018), pp. 17–34; Bachrach and Bachrach, *Warfare*, p. 155; G. Halsall, 'Predatory Warfare – the Moral and the Physical', in Keller and Sarti (eds), *Pillages*, pp. 53–68.

[12] J.L. Nelson, *Charles the Bald* (London, 1992), pp. 28–9; M. Innes, *State and Society in the Early Middle Ages. The Middle Rhine Valley, 400–1000* (Cambridge, 2000), pp. 143–53; M. Costambeys, M. Innes and S. MacLean, *The Carolingian World* (Cambridge, 2011), pp. 248–9, 279–81; Keller and Sarti (eds), *Pillages*. Halsall, *Warfare*, pp. 37, 74, 90–1, accepts Reuter's views with modifications.

[13] F.L. Ganshof, 'La Tractoria – Contribution à l'étude des origines du droit de gîte', *Tijdschrift voor Rechtsgeschiedenis / Legal History Review* 8 (1928), pp. 69–91. Ganshof expanded upon G. Waitz, *Deutsche Verfassungsgeschichte*, 2nd edn (Berlin, 1885), vol. 4, pp. 18–21. See also *MLLM* 2, pp. 1351–2.

[14] F.L. Ganshof, 'The Frankish Monarchy and Its External Relations', in F.L. Ganshof, *The Carolingians and the Frankish Monarchy*, trans. J. Sondheimer (Aberdeen, 1971), pp. 162–204, at p. 174. Ganshof's definition is misleading, since Carolingian *tractoriae* do not mention transport or lodging.

and cataloguing their appearance in the sources than on explaining their political significance. Since Ganshof's article, most scholarship on Carolingian Europe has ignored *tractoriae* altogether.[15]

Derived from the verb *trahere* ('to convey'), *tractoriae* first appeared in the fourth century. The late Roman government introduced these documents to authorize officials, messengers, and bishops to travel by the imperial road network (*cursus publicus*) and receive provisions along the way.[16] The use of *tractoriae* by public officials survived the end of the western Roman empire. In Frankish Gaul, Merovingian kings and mayors continued to issue them for legates and other figures.[17] A seventh-century collection templates for legal documents known as the *Formulary of Marculf* contains the text of a Merovingian *tractoria*. Issued by a king, it instructs all royal agents to supply the carriers with a long list of possible daily provisions: various foods, exotic spices, firewood, fresh horses, and fodder.[18] Another Merovingian-era formulary contains a *tractoria* from a mayor of the palace for pilgrims travelling to Rome.[19] In 716 Chilperic II confirmed his predecessors' grants to the monastery of Corbie that included a *tractoria* bestowing the right for the abbot's legate to collect supplies when travelling on monastic business.[20] The use of these documents then appears to have declined under the early Carolingians. Early Carolingian royal decrees never mention *tractoriae*, and the only royal charter that does so seems to employ the term simply as a synonym for the charter itself.[21] However, we find a notable, and heretofore largely unexplored, revival of their use during the reigns of Louis the Pious and his sons. This

[15] Only a handful of historians have noted their existence: P. Classen, 'Kaiserreskript und Königsurkunde. Diplomatische Studien zum römisch-germanischen Kontinuitätsproblem, Teil 1', *Archiv für Diplomatik* 1 (1955), pp. 1–87, at pp. 45–8; Brühl, *Fodrum*, pp. 112–14 (who expressly limited himself to summarizing Ganshof's article); Halsall, *Warfare*, p. 150 (an indirect reference); S. Esders, '"Öffentliche" Abgaben und Leistungen im Übergang von der Spätantike zum Frühmittelalter: Konzeption und Befunde', in T. Kölzer and R. Schieffer (eds), *Von der Spätantike zum frühen Mittelalter: Kontinuitäten und Brüche, Konzeptionen und Befunde*, Vorträge und Forschungen 70 (Ostfildern, 2009), pp. 189–244, at p. 195; Goffart, 'Frankish Military Duty', p. 179 n. 41, p. 186.

[16] A. Kolb, *Transport und Nachrichtentransfer im Römischen Reich* (Berlin, 2000), pp. 109–12; L. Lemcke, '*Evectiones et tractoriae*. Identifying the Permits for the *Cursus Publicus* in the 4th Century', *Byzantinische Zeitschrift* 109 (2016), pp. 769–84.

[17] Ganshof, 'Tractoria', pp. 70–86.

[18] *Formulae Marculfi*, no. 11, *MGH Formulae*, p. 49 (the quantities are left blank). For a helpful commentary and translation, see: A. Rio (trans.), *The Formularies of Angers and Marculf: Two Merovingian Legal Handbooks* (Liverpool, 2008), pp. 103–23, 142–4; *eadem*, *Legal Practice and the Written Word in the Early Middle Ages, c.500–1000* (Cambridge, 2011), pp. 81–101.

[19] *Formulae Salicae Bignonianae*, no. 16, *MGH Formulae*, p. 234.

[20] *Urkunden der Merowinger*, no. 171, *MGH DD. Merov.* 1, pp. 424–6.

[21] *Urkunden Karls des Grossen*, no. 88, *MGH DD Karol.* 1, pp. 127–8 (774/5); *Urkunden Ludwigs des Frommen*, no. 41, *MGH DD Karol.* 2.1, pp. 105–7 (confirmation). The MGH editors and Ganshof, 'Tractoria', p. 87 less convincingly posit that the phrase *per hanc tractoriam* refers to a lost document.

article investigates the re-emergence of *tractoriae* during the ninth century and examines what they reveal about how the later Carolingians supplied entourages, soldiers, and horses in times of peace and war.

Tractoriae, royal legates, and entourages

After a long absence in the Carolingian sources, *tractoriae* reappear under Louis the Pious. It is likely that Merovingian *tractoriae*, such as the one preserved in the *Formulary of Marculf*, provided the inspiration for this revival.[22] The personal initiative of the emperor also seems to have played a role. As we have seen, the Astronomer highlighted Louis's concern for the efficient supplying of his entourage and *milites*, and Louis's use of *tractoriae* apparently was part of this project. By restoring their usage, the emperor attempted to oversee more closely the renders that royal agents collected, an aspect of administration that was always open to abuse.[23] This was part of Louis's larger efforts to reform government throughout the empire. As Mayke de Jong sums up, '"Improvement" was the name of the game: judicial procedures, the levying of tolls, the protection of the poor and weak, the extension of markets and mints and, in general, the increase of the efficiency of local administration and its contact with the centre.'[24]

Louis introduced *tractoriae* in the first major reform decrees of his reign, a body of legislation that dates to the last days of 818 or early 819. Scholars traditionally refer to such decrees as 'capitularies', that is, written royal laws and instructions organized into chapter lists that functioned as a central medium of communication between the court and ruling elite.[25] Capitularies addressed a wide range of concerns of kings and their counsellors, some general in nature and others responding to issues rulers faced at specific moments. All capitularies survive as later copies: some seem to preserve original 'master versions'

[22] All seven surviving manuscripts of the *Formulae Marculfi* date to the Carolingian period: Rio (trans.), *Formularies*, pp. 31, 105, 118; Rio, *Legal Practice*, p. 92. For the Carolingian emulation of late Roman law and administration, see: J.L. Nelson, 'Translating Images of Authority: The Christian Roman Emperors in the Carolingian World', in M.M. Mackenzie and C. Rouché (eds), *Images of Authority: Papers Presented to Joyce Reynolds on the Occasion of Her 70th Birthday* (Cambridge, 1989), pp. 194–205; S. Esders, 'Die römischen Wurzeln der fiskalischen Inquisitio der Karolingerzeit', in C. Gauvard (dir.), *L'enquête au Moyen Âge* (Rome, 2008), pp. 13–28.

[23] Ganshof, 'Tractoria', pp. 88–9; Kolb, *Transport*, pp. 117–22.

[24] M. de Jong, *The Penitential State. Authority and Atonement in the Age of Louis the Pious, 814–840* (Cambridge, 2009), p. 23 and n. 57. See also F.L. Ganshof, 'Louis the Pious Reconsidered', in Ganshof, *Carolingians*, pp. 261–72.

[25] For recent re-evaluations of capitularies, see: J.R. Davis, *Charlemagne's Practice of Empire* (Cambridge, 2015), pp. 34–6 and *passim*; S. Kaschke and B. Mischke, 'Capitularies in the Carolingian Period', *History Compass* 17 (2019), pp. 1–11; S. Patzold, *Wie regierte Karl der Große?* (Cologne, 2020).

produced at court, while others offer abbreviated and excerpted texts that reflect the concerns of later compilers.[26] In the case of the 818/19 capitularies, we are fortunate to have what appears to be the master versions composed at the palace.[27] The *Royal Frankish Annals* report that, after Christmas, the emperor held a large assembly with his magnates at Aachen at which they agreed on 'a number of very important chapters' that were added to the existing written laws.[28] The resulting 818/19 capitularies (there were several) contain new decrees to reform the Church, keep the peace, curb the corruption of officials, and defend the crown's rights. Louis sent out royal legates to bring copies of the decrees to their districts and announce them to the people.

One of these capitularies introduced the topic of *tractoriae*. The twenty-seventh chapter reads:

> That our royal legates, whether they are bishops, abbots, or counts, should not receive anything from the tax of other people while they are near their own benefices. But after they have travelled far from [their benefices], then let them receive [the tax] according to what is stated in their *tractoria*. However, let our vassals and court officers who are our legates receive the tax wherever they go.[29]

The capitulary concluded by specifying the supplies that each royal legate was authorized to collect according to his rank (*iuxta suam qualitatem*) (see Table 1, columns 1–3). At the top were bishops, who were entitled to the most daily provisions: forty loaves of bread, three pigs, three measures of wine, one piglet, three chickens, fifteen eggs, and four measures of grain for horses. The second tier consisted of abbots, counts, and court officers, who received slightly less: thirty loaves of bread, two pigs, two measures of wine, one piglet, three chickens, fifteen eggs, and three measures of grain. The lowest-ranking *missi* were the royal vassals, who collected seventeen loaves of bread, one pig, one

[26] S. Patzold, 'Normen im Buch. Überlegungen zu Geltungsansprüchen so gennanter "Kapitularien"', *Frühmittelalterliche Studien* 41 (2007), pp. 331–50; *idem*, 'Capitularies in the Ottonian Realm', *Early Medieval Europe* 27 (2019), pp. 112–32.

[27] *Fränkische Herrschererlasse (814–840)*, nos. 7–11, *MGH Capit. N. S.* 4.1, pp. 55–173. Concerning these decrees, see: De Jong, *Penitential State*, p. 30; W. Hartmann, *Die Synoden der Karolingerzeit im Frankenreich und Italiens* (Paderborn, 1989), pp. 161–7; E. Boshof, *Ludwig der Fromme* (Darmstadt, 1996), pp. 126–8.

[28] *Annales regni Francorum*, *s.a.* 819, ed. G.H. Pertz, *MGH SS rer. Germ.* 6 (Berlin, 1895), p. 150.

[29] *Fränkische Herrschererlasse (814–840)*, no. 11, c. 27, *MGH Capit. N. S.* 4.1, pp. 170–1: 'Ut missi nostri, qui vel episcopi vel abbates vel comites sunt, quamdiu prope suum beneficium fuerint, nihil de aliorum coniectu accipiant; postquam vero inde longe recesserint, tunc accipiant secundum, quod in sua tractoria continetur. Vassi vero nostri et ministeriales, qui missi sunt, ubicumque venerint, coniectum accipiant.' For *ministeriales* as court officers, see: Ganshof, 'Tractoria', p. 89; *MLLM* 2, pp. 893–4 ('ministerialis' as noun, def. 3).

Table 1 *Tractoria* supplies and estimated entourage sizes.

Tractoria recipient and context	1. Bishop acting as *missus*	2. Abbot, count, or court officer acting as *missus*	3. Royal vassal acting as *missus*	4. *Missus* during famine	5. Royal vassal in army
Date (source)	818/19 (*Capit.* no. 11, c. 30)	818/19 (*Capit.* no. 11, c. 30)	818/19 (*Capit.* no. 11, c. 30)	829 (*Capit.* no. 45a, c. 1)	*c.*830 (*Form. Imp.*, no. 7)
Bread (loaves)	40	30	17	40	20
Piglets	1	1	1	2	2
Pigs/lambs	3	2	1	1	1
Chickens	3	3	2	4	2
Eggs	15	15	10	20	10
Wine (*modii*)	3	2	1	0.6 (9 *sextarii*)	1
Beer (*modii*)	-	-	-	2	-
Grain (*modii*)	4	3	2	2	4
Hay (wagons)	-	-	-	-	0.5
People (est.)	120	90	50	80	55
Horses (est.)	22–30	17–23	11–15	11–15	44–49

piglet, one measure of wine, two chickens, ten eggs, and two measures of grain.[30] Louis threatened heavy penalties for anyone who disregarded a *tractoria*. A high-ranking official who did so was to come to the palace and 'receive a punishment according to our will that suits his stupidity': either lose all his *honores* or be made to provision travelling *missi* from his own properties until the emperor was satisfied. A lesser offender of free status would lose any office or benefice he held, while a slave was to have his head shaved, be tied to a post, and beaten.[31]

These chapters from the 818/19 reform capitularies allow us to make several observations. First, the stated character of these capitularies – that they were new royal decrees to be added to the pre-existing written laws[32] – implies that Louis saw the use of *tractoriae* as a renewed practice that needed to be codified. Second, while these decrees recall the characteristics of Merovingian *tractoriae*, they do not borrow their language directly, and they differ in many specifics. In comparison to the *tractoria* in the *Formulary of Marculf*, the 818/19 capitularies do not grant permission to requisition horses, they reduce the long list of foodstuffs and omit the exotic spices, and they place new emphasis on punishments for disobedience. Also novel is the focused use of these documents to provision *missi*, that is, the powerful royal legates who carried out special commissions (*legationes*) in the emperor's name within assigned districts (*missatica*).[33] Third, it is significant that the 818/19 capitulary refers several times to a *coniectus* from which the supplies were to be raised. A *coniectus* was a tax levied in kind or coin from the people of a district for the sustenance of the king or his agents.[34] Louis's threat that he would compel an official who scorned a *tractoria* to supply travelling *missi* from his own properties highlights that, under normal circumstances, the *coniectus* was paid by the common people (*de coniectu populi*).[35] Fourth, Louis did not want his *missi* to abuse their right to gather supplies at public expense, which explains why bishops, abbots, and counts were to supply themselves from their own benefices when near them. However, he did allow the lower-ranking court officers and royal vassals to collect

[30] *Fränkische Herrschererlasse (814–840)*, no. 11, c. 30, *MGH Capit. N. S.* 4.1, pp. 170–3.
[31] *Fränkische Herrschererlasse (814–840)*, no. 9, c. 16, *MGH Capit. N. S.* 4.1, p. 134.
[32] *Annales regni Francorum*, *s.a.* 819, ed. Pertz, *MGH SS rer. Germ.* 6, p. 150; *Fränkische Herrschererlasse (814–840)*, no. 9, *MGH Capit. N. S.* 4.1, p. 118 and n. 1.
[33] F.L. Ganshof, 'The Institutional Framework of the Frankish Monarchy', in Ganshof, *Carolingians*, pp. 86–110, at pp. 93, 102; *idem*, 'Louis', p. 267.
[34] *MLLM* 1, p. 324.
[35] This Latin phrase comes from an 829 capitulary: *Fränkische Herrschererlasse (814–840)*, no. 46, c. 3, *MGH Capit. N. S.* 4.2, p. 602. For records of such local payments of food, wine, and grain, see I. Garipzanov, 'A Polyptych in the Margins: Accounting Notes from Early Tenth-Century Laon', *Early Medieval Europe* 32 (2024), pp. 518–42.

supplies everywhere, presumably because they did not hold large benefices. These decrees resonate with the Astronomer's observation that Louis wanted to limit the burdens that his taxes put on the common people.

We can draw further insights from the lists of supplies in the 818/19 capitulary's final chapter. To state the obvious, these provisions far exceeded the nutritional needs of even the most voracious bishop. Instead, these foodstuffs clearly were intended to feed the entourage that accompanied him. In the Frankish world, powerful people travelled with sizeable entourages.[36] This was not a symptom of 'Germanic continuity' of barbarian warbands but rather an inheritance from the late Roman empire.[37] The size and magnificence of a lord's retinue announced his status and power. For a king to ride a horse with only a few companions was a public humiliation that made him seem a person without rank.[38] Louis's eldest son Lothar I (840–55) felt it necessary to admonish his subjects not to come to law courts with armed followings.[39] Although the 818/19 capitulary does not contain the exotic spices found in the *Formulary of Marculf*, the foods it does list – especially the pork, piglet, and wine – underscore that many people in the entourages of *missi* were of high status. As Martin Gravel and Jamie Kreiner have emphasized, dining on roasted pork and succulent piglet had strong associations with wealth and power.[40] Throwing lavish banquets was essential for the performance of lordship and the maintenance of political bonds with followers.[41]

We can make some cautious estimates about the size of these entourages based on the quantities of food. Early medieval pigs ranged in size from 57–100 kg, yielding on average 45–80 kg of pork and lard and feeding roughly fifty people.[42] Piglets (suckling pigs usually under 18 kg) could nourish around ten people. Following Charlemagne's reform of weights and measures, an 'official' *modius* of wine equalled

[36] Halsall, *Warfare*, pp. 45–50; R. Le Jan, 'Satellites et bandes armées dans le mond franc (VIIIe–Xe siècles)', in *Le combattant au Moyen Âge* (Paris, 1991), pp. 97–105; J. Kreiner, 'About the Bishop: The Episcopal Entourage and the Economy of Government in Post-Roman Gaul', *Speculum* 86 (2011), pp. 321–60; West, 'Lordship', pp. 3–40.

[37] L. Sarti, 'Die Identität des Kämpfenden nach dem Zusammembruch des römischen Militärwesens in Gallien', *Archiv für Kulturgeschichte* 95 (2013), pp. 309–22, esp. pp. 313–14.

[38] Astronomer, *Vita Hludowici*, c. 48, ed. Tremp, *MGH SS rer. Germ.* 64, p. 478.

[39] *Fränkische Herrschererlasse (814–840)*, no. 20, c. 5, *MGH Capit. N. S.* 4.1, p. 256.

[40] M. Gravel, 'Of Palaces, Hunts, and Pork Roast: Deciphering the Last Chapters of the Capitulary of Quierzy (*a.* 877)', *Florelegium* 19 (2012), pp. 89–115, at pp. 95–6, 104; J. Kreiner, *Legions of Pigs in the Early Medieval West* (Yale, 2020). Commoners tended to eat more beef and mutton.

[41] P.J. Geary, 'Feasting, Giving, and Taking in the Carolingian Court', in L. Jégou, S. Joye, T. Lienhard and J. Schneider (eds), *Faire lien. Aristocratie, réseaux et échanges compétifs. Mélanges en l'honneur de Régine Le Jan* (Paris, 2015), pp. 73–80.

[42] Gravel, 'Of Palaces', p. 105 and n. 86; Kreiner, *Legions*, p. 78 and n. 2.

40–55 litres.[43] When we add the additional bread, chickens, and eggs and reckon two meals per day, we can convert these daily supplies into ballpark approximations of entourage sizes.[44] Based on these calculations, the rations authorized by a bishop's *tractoria* would have fed about 120 people per day, that of an abbot, count, and court officer could have supported around 90 followers, and that of a royal vassal could have supplied some 50 companions. Members of these entourages would have received 0.8–1.4 litres of wine daily – roughly the amount allotted to Carolingian monks.[45] An offhand comment of Hincmar of Reims in a work dating to the late 850s resonates with our estimate of 120 people in a bishop's retinue. Citing an earlier Spanish synod, Hincmar recommended that a bishop's *obsequium* not exceed fifty people. But he lamented that they had in fact become much larger: 'We [bishops] tour our dioceses with a veritable assembled army and thus now seem to be, not preachers of God's word, but rather tax collectors and devourers of the gifts from the faithful who are in the care of our priests.'[46]

The supplies for horses (*annona ad caballos*) in the 818/19 capitulary also require comment. The Astronomer referred to these dues as the *annonae militares quas vulgo foderum vocant*. This terminology went back to the former Roman *annona militaris*, the local levies to supply imperial soldiers, although direct continuity between the Roman and Carolingian military taxes is unlikely.[47] Well-bred horses were important status symbols in the Carolingian world. Most noblemen travelled on horseback, and it was for this reason that Louis the Pious introduced the penalty of *harmscara* – the public humiliation of carrying one's saddle on his back – for certain offences.[48] 'According to ancient custom', fresh grass for horses was one of the few things

[43] J.-P. Devroey, 'Units of Measurement in the Early Medieval Economy: The Example of Carolingian Food Rations', *French History* 1 (1987), pp. 68–92, at p. 86 (Table 3).

[44] For these calculations, I round the estimated numbers of people to the nearest multiple of five and use the following servings per meal: a pig or sheep fed fifty people, a piglet ten people, one 1.1 kg loaf of bread 1.7 people, a chicken four people, and five eggs one person. At ninth-century Corbie, an average loaf weighed 1.1 kg, and a monk was allotted 1.3 kg daily: Devroey, 'Units', pp. 82, 87.

[45] Monks received 1.3–1.6 litres of wine or beer daily: Devroey, 'Units', p. 87.

[46] Hincmar, *Collectio de ecclesiis et capellis*, ed. M. Stratmann, *MGH Fontes iuris Germanici antiqui* (*Fontes iuris*) 14 (Hanover, 1990), p. 111 and n. 256, pp. 120–1 (quote).

[47] A.H.M. Jones, *Later Roman Empire, 284–602* (Baltimore, 1964), vol. 1, pp. 448–62; Fritz Mitthof, *Annona militaris. Die Heeresversorgung im spätantiken Ägypten*, 2 vols (Florence, 2001).

[48] K. Kinoshita, '*Harmscara* and Elites in the Carolingian Age', *Legal History Review* 64 (2015), pp. 97–141. For horses and chivalry in Carolingian culture, see J.L. Nelson, 'Ninth-Century Knighthood: The Evidence of Nithard', reprinted in *eadem*, *The Frankish World, 750–900* (London, 1996), pp. 75–87; D. Barthélemy, 'Le chevalerie carolingienne: prelude au XIe siècle', in R. Le Jan (ed.), *Le royauté et les élites dans l'Europe carolingienne (début IXe siècle aux environs de 920)* (Villeneuve d'Ascq, 1998), pp. 159–75.

travelling officials and soldiers could requisition from the common people (along with water, firewood, and temporary lodging in bad weather).[49] Elites invested considerable time, resources, and care into their mounts. Future warhorses typically did not begin their training until the age of two and a half, at which point they required three years of extensive drilling before they were ready to go on campaign.[50] Based on a survey of equine bones from early medieval archaeological sites, Jürg Gassmann concludes that Carolingian-era warhorses on average stood 14–15 hands (142–52 cm) tall at the withers, possessed a medium build, and weighed around 386 kg.[51] Horses of this size require approximately 7.2 kg of food every day (1.8% of their body weight), as well as 19–30 litres of fresh water.[52] Warhorses typically were fed a mixture of grain (barley, spelt, oats) and hay, although grass could be substituted for the hay if sufficient pasture and extensive time for grazing were available.[53] The 818/19 capitulary stipulates only grain supplies, which implies that the *missi* and their companions had to purchase hay at their own expense or let their animals graze.[54] Spelt, barley, and oats have an average density of 0.5 kg/litre, so an 'official' Carolingian *modius* (40–55 litres) would have fed about 6–8 horses doing light work if equal amounts of hay were available. Based on these calculations, the grain rations in the 818/19 capitulary

[49] *Capitulare Aquitanicum*, c. 6, and *Karoli ad Fulradum abbatem epistola*, *MGH Capit*. I, pp. 43 (quote), 168.

[50] E.L. Herbert-Davies, 'The Warhorse in England under Edward I and Edward II: 1272–1327', Ph.D. thesis, University of Leeds (2024), pp. 153–98.

[51] J. Gassmann, 'Combat Training for Horse and Rider in the Early Middle Ages', *Acta Periodica Duellatorum* 6 (2018), pp. 63–98, at pp. 70–1, 87. Gassmann revises down the 'paper-based' estimates of B.S. Bachrach, '*Caballus et Caballarius* in Medieval Warfare', in H. Chickering and T.H. Seiler (eds), *The Study of Chivalry: Resources and Approaches* (Kalamazoo, 1988), pp. 173–211, at p. 179, who argued that Frankish warhorses weighed 590–680 kg. Gassmann observes that a horse of that weight and the height indicated by early medieval equine bones 'would look grotesque'. Late medieval English warhorses were slightly taller (148–63 cm): Herbert-Davies, 'Warhorse', pp. 53–6.

[52] Bachrach, '*Caballus*', pp. 178–9, estimated that early medieval warhorses required 11 kg of food every day, but he based this on his assumption that warhorses weighed 590 kg. Because horses usually consume a certain percentage of their body weight every day (although this varies according to work), Gassmann's revised estimate of 386 kg for the average weight of a Carolingian warhorse means that the nutritional requirements proposed by Bachrach need to be reduced by 35 per cent. Bachrach and Bachrach, *Warfare*, p. 159, slightly revise down the estimate of a warhorse's daily food requirement to 10 kg. Herbert-Davies, 'Warhorse', pp. 53–6, 211–13, argues that the larger late medieval English warhorses received 6 kg of oats daily.

[53] Herbert-Davies, 'Warhorse', pp. 211–12. Bachrach, '*Caballus*', p. 178, and Bachrach and Bachrach, *Warfare*, p. 158. For the complexity of equine diet, see K. Boniface, 'Bread for My Horses', in A. Ropa and T. Dawson (eds), *The Horse in Premodern European Culture* (Berlin and Boston, 2019), pp. 161–73.

[54] While preparing to make a tour as *missus* in the spring of 844, Lupus of Ferrières expressed anxiety about the supply of fodder (*propter equorum pabulum*) and stated that he could not set out before there was abundant grass (*ante copiam herbae*): Lupus, *Epistolae*, no. 63, ed. E. Dümmler, *MGH Epistolae* (*Epp.*) 6 (Berlin, 1925), p. 63.

corresponded roughly to 22–30 horses for a bishop, 17–23 for an abbot, count, or court officer, and 11–15 for a royal vassal. But, as we have seen, the entourages of Louis's *missi* were much larger and therefore presumably included far more horses than these grain supplies could have fed. We can explain this discrepancy if we take seriously the Astronomer's comment that Louis prohibited his soldiers from collecting the *annonae militares* called 'fodder'. A significant number of people in the entourages of Louis's *missi*, many of whom would have been mounted *milites*, apparently had to bring or purchase their own grain supplies, and everyone had to buy hay or dedicate much time to grazing. In other words, the supplies in the 818/19 capitulary corroborate the Astronomer's report that Louis made his retainers supply their horses from their own resources.

Louis and his sons continued to use *tractoriae* for the next half century. When Louis's counsellor and *missus* Ansegis compiled an important capitulary collection in 827, he included the two 818/19 decrees about *tractoriae* and the punishment of those who ignored them.[55] In 832 Lothar I reissued for Italy thirteen decrees of his father and grandfather, again including Louis's list of punishments for anyone who scorned a *tractoria*.[56] At the Synod of Meaux-Paris in 845/6, the west Frankish bishops requested that Charles the Bald grant them *tractoriae* so that, when necessary, they could quickly assemble with the counts and respond to any urgent situation.[57] Like his father, Charles worried about local officials using the collection of provisions for *missi* as an opportunity to enrich themselves. When he sent his legates to Burgundy in 865, he instructed them to make sure that the counts' agents did not collect more supplies than authorized in their *tractoriae*.[58] We also find offhand references to *tractoriae* in the correspondences of prelates. Agobard of Lyons complained in a letter to Louis the Pious that the emperor's *missi* had recently arrived in his city not only carrying a capitulary favouring the Jews, but also 'holding in their hands a *tractoria* for daily supplies'.[59] Lupus of Ferrières told Prudentius of Troyes that he planned to go to Charles the Bald's court to obtain *tractoriae* before setting out as the king's *missus*.[60] Such casual allusions to these documents reveal that they had become part of the regular accoutrements of Carolingian government.

[55] *Die Kapitulariensammlung des Ansegis*, 4.28, 4.67, ed. G. Schmitz, *MGH Capit. N. S.* 1 (Hanover, 1996), pp. 639–40, 657.
[56] *Fränkische Herrschererlasse (814–840)*, no. 51, *MGH Capit. N. S.* 4.2, p. 668.
[57] *Die Konzilien der karolingischen Teilreiche, 843–859*, no. 11, c. 71, ed. W. Hartmann, *MGH Concilia* (*Conc.*) 3 (Hanover, 1984), p. 118.
[58] *Capitulare Tusiacense in Burgundiam directum*, c. 16, *MGH Capit.* 2, p. 332.
[59] Agobard, *De insolentia Iudeorum*, ed. L. Van Acker, *Agobardi Lugdunensis Opera Omnia*, Corpus Christianorum, Continuatio Medievalis 52 (Turnholt, 1981), pp. 191–5, at p. 192.
[60] Lupus, *Epistolae*, no. 63, ed. Dümmler, *MGH Epp.* 6, p. 63.

One of the advantages of *tractoriae* was their flexibility. Rulers could adjust their content to fit the circumstances. For example, in 829 Louis sent out his *missi* to correct injustices and report how many freemen owed military service.[61] In connection with this commission, Louis's court drew up an internal document that again stipulated how much food the *missi* could collect (see Table 1, column 4). In contrast to the 818/19 capitulary, this document grouped all the *missi* together. It reads:

> We desire that our legates collect the following tax when they travel through their district: specifically, that each one collect forty loaves of bread, two piglets, one pig or lamb, four chickens, twenty eggs, nine *sextarii* [0.6 *modii*] of wine, two *modii* of beer, and two *modii* of [grain] supplies. When they are near their homes, however, they should not collect the tax.[62]

Using the same calculations, these supplies would have fed approximately eighty people (each of whom could have imbibed about 1.3 litres of alcohol) and 11–15 horses (again assuming equal amounts of hay or grass were available). Compared to the 818/19 supplies, this was a reduction for bishops, abbots, and counts. (Lower-ranking court officers and royal vassals apparently were not among Louis's *missi* in 829, since he did not include permission for them to collect the *coniectus* everywhere, as he did in 818/19.) Context seems to explain this adjustment. For several years the empire had been suffering from 'constant famine, mortality of animals, disease among men, and bareness of crops', which the court interpreted as divine punishment for the Franks' sins.[63] This famine probably explains why Louis reduced his legates' *stipendia* at this moment.[64] Charles the Bald likewise modified supplies according to context. When he faced opposition from some of the Aquitanian bishops in 844, he restricted their daily provisions to only one pig and one *modius* of wheat, barley, and wine, apparently to limit their ability to build up large forces against him.[65]

[61] *Fränkische Herrschererlasse (814–840)*, no. 45b, *MGH Capit*. 4.2, pp. 588–93.
[62] *Fränkische Herrschererlasse (814–840)*, no. 45a, c. 1, *MGH Capit*. 4.2, pp. 583–7, at p. 586.
[63] *Fränkische Herrschererlasse (814–840)*, no. 39, *MGH Capit*. 4.2, pp. 492–500, at p. 496; Costambeys, Innes and MacLean, *Carolingian World*, pp. 216–17.
[64] Another capitulary connected to the 829 commission supports this interpretation. It complains that, in some districts, counts and their deputies collected from the people enough food to feed large entourages when in fact the *missi* on this occasion had small ones: *Fränkische Herrschererlasse (814–840)*, no. 46, c. 3, *MGH Capit*. 4.2, p. 602.
[65] *Die Konzilien der karolingischen Teilreiche, 843–859*, no. 4, c. 2, ed. Hartmann, *MGH Conc*. 3, pp. 18–23, at p. 20. This canon does not explicitly mention *tractoriae*, but its itemizing of daily supplies is similar. One notes the absence of piglets, chickens, eggs, and fodder. For context: Nelson, *Charles*, pp. 139–41.

Tractoriae, military retinues, and the army

Louis the Pious used *tractoriae* not only to supply the entourages of *missi* when travelling on royal business. He also employed them to feed the military retinues of his magnates when he mobilized the army. The evidence for the use of *tractoriae* in military logistics comes from the collection of model documents from Louis the Pious's court known as the *Formulae imperiales*. As Sarah Patt has shown, a court notary compiled the *Formulae imperiales* in *c*.830 as a handbook of templates for charters and documents frequently drawn up by court scribes.[66] One of these templates is for a *tractoria*. This is in fact the only complete text of a Carolingian *tractoria* that survives. Once again, it broadly resembles the Merovingian *tractoria* in the *Formulary of Marculf*, yet it differs from it in many particulars. It is therefore worth quoting it in full:

> To all the bishops, abbots, abbesses, counts, viscounts, hundredsmen, and other faithful men of ours: Be it known to you that we are sending our vassals [So-and-so] and [So-and-so] to the region of [Such-and-such] to muster the army and exact the *heribannum*. Therefore, we desire and command that you render to each of them as their daily supplies the following: twenty loaves of bread, two piglets, a pig or lamb, two chickens, ten eggs, one *modius* of wine; salt, herbs, and vegetables; and sufficient firewood. During Lent, however, render the following every day: four wheels of cheese, two *sextaria* of legumes, and as many fish as you can obtain. Moreover, for their horses render every day four *modii* from your grain supplies and, for both [vassals], a wagonload of hay. Make sure you do not neglect this duty.[67]

The fact that this *tractoria* was included in the *Formulae imperiales* points to the conclusion that the court frequently issued such form letters in conjunction with the mobilization of the army.

[66] S. Patt, *Studien zu den 'Formulae imperiales.' Urkundenkonzeption und Formulargebrauch in der Kanzlei Kaiser Ludwigs des Frommen (814–840)*, MGH Studien und Texte 59 (Wiesbaden, 2016); Rio (trans.), *Formularies*, pp. 8–9; Rio, *Legal Practice*, pp. 132–7; *Fränkische Herrschererlasse (814–840)*, *MGH Capit. N. S.* 4.1, pp. xxvii–xxix.

[67] *Formulae imperiales*, no. 7, *MGH Formulae*, p. 292 (with commentary in *MGH DD Karol.* 2.2, p. 1183): 'Omnibus episcopis, abbatibus, abbatissis, comitibus, vicariis seu reliquis fidelibus nostris. Notum sit vobis, quia istos vasallos nostros illos et illos mittimus ad has partes ad exercitum promovendum et heribannum exactandum. Propter hoc volumus atque iubemus, ut ad stipendia eorum cotidie unicuique illorum dare faciatis panes 20, friscingas duas, porcellum sive agnum unum, pullos duos, ova 10, de potu modium unum, sal, herbola, ortolanas, ligna sufficienter et intra quadragesimam cotidie formaticos quattour, legumina sextaria duo, pisces, iuxta quod invenire possunt, et ad caballos eorum de annona cotidie modios quattuor et inter ambos de feno karradam, vecturam. Videte, ut nullam inde negligentiam habeatis.'

We can make several observations from this document. As we have seen, the recipients of this *tractoria*, several unnamed royal vassals, numbered among the lower tier of Louis's hierarchy of magnates, ranking beneath bishops, counts, abbots, and court officers. Under Charlemagne, a royal *vassallus* was a junior military officer who led a small unit of soldiers (*minor manus*) in the army, and this seems still to have been the case under his son.[68] Notably, the daily *stipendia* for royal vassals enumerated in this *tractoria* closely resemble the supplies in Louis's 818/19 capitulary (see Table 1, column 5, and compare with column 3). We have observed that the 818/19 capitulary authorized vassals to collect enough daily supplies to feed an entourage of around fifty people. Using the same calculations, this *tractoria* in the *Formulae imperiales* would have maintained slightly more, that is, about fifty-five.

Moreover, the high-quality foods (especially the pork, piglet, wine, and herbs) as well as the fodder for horses point to the conclusion that this *tractoria* was intended to supply the mounted soldiers (*caballarii*) in the retinues of the royal vassals. We have seen that the retinues of well-equipped soldiers made up a significant part of lords' households.[69] Hincmar observed that bishops spent up to 40 per cent of their income to maintain such household soldiers (*militia*, *militantes casati*).[70] When Louis called up the army, he expected these vassal-soldiers of bishops, abbots, abbesses, and counts all to serve or pay the heavy *heribannum* fine for draft-dodging.[71] Under Charles the Bald, counts and royal vassals led their *homines* to the muster themselves, while bishops, abbots, and abbesses either sent their soldiers led by a standard-bearer or commanded them in person.[72] Carolingian rulers likewise maintained a significant body of household troops – perhaps around one thousand cavalry – that functioned as the backbone of royal armies.[73] Such

[68] *Memoratorium de exercitu in Gallia occidentali praeparando*, c. 3, *MGH Capit*. 1, p. 135.

[69] Concerning magnates' household troops, see: Reuter, 'Recruitment', pp. 32–3; Halsall, *Warfare*, p. 76; West, 'Lordship', pp. 9–17; Bachrach and Bachrach, *Warfare*, pp. 107–9. For a reinterpretation of Carolingian military service, see C. Haack, *Die Krieger der Karolinger. Kriegsdienste als Prozesse gemeinschaftlicher Organisation um 800*, Ergänzungsbände zum Reallexikon der Germanischen Altermskunde 115 (Berlin, 2020).

[70] Hincmar, *Collectio de ecclesiis et capellis*, ed. Stratmann, *MGH Fontes iuris* 14, p. 120.

[71] *Fränkische Herrschererlasse (814–840)*, no. 11, c. 28, *MGH Capit*. 4.1, p. 170.

[72] *Capitulare Tusiacense in Burgundiam directum*, c. 13, *MGH Capit*. 2, p. 331.

[73] I base this guesstimate on my sense that the household troops of individual Carolingian rulers were at least twice the size of the reported *militiae* of especially powerful ninth-century figures: a Breton *dux* (200 men), the archbishop of Ravenna (almost 500 mounted soldiers), and the ruler of Moravia (644 mounted soldiers); *Nicolai I. papae epistolae variae*, no. 105, ed. Dümmler, *MGH Epp*. 6, p. 615; *Annales Fuldenses*, *s.a*. 871, ed. F. Kurze, *MGH SS rer. Germ*. 7 (Hanover, 1891), p. 75; Regino, *Chronicon*, *s.a*. 874, ed. F. Kurze, *MGH SS rer. Germ*. 50 (Hanover, 1890), p. 109. Similarly, a seventh-century mayor of the palace purportedly travelled with an escort of 300 men: Fredegar, *Chronicon*, 4.25, ed. B. Krusch, *MGH SS rerum Merovingicarum* 2 (Hanover, 1888), p. 130. Bachrach and Bachrach, *Warfare*, p. 109, propose some 10,000 men in the military households of Carolingian rulers.

mounted soldiers in the military households of kings and magnates seem to have come chiefly from the nobility, although ambitious commoners undoubtedly sought such positions to enhance their status. These household troops made up one of the two main components of Carolingian armies, the other being the general levies of freemen, who seem to have functioned primarily as light infantry and sappers (engineers, craftsmen, and labourers).[74] Louis the Pious complained that fights often broke out in the army between people of higher and lower status (*inter maiores et minores*). When such brawls erupted, he urged 'that faithful men of ours . . . hasten there fully armed (that is, those who have the means to do so) with his suit of armour, shield, sword, and mace and put an end to such wicked mischief'.[75]

One notices a significant difference in the *annona* for horses between the *Formulae imperiales* and 818/19 capitulary. As we have seen, the latter authorized royal vassals to collect enough grain for only 11–15 horses, which led us to conclude that, when *missi* travelled on royal business, most of the people in their entourages had to bring or purchase their own fodder. In contrast, the *tractoria* in the *Formulae imperiales* assigns each royal vassal much more fodder: four measures of grain and, additionally, half a wagon of hay. A two-wheeled wagon could haul around 450 kg, which is the approximate weight of a large bale of hay. Since Carolingian-era warhorses required around 7.2 kg of food daily, four *modii* of grain (93–125 kg) plus half a wagonload of hay (225 kg) would have fed some 44–49 warhorses: that is, almost four times as many as in the 818/19 capitulary. The military context seems to explain this divergence. Since the *tractoria* in the *Formulae imperiales* was for royal vassals in the army, it authorized them to collect hay and grain for many more mounted soldiers. This discrepancy enables us to reconcile the scholarly disagreement over whether Louis prohibited his soldiers from collecting fodder, as the Astronomer alleged. The *tractoria* evidence points to the conclusion that Louis did do this, but only in times of peace. When the army was mobilized, then Louis permitted his magnates to collect much more fodder for the horses of their men.

The *tractoria* in the *Formulae imperiales* sheds important light on the size of individual military entourages within Carolingian armies. As we have just seen, this *tractoria* suggests that, when the army was mobilized, a royal vassal might lead some 55 men and 44–49 horses. Because *formulae* were boilerplate letters intended to be modified according to context and recipient, it is likely that Louis's court issued

[74] Halsall, *Warfare*, pp. 93–6; Bachrach and Bachrach, *Warfare*, pp. 109–11; Goffart, 'Recruitment', pp. 17–33.
[75] *Fränkische Herrschererlasse (814–840)*, no. 55a, *MGH Capit.* 4.2, p. 710.

such *tractoriae* also for bishops, counts, abbots, and other magnates. In our examination of the 818/19 capitulary, we found that the estimated number of men in a bishop's entourage was 2.4 times the size of a royal vassal's, while that of an abbot, count, or court officer was 1.8 times the size.[76] It seems reasonable to suppose that similar proportional differences carried over to the mobilization of the army. If this is correct, then the *tractoria* in the *Formulae imperiales* suggests that, when the army was assembled, a bishop might have led some 130 men with 106–118 horses, an abbot, count, or court officer approximately 100 men and 79–88 horses, and a royal vassal around 55 men with 44–49 horses. However, we must consider the fact that not every horse would have been ridden by a soldier. Some wealthy nobles would have brought more than one horse, while other horses would have been draught and pack animals that pulled wagons or carried supplies. Moreover, some people in military retinues would have been non-combatants: squires, cooks, servants, and a blacksmith.[77] Such non-combatants probably did not have warhorses, and some may have ridden in wagons or travelled on foot. Thus, of the men and horses we have estimated based on the *tractoria* in the *Formulae imperiales*, perhaps only half were actual *caballarii*.[78] This points to the conclusion that, when the army was mobilized, a bishop might contribute some sixty-five mounted soldiers, an abbot, count, or court officer fifty, and a royal vassal thirty.

To be sure, this estimate of 30–65 mounted soldiers as 'typical' for the individual military entourages of magnates in the army is only a very rough approximation extrapolated from the *tractoria* supplies. Yet it notably agrees with the estimates of military historians.[79] It also resonates with scattered evidence from contemporary sources. Three examples can be given. First, as we have already seen, Hincmar lamented that episcopal entourages had become quasi-armies far exceeding fifty men, and a significant portion of those retinues would have been *caballarii*. Second, in 887 Charles the Fat (876–88) temporarily revoked the exemption from military service of the *homines* of Abbot Bobo of Corvey, because he urgently needed them in the army 'on account of the huge infestation of barbarians' (i.e.,

[76] That is, 120, 90, and 50 men, respectively (Table, columns 1–3).
[77] Herbert-Davies, 'Warhorse', pp. 199–201, 214–17.
[78] Reuter, 'Recruitment', p. 36, estimates that half of a magnate's household were actual soldiers.
[79] K.F. Werner, 'Heeresorganisation und Kriegsführung im deutschen Königreich des 10. und 11. Jahrhundert', reprinted in K.F. Werner, *Structures politiques du mond franc (Vie–XIIe siècles)* (London, 1979), pp. 791–843, at p. 820 (at least 20 cavalrymen for bishops, abbots, and counts); Bachrach and Bachrach, *Warfare*, p. 109 (20–60 *milites* for bishops, abbots, and counts).

Northmen). However, Charles did permit Bobo to keep with him thirty *homines nobiles* when travelling on royal business as *missus* in Saxony.[80] If we suspect that Charles reduced by half the abbot of Corvey's household troops, that would point to a usual military entourage of around sixty soldiers: not far from the above estimate of fifty for an abbot. A third piece of evidence is the so-called *Indiculus loricatorum* ('list of armoured soldiers').[81] This much-debated document catalogues the number of heavily armed cavalry that the German princes were to send to reinforce Otto II's army in Italy in 981/2. It reports that, on average, German archbishops were to contribute eighty-five *loricati*, bishops forty-nine, abbots forty-three, and lay magnates twenty-four. Admittedly, it is unclear if some of the German bishops and abbots had already sent soldiers to Italy with Otto II's initial army (the lay magnates probably had), but the range of 24–85 soldiers again resembles our estimates. In short, this evidence from ninth- and tenth-century sources corroborates our *tractoria*-based estimation of 30–65 mounted soldiers as representative of the military retinues of individual Carolingian magnates.

This in turn tells us something about the overall scale of Carolingian armies. There has been much debate about this, with estimates ranging from very small (dozens or low hundreds of soldiers) to massive (multiple tens of thousands).[82] As Jonathan Jarrett has noted, some of this debate rests on questionable interpretations of select sources combined with bad math and wishful thinking.[83] Yet the *tractoria* evidence offers a new basis for assessing the scale of Carolingian armies grounded in their lists of supplies. Of course, there was no single 'the Carolingian army', but rather different armies raised at different moments in different regions for different objectives with different levels of aristocratic support.[84] Carolingian armies were composite entities, consisting of the household troops of multiple bishops, abbots, abbesses, counts, and royal vassals, sometimes (but not always) the king

[80] *Die Urkunden Karls III.*, no. 158, ed. P. Kehr, *MGH Diplomata regum Germaniae ex stirpe Karolinorum* 2 (Berlin, 1937), pp. 255–7.

[81] *Indiculus loricatorum*, ed. L. Weiland, *MGH Constitutiones I* (Hanover, 1893), pp. 632–3; Halsall, *Warfare*, pp. 124–5; Bachrach and Bachrach, *Warfare*, p. 120.

[82] For a range of views, see: Werner, 'Heeresorganisation', pp. 821–2 (tens of thousands, with an overall military force of some 30,000 cavalry and over 100,000 soldiers total); Reuter, 'Recruitment', pp. 35–6 (dozens or hundreds); France, 'Composition', pp. 61–82 (from a few hundred to mid-thousands); Halsall, *Warfare*, pp. 119–33 (low- to mid-thousands); Bachrach and Bachrach, *Warfare*, pp. 105–111 (tens of thousands). For the broader social context, see S. Bobrycki, *The Crowd in the Early Middle Ages* (Princeton and Oxford, 2024).

[83] J. Jarrett, 'Bad Numbers by Karl-Ferdinand Werner', *A Corner of Tenth-Century Europe*, posted on 11 May 2024 (with links to previous related blogs): https://tenthmedieval.wordpress.com/2024/05/11/bad-numbers-by-karl-ferdinand-werner/#comments.

[84] France, 'Composition', pp. 62, 70–1.

and his royal soldiers, as well as general levies of freemen. For example, when Pippin II ambushed an army of Charles the Bald (who was not present) in 844, the multitude killed or captured included two bishops, three abbots, four counts, four high-ranking laymen, 'and not a few other noblemen'.[85] Similarly, when the Northmen crushed an east Frankish army in Saxony in 880 (again no king was present), among the dead were two bishops, twelve counts, eighteen royal vassals, 'and all the men who followed them'.[86] It is impossible to know what contribution the general levies of freemen made to the overall size of armies, but on occasion it may have been substantial.[87] When we take this composite nature of Carolingian armies into account and combine it with our ballpark estimate of 30–65 *milites* for the entourage of each magnate, we see that Carolingian armies must have ranged considerably in size: from small forces of several hundred soldiers to large (but not truly massive) armies in the low- to mid-thousands. The key factors would have been how many magnates showed up, whether a king was present, and the extent of the contribution of general levies. This range of hundreds to low- to mid-thousands of soldiers for Carolingian armies agrees with the estimates of John France, Guy Halsall, and Simon Coupland, and it also matches the size of contemporary Byzantine armies as argued by John Haldon.[88]

Louis the Pious's use of *tractoriae* to supply soldiers and horses in the army seems to have been an innovation in military logistics. His father had instructed the magnates' *caballarii* and the general levies to bring three months' rations with them on wagons, and he allowed them to take only grass, water, and firewood in the districts through which they passed.[89] As scholars have emphasized, this presented significant logistical challenges owing to the long and slow wagon trains required to transport such supplies for men and horses.[90] But Louis's use of *tractoriae* would have reduced these difficulties, since magnates in the army could collect food for their *caballarii* locally as they travelled to and from the empire's frontiers. The general levies of freemen, on the other hand, apparently still had to bring their own food (or money to

[85] *Annales de Saint-Bertin*, *s.a.* 844, ed. F. Grat, J. Vielliard, S. Clémencet and L. Levillain (Paris, 1964), pp. 46–7.

[86] *Annales Fuldenses*, *s.a.* 880, ed. Kurze, *MGH SS rer. Germ.* 7, p. 94.

[87] Bachrach and Bachrach, *Warfare*, pp. 119–22, assume that the general levies of freemen far outnumbered the military retinues of lords in Carolingian and Ottonian armies. This may have been true sometimes, but it needs to be assessed on a case-by-case basis.

[88] France, 'Composition', pp. 81–2; Halsall, *Warfare*, pp. 119–33; S. Coupland, 'The Carolingian Army and the Struggle against the Vikings', *Viator* 35 (2004), pp. 49–70, at pp. 56–8; J. Haldon, *Warfare, State, and Society in the Byzantine World, 565–1204* (London, 1999), pp. 99–106.

[89] *Karoli ad Fulradum abbatem epistola*, and *Capitulare Aquisgranense*, c. 10, *MGH Capit.* 1, pp. 168, 171.

[90] Halsall, *Warfare*, pp. 149–51.

be spent at markets[91]), while everyone had to transport supplies once an army entered the hostile territory of an adversary (Slavs, Bretons, Spanish Muslims, etc.). The use of *tractoriae* in the army therefore would have reduced, but not eliminated altogether, the need for pack horses, wagons, and (whenever possible) ships to carry food.[92] But these logistical challenges were surmountable for the typically short summer campaigns that the Carolingians favoured – that is, until the nature of warfare fundamentally changed in the 830s.

The disappearance of *tractoriae* and the rise of rapine

Why did *tractoriae* disappear in the second half of the ninth century? The last reference to these documents is found in Charles the Bald's 865 capitulary for *missi* that he sent to Burgundy. On that occasion Charles instructed his legates to make sure that counts' agents did not exact more supplies than their *tractoriae* authorized.[93] For Ganshof, the explanation for the disappearance of the *tractoria* was simple: the rise of feudalism.[94] In his eyes, the history of *tractoriae* illustrated the continuity of public institutions and the 'state' from the Roman empire through the reign of Charles the Bald, only to be usurped by rapacious 'feudal' magnates as the power of the late Carolingians waned. In this way, the fate of the *tractoria* for Ganshof summed up the momentous transition from Antiquity to the Middle Ages itself.

Yet the more recent rejection of feudalism as a helpful lens for understanding early medieval politics and society urges us to reassess Ganshof's explanation.[95] We can offer a more nuanced account of the disappearance of *tractoriae* that is rooted in ninth-century political change. Louis the Pious had reintroduced the *tractoria* into Frankish government in 818/19, during highpoint of the Carolingian empire. This was an era of relative peace and stability, when *missi* travelled far and wide on royal business and Frankish armies fought distant summer campaigns along the empire's far-flung borders. Yet this all began to change in the 830s. As is well known, two interrelated developments began to destabilize Carolingian Europe at that time: rebellions and civil wars among Louis the Pious's sons and the invasions of the Northmen.[96]

[91] Merchants and shield-sellers accompanied armies: *Annales de Saint-Bertin*, *s.a.* 876, ed. Grat, Vielliard, Clémencet and Levillain, p. 209.

[92] For the use of ships to support armies, see E.J. Goldberg, *Struggle for Empire: Kingship and Conflict under Louis the German, 817–876* (Ithaca and London, 2006), pp. 126–7.

[93] *Capitulare Tusiacense in Burgundiam directum*, c. 16, *MGH Capit.* 2, p. 332.

[94] Ganshof, 'Tractoria', p. 91.

[95] S. Reynolds, *Fiefs and Vassals. The Medieval Evidence Reinterpreted* (Oxford, 1994).

[96] Good overviews include Costambeys, Innes and MacLean, *Carolingian World*, pp. 213–22, 379–407, 419–27; C. Cooijmans, *Monarchs and Hydrarchs. The Conceptual Development of Viking Activity across the Frankish Realm* (London and New York, 2021), pp. 100–208.

These two factors – internal dynastic strife and external Norse invasions – profoundly transformed Carolingian warfare. No longer were wars primarily directed beyond distant fronters; now, military conflicts increasingly focused on the Frankish heartlands between the Rhine and Loire Rivers. This new climate forced rulers like Charles the Bald and his magnates to maintain a heightened level of vigilance so they could respond quickly to the threat of invasion.

This transformation of warfare seems to have impacted the use of *tractoriae*. In this heightened state of military preparation, magnates needed these documents, not intermittently to sustain their troops for short summer campaigns far from Francia, but for longer periods of time – including winters – in the heart of the empire. We see this in the bishops' appeal to Charles in 845/6 at the Synod of Meaux-Paris. At that moment, Charles faced threats on multiple fronts: the predatory policies of his brother Lothar I, open war with his nephew Pippin II of Aquitaine, and Scandinavian invaders along the Seine and Loire. Indeed, in 845 a group of Northmen sacked Paris itself and forced Charles to pay tribute for the first time.[97] This climate of political unrest and military vulnerability explains the west Frankish bishops' request,

> That the most Christian prince [Charles] give to each bishop a charter authenticated with the royal seal in the form of a *tractoria*, so that every bishop might have one in his possession. Thus, when he has need, he can gather the agents of the state [i.e., counts] with that charter and properly carry out his holy duty with the assembled agents of the state in whatever way public aid requires.[98]

This is the first mention of *tractoriae* authenticated with a royal seal, which suggests that bishops wanted these temporary documents altered to convey the permanent right to gather *stipendia* whenever they and the counts gathered. This hearkened back to the Merovingian charter for Corbie, which had confirmed the enduring right to collect supplies *perpetualiter absque renovata tracturia*.[99] In other words, the new climate of instability within Francia pressured Charles the Bald to modify *tractoriae* into documents bestowing lasting privileges. This was not a case of feudal magnates usurping *la puissance publique* for their own benefit, but rather of faithful royal agents trying to streamline their ability to serve the crown in a time of need. Seen in this light, the

[97] *Annales de Saint-Bertin*, *s.a.* 844, 845, ed. Grat, Vielliard, Clémencet and Levillain, p. 49; Nelson, *Charles*, pp. 135–59; and generally S. Coupland, 'The Frankish Tribute Payments to the Vikings and Their Consequences', *Francia* 26 (1999), pp. 57–75.

[98] *Konzilien der karolingischen Teilreiche, 843–859*, no. 11, c. 71, ed. Hartmann, *MGH Conc.* 3, p. 118 and n. 213.

[99] *Urkunden der Merowinger*, no. 171, *MGH DD Merov.* 1, p. 425.

most likely explanation for the disappearance of *tractoriae* after 865 is not 'feudalization' but regularization. By the second half of the ninth century, the rendering of daily *stipendia* to bishops and counts apparently had become so widely accepted that *tractoriae* were no longer needed. Their success had made them obsolete.

The problem was that, in this changed climate of constant vigilance and internal warfare, the demand for supplies to feed soldiers and horses was becoming heavier. The reality of persistent military preparation spurred Charles and his magnates (including a growing group of powerful lay abbots[100]) to build up larger military retinues that could respond with alacrity to Carolingian and Norse invasions. The growing size and more frequent mobilization of military households forced Charles and his supporters to collect more and more supplies at public expense. This explains why, beginning in the 830s and 840s, chroniclers expressed growing alarm about the crime of rapine (*rapina*) committed by hungry troops, whom they branded *raptores*.[101] *Rapina* was a technical term that, going back to Roman law, often designated unauthorized requisitions by soldiers.[102] Thus, when Charles met with his brothers at Meerssen in 847 to reaffirm their peace after a long period of civil war, they agreed 'that rapine and plundering, which hitherto have been carried out as if with legal right, be wholly forbidden', and they established tribunals to hear accusations of *rapina* brought forward by the poor.[103] It was around this same time that the Astronomer, with whom we began, composed his *Life of Emperor Louis* in which he celebrated the ruling kings' deceased father for reducing the exactions of his *milites* and vigorously prosecuting *raptores*.[104] Radbert of Corbie lamented that, since the 830s, great lords (*optimi*) used their authority to collect supplies as a tool to expand their *militiae*:

[100] Nelson, *Charles*, pp. 61–2.

[101] E.g., Nithard, *Historiarum libri IV*, 1.3–5, ed. E. Müller, *MGH SS rer. Germ*. 44 (Hanover and Leipzig, 1907), pp. 3–8; *Annales de Saint-Bertin*, *s.a*. 843, ed. Grat, Vielliard, Clémencet and Levillain, p. 44; *Annales Xantenses*, *s.a*. 842, ed. B. von Simson, *MGH SS rer. Germ*. 12 (Hanover and Leipzig, 1909), pp. 12–13. These chroniclers sometimes employed the terminology of *praeda* and *latrocinium* alongside *rapina*: E. Magnou-Nortier, 'The Enemies of the Peace: Reflections on a Vocabulary, 500–1100', in T. Head and R. Landes (eds), *The Peace of God. Social Violence and Religious Response in France around the Year 1000* (Ithaca, 1992), pp. 58–79, at pp. 69–79; G. Koziol, *The Peace of God* (Leeds, 2018), pp. 17–24; E.J. Goldberg, 'Rapine, the Common People, and the Capitulary of Ver (884)', in V.L. Garver (ed.), *Living in a Carolingian World* (forthcoming). I am currently writing a book about rapine and Carolingian armies.

[102] A. Berger, 'Encyclopedic Dictionary of Roman Law', *Transactions of the American Philosophical Society* 43.2 (1953), pp. 333–809, at p. 667.

[103] *Conventus apud Marsnam primus*, cc. 6–8, *MGH Capit*. 2, p. 69.

[104] Astronomer, *Vita Hludowici*, cc. 7, 53–4, ed. Tremp, *SS. rer. Germ*. 64, pp. 304–7, 498–500, 504.

> For now [in the 850s] there is hardly anyone who leads his soldiers by paying them *stipendia* either out of his own resources or from those lawfully collected instead of through *rapina* and violence . . . The more these people now surround themselves with *raptores*, the more powerful they become, so that no one can speak out against their acts of *rapina*.[105]

Hincmar likewise bemoaned the *rapina* committed by the retinues of Charles the Bald and his magnates. In several letters dated to 859, the archbishop accused the *homines caballarii* of the king and his *fideles* of committing widespread rapine and extorting unjust payments 'after receiving all necessary food and drink'.[106] He admonished Charles to imitate his predecessors and dismiss the multitude of retainers at the palace, 'men who come from their own homes with their entire households so they might live from the labour of others'.[107] Here Hincmar put his finger on the transformation of the late Carolingian military: that Charles the Bald and his *fideles* now kept larger military entourages with them for longer periods of time so they could respond quickly to invaders. In this new context, the collection of *stipendia* proved increasingly oppressive.

Charles the Bald and his successors never found a solution to this problem. When the elderly Hincmar dedicated his *On the Governance of the Palace* to Charles's grandson Carloman II (879–84) in 882, he again emphasized the need for the king to maintain control over the soldiers and vassals at court so that he and his officers 'could manage and support them without sin, that is, without rapine and theft'.[108] Indeed, Carloman II's two capitularies – the last two Carolingian capitularies that survive – focused exclusively on the crime of *rapina* committed by mounted troops.[109] In the end, Louis the Pious's vision of the orderly supplying of entourages and their horses through the use of *tractoriae* proved unable to deal with the new realities of dynastic

[105] Radbert, *Epitaphium Arsenii*, 2.15, ed. E. Dümmler, *Abhandlungen der königlichen preussischen Akademie der Wissenschaften zu Berlin* (Berlin, 1900), p. 83; translation modified from M. de Jong and J. Lake (trans.), *Confronting Crisis in the Carolingian Empire. Paschasius Radbertus' Funeral Oration for Wala of Corbie* (Manchester, 2020), p. 193.

[106] *Die Briefe des Erzbischofs Hinkmar von Reims*, nos. 125–7, ed. E. Perels, *MGH Epp*. 8.1 (Berlin, 1939), pp. 60–7, at pp. 63, 65–6 (quote). For context: Goldberg, *Struggle*, pp. 248–62.

[107] *Briefe des Erzbischofs Hinkmar*, no. 126, ed. Perels, *MGH Epp*. 8.1, p. 64.

[108] Hincmar, *De ordine palatii*, c. 5, ed. T. Gross and R. Schieffer, *MGH Fontes iuris* 3 (Hanover, 1980), pp. 80–2. Hincmar likewise addressed *rapina* at the Synod of Fismes (881): *Die Konzilien der karolingischen Teilreiche, 875–911*, c. 6.1–9, ed. W. Hartmann, I. Schröder and G. Schmitz, *MGH Conc*. 5 (Hanover, 2012), pp. 186–8.

[109] *Karlomanni capitula Compendii de rapinis promulgata* and *Karlomanni capitulare Vernense*, nos. 286–7, *MGH Capit*. 2, pp. 371–5. Carloman's threat of *harmscara* (p. 371, c. 2) highlights that these capitularies were aimed at mounted soldiers. On these last two capitularies, see Goldberg, 'Rapine'.

strife, Norse invasions, and larger military retinues that characterized the last decades of the Carolingian empire.

Louis the Pious's revival of *tractoriae* in 818/19 therefore was part of his larger efforts to reform Carolingian government. Through these documents, he sought to standardize and make more efficient the supplying of entourages and household troops of *missi* and other magnates, whether travelling on royal business or serving in the army. *Tractoriae* authorized the collection of daily *stipendia* for large numbers of people and horses that were raised through local taxation. The provisions they enumerate corroborate and nuance the Astronomer's report that Louis prohibited soldiers from collecting fodder from the common people. They indicate that Louis did indeed do this, but only in times of peace. When the army was mobilized, then his *tractoriae* permitted magnates to collect much more fodder for the horses of their troops. The disappearance of these documents during the second half of the ninth century is best explained by the widespread acceptance of rendering daily supplies to travelling magnates. However, the expansion and longer mobilization of military entourages beginning in the 830s to deal with Carolingian conflicts and Norse invasions made the collection of these supplies ever more oppressive. The result was the growing problem of rapine, which paved the way for the breakdown of Carolingian authority and political order that characterized the tenth century.

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