East meets West: Mounted Encounters in Early and High Mediaeval Europe

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Abstract – By the Late Middle Ages, mounted troops – cavalry in the form of knights – are established as the dominant battlefield arm in North-Western Europe. This paper considers the development of cavalry after the Germanic Barbarian Successor Kingdoms such as the Visigoths in Spain or the Carolingian Franks emerged from Roman Late Antiquity and their encounters with Islam, as with the Moors in Iberia or the Saracens (Arabs and Turks) during the Crusades, since an important part of literature ascribes advances in European horse breeding and horsemanship to Arab influence. Special attention is paid to information about horse types or breeds, conformation, tactics – fighting with lance and bow – and training. Genetic studies and the archaeological record are incorporated to test the literary tradition.

Keywords – Knights, cavalry, Moors, Crusades, Saracens, Islam, Byzantium, Visigoths, Normans, Arabs, Iberia, horses

I. INTRODUCTION – HORSE DOMESTICATION, USE AND TERMINOLOGY

I.1. Introduction

The Germanic kingdoms that established themselves in the Roman Empire of the West in the 5th C did not exist in a vacuum, they interacted with outside powers. Initially defensively, as Muslim forces first overran North Africa and then – in Iberia and Gaul – encroached on the European kingdoms as well; and further during the Crusades, as Europe transitioned from the defensive to the strategic counter-offensive.

The equine side of these encounters has received little attention, and where it has, statements are often made and conclusions drawn which at the very least require testing against the archaeological and literary record. Several authors hypothesise that European breeding and horsemanship received decisive impulses from these encounters – these hypotheses shall here be tested.

This article will summarise recent DNA research, track through some of the referenced sources on horses and horsemanship involved in these encounters, and seek to add to the information on the European equine landscape between Late Antiquity and the High Middle Ages (300-1250).

I.2. Domestication of Horses

It is now generally believed that horses were first domesticated in the Pontic-Caspian Steppe in the mid-Neolithic, roughly 6,000 years ago.[1] Genetic evidence suggests that horse domestication proceeded differently from the domestication of other animals, as even after domestication, there were repeated infusions of wild stock into domesticated herds.[2] Horse DNA shows a wide palette of roots, the "genetic bottleneck" observable with other domesticated species is not evident in horse DNA.[3] This would suggest that the behavioural and physiological differences between wild horse types and their domesticated cousins would have been small, unlike in other domesticated species.[4]

Already in the Bronze and Iron/La Tène Ages, there is (genetic) evidence of an exchange of horses both ways across the Straits of Gibraltar; subsequently, and certainly into the Late Middle Ages, there were populations either side of the Straits that were genetically virtually indistinguishable, though for the Western North African horse, the term "Barb", or Barbarian/Berber horse, has been used (i.e. "Barb DNA" was current in Iberia, but not the whole palette of Iberian DNA was present in North Africa).[5]

I.3. What Are Horses Used For

Functionally, the purpose of the horse can be grouped into four general (and partly overlapping) categories: Work; transportation; war; and pleasure. In the category "work",

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[1] Anthony, *Horse, Wheel, Language*, p. 196-205; Bendrey *et al.*, *Domestic Horses*, p. 91-92; Aberle/Distl, *Domestication*, p. 530.

[2] Aberle/Distl, *Domestication*, p. 530-531. Lopes *et al.* (*Lusitano horse*) and Warmuth *et al.* (*Holocene Refugia*) argue for a discrete domestication event on the Iberian Peninsula; supportive Cieslak *et al.*, *mtDNA Lineages* and Lira *et al.*, *Ancient DNA*; equivocal Bendrey *et al.*, *Domestic Horses*. Certainly, the Iberian Peninsula shows a broad palette of genetic markers, which is attributed to the survival of wild horse herds on the Peninsula during the last ice age. The Iberian Sorraia types still today show grey with a dark dorsal stripe, the typical mark of ancient DNA (Aberle/Distl, *Domestication*, p. 519; Luís *et al.*, *Sorraia*; Willekes, *Steppe*, p. 104); this was remarked upon by Albertus Magnus: *Color autem naturalis equi est qui in silvestribus deprehenditur cinereus, per dorsum linea fusca a capite usque ad caudam protracta* ("The natural colour of the horse that is caught in forests is ashen, with a dark stripe on its back from its head to its tail" – p. 1378).

[3] Anthony, *Horse, Wheel, Language*, p. 196; Cieslak *et al.*, *mtDNA Lineages*, p. 6.

[4] Lindgren *et al.*, *Limited patrilines*, p. 336; Jansen *et al.*, *mtDNA*, pp. 10905 and 10909-10910; this is still speculative, as today there are no genuine wild horse populations – the Przewalski horse, the only extant wild horse, is quite intractable, and it is genetically unlikely to be the ancestor of domesticated horses; Cieslak *et al.*, *mtDNA Lineages*, pp. 1-2; Aberle/Distl, *Domestication*, pp. 517-518. For this reason, it is also not possible to tell from conformation alone whether bones are from a domesticated or wild horse, unless characteristic wear from e.g. bridling can be detected (Bendrey *et al.*, *Domestic Horses*, pp. 96-99; Cieslak *et al.*, *mtDNA Lineages*, p. 1; Brandaris-Fontes *et al.*, *Retuertas Horses*, pp. 6-7). Varro refers to wild horses being found Iberia (p. 314).

[5] Willekes, *Steppe*, pp. 100-104; Vegetius refers to African horses of Iberian blood – below II.1.

horses may be used for field work (ploughing, harrowing), herding, hunting, hauling (lumber, barges, carts), mechanical power (e.g. mills or pumps) or carrying. Already for the great variety of work in which a horse is useful, many different – and incompatible – attributes are desirable. To the extent there is one, the only non-equine alternative in Europe was oxen (or human).

Due to the close link between horses, war, the mounted fighting classes and the wealthy classes in society, written tradition focuses on the war-horse;[6] evidence on the other uses of horses are more scarce, obliging us to rely on archaeology and treatises on animal husbandry, veterinary medicine and compendia.

And yet the variety of uses for the working horse has a profound influence on a society's attitude toward horses' conformation and breeding, as well as technological developments in rigging and tack. In Europe, the fighting and ruling classes' economic base lay in agriculture, which gave them a direct interest in husbandry. It also meant that appreciation for a horse's attributes (beyond size, speed and gait, to also dispositional attributes such as "cowiness", agility, sure-footedness, even temperament, easy-keeping or hardiness) were understood and appreciated in broad sections of society, not just specialists in or for the ruling classes, as was the functionality of different kinds of rigging and tack. Whether we believe that distinct breeds were already established in the Middle Ages, or horse selection for functionality was based on the properties of the individual mature horse (with the truth probably lying somewhere in between), it would have meant that exchange in horses was brisk and of keen interest to many levels of society.

There is a clear difference between Europe on one hand and North Africa as well as the Muslim Middle East on the other – among the latter, the horse-drawn cart all but disappeared after the dissolution of the Roman Empire. The Empire had maintained a road network, which carts depended upon, and which deteriorated or was deliberately destroyed after the collapse of Roman administration; on the other hand, the camel was an easy-keeping, off-road-capable beast of considerable burden.[7] As a consequence, neither draught horses nor sumpters feature in North Africa and the Middle East.

It is worth bearing in mind that Vegetius' 300-page *mulomedicina* deals with equine (and bovine) veterinary medicine for animals employed in all uses of a manor's operation, not

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[6] E.g. Carstens, *To bury a ruler*; Dizdar/Radman-Livaya, *La Tène Warrior*. Of course, military needs also influenced breeding: Gladitz, *Breeding*, p. 215. A knightly lance typically consisted of the knight himself; a sergeant as well (or nearly so) mounted and armed as the knight; one or two lightly armed auxiliaries; and a squire. With remounts and pack horses for tents, armour, ammunition, supplies, impedimenta, and paraphernalia, the entourage would have had 10-12 horses, of which one, at most two were dedicated "warhorses" – the remainder had civilian jobs in the running of the manor. The Carolingians focussed not just on the breeding of war horses, but also pack and draught horses essential for campaign logistics: Bachrach, *Carolingians*, pp. 119-121; Cardini, *radici*, p. 444, 453; for 14th/15th C Burgundy: Schnerb, *Bourgogne*, pp. 71-76.

[7] Wiet, *Moslem World*, p. 352-353; Hill, *Engineering*, p. 84-85; Retsö, *Arabs*, pp. 580-583.

just the prestigious ones. Some of Vegetius' treatments would have been quite expensive, but Vegetius explicitly warns against skimping on treating less valuable animals, at the risk of jeopardising the health of valuable animals in the same manor.[8] While other texts from Antiquity were sacrificed for writing material to record the lives of obscure local saints, the *mulomedicina* was copied and re-copied in the Latin West in different traditions for over a thousand years,[9] and served as model and basis for mediaeval veterinary treatises.[10]

I.4. Terminology

"Breed" v. "Type"

There is considerable controversy on the question of pre-modern breeds. In the strict sense, a "breed", with its reliance on a stud book or register, is a modern artefact. Geographical descriptors were certainly used already in Antiquity, and certain conformational or dispositional features attributed to horses from a particular region; brands were used to denote provenance and to "brand" the horses in the marketing sense of the term.[11] But what the breeding standards or criteria were, we do not know – specifically, we do not know whether there were efforts to keep blood lines pure.[12] In any event, attempts to trace the origins of modern breeds back to the Middle Ages – or even Antiquity – are generally a fool's errand.[13]

As Willekes correctly points out, there is a lot more to a horse than size and colour; conformational (especially the length of the back) and dispositional attributes are of great practical importance.[14] An obviously horse-wise author like Vegetius refers to these "soft" attributes in evaluating different horses or characterising regional types, demonstrating a sensitivity for these traits and their currency in horse-related discourse.

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[8] Mezzabotta, *Multiculturalism*, p. 54-58 – scholarship seems to be satisfied that the Vegetius of the *mulomedicina* is the same as the one of *de re militari*, and that the text is pretty much integrally his; he was likely either a wealthy landowner and/or a military official dealing with cavalry remounts.

[9] Poulle-Drieux, *soigner chevaux*, p. 144. See the discussion on the tradition and editions in Lommatzsch, p. XXVI and generally the introduction; also Lazaris (*Hiéroclès*), who shows that 14th C Byzantine veterinary manuscripts reflecting a text from the 3rd C were influenced by European manuscripts, thus suggesting a two-way exchange between Byzantium and Europe.

[10] Overview with Poulle-Drieux, *soigner chevaux*; *ead.*, *chevaux malades*, pp. 157-165: The medical principles followed the theory of humours, but until the 14th C did not involve magic. While the purpose of the science was acknowledged to be commercial (i.e. the objective and criterion was a working horse), there is concern about avoiding pain.

[11] Willekes, *Steppe*, pp. 112-116.

[12] Classical authors were sensitive to blood-line, but only Columella gives it prime importance: Gladitz, *Breeding*, pp. 201-202.

[13] Willekes, *Steppe*, pp. 23-24.

[14] Willekes, *Steppe*, pp. 116-118 and *passim*.

"Arabian", "Arab", "Iberian", "European"

I shall use "Arabian" to refer to horses, and "Arab" to refer to humans. "Iberian" refers to all Peninsular horses, including Lusitanos. "European" shall refer to the Germanic tribal kingdoms of mainly north-western Europe. The term thus excludes Byzantium and non-Germanic (Huns, Slavs, Avars etc.) tribes. Generally, however, ethnonyms are used purely by convention and for convenience.

"Light" and "Heavy" Cavalry

The term "light cavalry" is used for mounted fighters who are not armoured and not used for closing with either infantry or cavalry in combat; their typical weapon is the bow. "Heavy cavalry" is intended for close-quarter combat with infantry or other cavalry; the trooper would normally have some body armour, possibly including protection for the horse, and fight with lance or sword. The categorisation is not clean, as e.g. the Byzantines, the Visigoths and later the Mamlukes used well-armoured mounted archers. "Light horse" denotes soldiers who move mounted, but dismount to fight.

"Cavalry-Heavy" Armies

"Cavalry-heavy" suggests that the cavalry arm makes up as much as one quarter to one third of the total battlefield force, which in turn may (but not necessarily does) imply that cavalry may be assigned the traditionally infantry job to seize and hold ground. In any event, infantry still made up the bulk of the battlefield forces. Throughout history, and certainly during the time under review, reasonably well-equipped infantry have regularly been able to defeat cavalry attacks so long as the infantry maintained cohesive formation.

It is not easy to differentiate between true cavalry and light horse – in all likelihood, contemporaries did not make this distinction as a category, and a trained fighter was as capable of fighting mounted as he was on foot.

Stirrups, Horseshoes, etc.

While the introduction of the stirrup, the nailed horseshoe and other innovations no doubt had an influence on the issues dealt with in this paper, it is my considered view that they brought incremental, evolutionary change, not revolutionary change.[15] Also, it is sufficiently clear that none of the parties dealt with in this paper had any overwhelming tactical advantage from the early introduction of these technologies. Therefore, these developments will not be addressed here.

Translations

Translations are mine unless otherwise indicated.

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[15] E.g. Lazaris, *fer à clous*; *idem*, *Antiquité*, p. 250 and *passim*; Dibon-Smith, *Stirrup*; Nettles, *Mamluk*, pp. 188-190; Nicolle, *Technology*, pp. 338-341; Khorasani, *Iran*, p. 71; DiMarco, *Warhorse*, pp. 91-93.

II. LATE ANTIQUITY, THE VISIGOTHS AND THE FRANKS

II.1. Late Antiquity and the Germanic Successor Kingdoms

Already in Antiquity, writers opined on the quality of horses from certain regions. Well known are the references with Xenophon, Pliny the Elder[16] or Vegetius:

VI. De signis, quibus agnoscitur patria.	On the signs by which the origin can be known
… Quae res nos compulit, qui per tam diversas & longinquas peregrinationes equorum genera universa cognoscimus, & in nostris stabulis saepe nutrivimus, uniuscujusque nationis explicare signa vel merita.	… This state of affairs compels us, who have on our many and long journeys come to know all kinds of horses and have raised them in our stables, to explain the distinguishing marks and merits of each nation[al horse].
Nam ut viliora ministeria taceamus, equos tribus usibus vel maxime necessarios constat: proeliis circo sellis.	To ignore the common uses, horses are necessary for particularly three uses: War, racing, and the saddle.
Ad bellum Huniscorum longe prima docetur utilitas patientiae, laboris, frigoris, famis; Toringos dehinc et Burgundiones iniuriae tolerantes, tertio loco Frigiscos non minus velocitate quam continatione cursus invictos, postea Epirotas, Samaricos ac Dalmatas, licet contumaces ad frena, armis habiles asseverant.	For war, it is taught that the Hunnish horse's utility is the best by far due to its patience and [tolerance of] work, cold and hunger; Thuringians and Burgundians are tolerant of abuse, in third place *Frigisci*[17] are unvanquished no less for their speed than for their endurance, then the Epirotes, the *Samarici*[18] and from Dalmatia – though they are impatient of the bridle, they persevere in capability of arms.
Curribus Cappadocum gloriosa nobilitas, Hispanorum par vel proxima in circo creditur palma. Nec inferiores prope Sicilia exhibet circo, quamvis Africa Hispani sanguinis velocissimos praestare consueverit.	Of the racers, the Cappadocians[19] have glorious nobility; to the Iberians goes the distinction of being believed to be their equal or runner-up on the racetrack. Nor does Sicily show inferior horses on the racetrack, while Africa tends to supply exceedingly fast ones of Iberian blood.

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[16] *In eadem Hispania Gallaica gens est et Asturica; equini generis hi sunt quos tieldones vocamus; minore forma appellatos asturcones gignunt, quibus non vulgaris in cursu gradus, sed mollis alterno crurum explicatu glomeratio, unde equis tolutim carpere incursum traditur arte* (Also in Iberia is the "Gallaica" and "Asturica" breed; these are the horse types we call palfreys; smaller ones called "Asturcones" are raised, which don't have the usual step in running, but a soft trot of an alternate beat of the legs, from which is handed down to the horses the art of the fast, high-trotting pace) – Pliny's vocabulary is not always clear; Pliny the Elder, *naturalis historia*, Book 8, LXVII, 166; Willekes, *Steppe*, p. 103.

[17] It is not clear whether this refers to "Phrygians" (next door to prominently mentioned Cappadocia); "Frisians" is also a possible interpretation, as in Hyland (*Warhorse*, p. 67).

[18] According to Junkelmann (*Reiter I*, p. 33) from the Somme area in northern Gaul.

[19] Philostorgius, who himself was from Cappadocia, relates in his *Ecclesiasticae Historiae*, Book 3, §4 / p. 27 that Constantius (Emperor 337-361) sent an embassy and a gift of 200 Cappadocian horses to Sheba in Arabia (from the context likely Yemen).

Ad usum sellae Persis provinciis omnibus praestat, equos exhibet patrimoniorum censibus aestimatos, ad vehendum molles et impigros, incessus nobilitate pretiosos. Sequuntur Armenii atque Sofoeni: in qua parte nec Epirotas Siculosque despexeris, si mores ac pulchritudo non deserat.	For saddle use Persia stands out before all other regions, it produces horses appreciated by the judgement of our fathers, for riding soft and willing, valued for their noble gait. Next are the Armenians and the *Sofoeni*[20]: in this regard, do not disdain the horses from Epirus or Sicily, if attitude and beauty are not missing.
Huniscis grande et aduncum caput, extantes oculi, angustae nares, latae maxillae, robusta cervix et rigida, iubae ultra genua pendentes, maiores costae, incurva spina, cauda silvosa, validissimae tibiae, parvae bases, plenae et diffusae ungulae, ilia cavata totumque corpus angulosum, nulla in clunibus arvina, nulli in musculis tori, in longitudine magis quam in altitudine statura propensior, venter exhaustus, ossa grandia, macies grata et quibus pulchritudinem praestet ipsa deformitas.	The Hunnish horses have a large and hooked head, protruding eyes, narrow nostrils, wide jaws, a strong and rigid neck, manes hanging down to their knees, large ribs, a bent spine, bushy tail, very strong legs, a small base, full and spread hooves, a hollow abdomen; the whole body is angular, no fat on their croup, smooth muscles, tending to have a conformation that is long rather than tall, a deflated stomach, coarse bones, they are thin and their deformity itself lends them beauty.[21] They have a moderate and prudent disposition and are tolerant of wounds.
Persae statura et positione a ceteris equorum generibus non differunt plurimum, sed solitus ambulaturae genere: nam quadam gratia discernuntur a ceteris: gradus est minutus, celer et qui sedentem delectet et erigat, nec arte doceatur sed naturae velut iure praestetur. Inter tolutarios enim et eos, quos totonarios vulgus appellat, ambulatura eorum media est et cum neutris sit similis, habere creditur aliquid ab utroque commune. His, sicut probatum est, in brevi amplior gratia, in prolixo itinere minor patientia, animus superbus et nisi labore subiugetur assiduo, adversum equitem contumax; mens tamen prudens et quod mirum sit in tanto fervore, cautissma decoris, incurvata in arcum cervix, ut mentum recumbere videatur in pectore.[22]	The height and stature of Persian horses does not differ much from other horse types, except in their habitual gait: for in this they distinguish themselves from other: the step is short, fast and pleases and supports the rider, and it is not taught but as if prescribed by a law of nature. Their gait is a medium one between the high-stepping trotters and those the common man calls gallopers, not similar to either, it seems to have something in common from both. As has proven, they are more pleasing in short journeys, impatient on long ones; they have a haughty attitude and if they are not put to diligent work, disrespectful of the rider. Their mind is prudent and, which is surprising with such fire, highly mindful of propriety – their neck is curved in an arc, and the chin appears to rest on the chest.
VII. de temporibus vitae	**On life expectancy**
Aetas longaeva Persis, Hunniscis, Epirotis, ac Siculis: brevior Hispanis ac Numidis.	Persian, Hunnish, from Epirus and Sicilian horse have a long life; shorter for Iberian and Numidian.

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[20] Unclear – Junkelmann (*Reiter I*, p. 34) reads this as *sapharani* (western Arabia).

[21] For the Latin equine body parts vocabulary, see also Junkelmann, *Reiter I*, p. 33.

[22] Vegetius, *mulomedicina*, ed. Lommatzsch, Book III Cap. VI (p. 249-251); *idem*, ed. Gesner, Book IV Cap. VI (p. 275-277). My translation, though I have also referred to the partial translations in Mezzabotta (*Multiculturalism*), Hyland (*Warhorse*) and Junkelmann (*Reiter I*, pp. 32-34).

The mainstay of the Roman Army into the 3rd C was the Legionary heavy infantry; the cavalry *alae*, typically raised locally or from horsey "barbarian" tribes, were mere auxiliaries.[23] In the 3rd C, Roman military organisation changed in step with the economic situation and with the threats it faced: the Empire downgraded static defence at the border, and switched to a dynamic defence in depth. This meant fortifying the main cities and strategic points inside the Empire and defending them with locally-raised infantry militia; attacking mounted raiders, mobile but unsophisticated in siege warfare, having breached the border screen would be pinned against the "anvil" of the fortified town and hit by the "hammer" of a strong, highly mobile and élite mounted rapid reaction force, which could fight on foot or as cavalry. The Roman forces became more cavalry-heavy,[24] relying on cavalry drawn from the Empire's Celtic, Germanic and other tribes.[25] Military manuals – Vegetius, Arrianus – dealt in great detail with cavalry training.[26]

In the Germanic tribal kingdoms that in the Western Empire gradually supplanted Imperial provincial administration from the 4th or 5th C onwards, the military organisation and tactical doctrine instituted by Imperial Rome continued.[27]

The evolution of the Roman Army's *ordre de bataille* in Late Antiquity and contemporary reports on the Germanic tribes' fighting customs very strongly suggest that the Germanic tribes (at least the nobility and its retainers) were comfortable with mounted warfare as well as skilled and effective at it.[28] Specific weaponry, e.g. the heavy lance, and tactics –

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[23] Speidel, *Warriors*, pp. 121-122; Junkelmann, *Reiter II*, pp. 54-58; also Dizdar/Radman-Livaja, *La Tène Warrior*, p. 219; Radman-Livaja, *Roman Army*, pp. 166-181.

[24] Radman-Livaja, *Roman Army*, p. 183; Eisenberg, *Adrianople*, p. 110; Speidel, *Caesar*, pp. 150-151: In the early Principate, the ratio of infantry to cavalry was 10-to-1 (or even 12-to-1); by the Battle of Adrianople 378, it was about 3-to-1. Ambivalent to the notion: Halsall, *Worlds*, pp. 522-523.

[25] Thompson, *Early Germanic Warfare*, p. 5; Speidel, *Caesar*, *passim*.

[26] Junkelmann, *Reiter II*, pp. 175-182; Bachrach, *Carolingians*, p. 51 and *passim*; Willekes, *Steppe*, pp. 291-296; Nettles, *Mamluk*, pp. 121-122: one of the exercises (*ἱππικά γυμνάσια*) – technically challenging and not without danger – is called the "Cantabrian Run" (*Κανταβρικη τις καλουμενη επελασις*), after that north-western Iberian tribe: Arrianus, *Ars Tactica*, pp. 89-90; Junkelmann, *Reiter II*, p. 180 (with diagram).

[27] Bachrach, *Merovingians*; Bachrach, *Carolingians*, pp. 51-54; Settia, *Rapine*, p. 172.

[28] Ref. Fn 40; for the Visigoths see Fn 34; Franciscus Irenicus in Book II, Cap XXIV (on p. 67) writes: *Fuit & Germanis familiare, in gyrum equos vertere, ac in altum levare. Ostendit hujus rei argumentum Maximinus Caesar, qui à Germanis utrisque parentibus ortus (patre enim Gotho ac matre Alana) hoc usu tenebatur. Nam equos in circulos vertere barbarica consuetudine, ut Symmachus Lib. Histor. V. ac Jordanes testantur, semper experiebatur* (The Germans tended to turn their horse in narrow turns, and make them rise up. Evidence of this is provided by Caesar Maximinus [I Thrax, or C. Julius Verus Maximinus Augustus, 173-238, emperor 235], descended from German parents on both sides (a Gothic father and an Alan mother), who used to do this. For it was a barbarian habit to turn horses in circles, as Symmachus in Vol. 5 of his 'History' and Jordanes attest.) See Iordanis, p. 78-80. Aurelius Victor (N. 21 / p. 25): *Alamann[orum] gen[s]*

complemented by relevant training – reinforce the proposition. So while technological advances, especially the stirrup,[29] were important to the development of tactics, it was in all likelihood not the case that the technological progress caused the tribes to switch from foot to mounted, but that an already effective horse wing further expanded its capabilities.[30]

II.2. The Visigoths

The Iberian Peninsula had been among the first non-Italian provinces of the Roman Empire, acquired in the context of the Punic Wars and already then a supplier of cavalry and mounts to the Roman Army. A comprehensive analysis of Late Antiquity bit finds shows a sophisticated horse culture.[31] In 470, the Visigoths occupied Iberia[32] and by the late 7th C had established a proto-feudal order[33] with a strong emphasis on the cavalry arm: Nobles were well-armoured and formed a "heavy cavalry" nucleus, their retainers were less well armoured and rated more as "light cavalry". Unusually for Germanic horsemen, horse-archers were an integral part of the force make-up.[34]

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populos[a] ex equo mirifice pugnan[s] (the Alamanni are a numerous people that fight marvellously on horseback). Archaeological evidence with Dizdar/Radman-Livaja, *La Tène Warrior*.

[29] The stirrup is not crucial for lance-work; both literature and iconography show lances (and bows) being used effectively long before the advent of stirrups, and the Roman saddle, with its high cantle and double horn/bucking rolls, provides a more than sufficient fighting platform. I am grateful to Michael Theren as well as Samuel and Jack Gassmann for these observations.

[30] Ayton, *Horses*, p. 188; Nettles, *Mamluk*, pp. 188-190.

[31] Ripoll/Darder, *Frena Equorum*, esp. pp. 352-353. Also Domínguez, *Jinetes*, esp. pp. 225-233. Junkelmann, *Reiter*, II pp. 54-58. The 7th C *leges Visigothorum* – which unlike other Germanic successor kingdom codes did not differentiate between Roman and Germanic citizens – contain numerous provisions dealing with horses and horse-related events.

[32] Generally: Collins, *Visigothic Spain*. Political and military organisation: Gallegos, *Ejército Visigodo*; Morín, *Ejército Visigodo*, pp. 30-36.

[33] Morín, *Ejército Visigodo*, p. 36-37; King, *Visigothic Kingdom*, p. 62, 215-216 and *passim*. Isidore of Seville, in his *laus Spaniae*, includes Iberian horses among his panegyric (p. 267): *Tibi cedet Alfeus equis …, quamquam volucres per spatia Pisaea quadrigas Olympicis sacer palmis Alfeus exerceat … Tu … nec equorum cursu tuorum Eleis curribus invidebis. … tibi fons equi genitor* (Translation Wolf, pp. 79-80: Alpheus yields to you in horses…, although Alpheus, regarded as sacred for his Olympic victories, exercised fleet chariots on the track of Pisa… [N]or do your horses run less swiftly than the Elian chariots… You have a spring that fathered a horse).

[34] Cardini, *radici*, p. 443; Morín, *Ejército Visigodo*, p. 36-37; more cautious López/Catalán, *equipamiento militar*. The mounted bow may originate with the Byzantines, who recaptured parts of Southern Spain (and North Africa) in 552 and held it until ousted by the Visigoths in 624.

II.3. The Carolingians and Ottonians

An analysis of the archaeological record in Northern France shows that while the average size of other livestock (especially ovines and bovines) declined between Late Antiquity and the Merovingian era, equines (horses and mules) did not: the average height of horses remained constant at 139 cm (roughly 13¾ hands) throughout the period, and horses grew more slender. Both factors strongly suggest that even while Roman sheep and cattle breeding skills were lost, horse breeding skills and know-how were maintained, and breeders were able to improve their stock in a targeted fashion.[35]

Gregory of Tours in his *Historiae Francorum* relates an episode in the war against the Thuringians where the Frankish cavalry were faced with camouflaged pits on the battle-field, but adapted to the challenge and decisively beat the enemy.[36] The late 6th C *Strategikon* acknowledges the fighting skill, both mounted and on foot, of the Frankish warriors whom the Byzantines encountered in Italy,[37] but the Western lands of the former Roman Empire did not develop the strategic literature the Eastern Empire did. That does not mean the subject did not receive attention; in the Germanic successor kingdoms, Vegetius' *de re militari* was known and read, and Hrabanus Maurus summarised and excerpted Vegetius for his monarch Lothar in his *de procinctu Romanae militiae*.

The work is instructive: His short summary concentrates on mounted combat, which was the focus of Carolingian military tactics. Hrabanus was at pains to emphasise that he took those parts of Vegetius that were relevant to the Frankish military effort at the time, and

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[35] Baillif-Ducros/Yvinec, *cheval de monte*, p. 14 (after a dramatic increase in height during the La Tène / Iron Age Period); Junkelmann, *Reiter I*, pp. 250-253; Clark, *Horse*, pp. 23-32; Cardini, *radici*, p. 477. On the early mediaeval decrease in size of ovines and bovines in the Alamannic area: Kokari, *Haustiere*, pp. 331-332. By comparison, an analysis of horse burials of the Elblag group (i.e. in the Baltic, outside the Roman Empire) in the late Migration Period shows heights of 125-133 cm (12¼-13 hands): Kontny/Okulicz-Kozaryn/Petrzak, *Elblag Horse Graves*, p. 169. Junkelmann (*Reiter I*, pp. 43-44), who supplemented his academic analysis with thoroughly researched recreations, finds that a well-conditioned, medium-build horse of 145 cm (14¼ hands) and a weight of 400 kg (850 lbs) is perfectly capable of heavy cavalry warfare; similarly Hyland, *Warhorse*, p. 86, based on archaeological horse-shoe evidence, and *ibid.* Fn 27. In an 878 letter, Bishop Solomon II of Constance waxes lyrical about a horse he is about to send to Bishop Antonius of Brixen, with emphatic instructions about how to, and not to, treat the horse to obtain best performance on the battlefield and off (MGH – Leges, Formulae Merowingici et Karolini aevi (Hannover: Hahn, 1886), p. 422).

[36] Baillif-Ducros/Yvinec, *cheval de monte*, p. 17; Bachrach, *Carolingians*, p. 184; Gregory of Tours, Book 3, chapter 7 (p. 114). On the other hand, a similar device "nonplussed" the attacking Meccan cavalry at the Battle of the Ditch before Medina in 627 – Hill, *Camel*, p. 40.

[37] … while deploring their lack of discipline: Baillif-Ducros/Yvinec, *cheval de monte*, p. 17; Bachrach, *Carolingians*, p. 121; Cardini, *radici*, pp. 433-435. The conjecture that Pippin I moved the muster from March to May in the mid-8th C because the Franks had introduced cavalry and now needed to muster when grass was available is based on misunderstanding: Bachrach, *Marchfield*.

left out those that no longer applied.[38] As one of the few contemporary comments, he repeats the evidently current proverb that *in pube posse fieri equitem, maioris uero aetatis aut uix aut numquam.*[39]

Certainly still (or again) in Carolingian times, the sources document highly sophisticated mounted unit manoeuvres, which would not have been possible with inferior stock or horsemanship, such as the training exercise described by Nithard, where two groups of mounted units from different tribes alternately attacked, and retreated from, each other.[40] The passages clearly illustrate training for mounted combat; if the horses had been used merely to carry the warrior to battle for dismounted fighting, no such elaborate manoeuvres would have been practiced.[41]

Literature bears this out. This manoeuvring, this time in battle, also appears to be described in a passage from the *Carmen de bello Saxonico* (probably winter 1075-76):

> *Procurrunt equites ex agmine regis alacres / Exultantque suis flectentes colla caballis*
> *Alternos ineunt discursus atque recursus, / Versuras celeres duplicantque decenter equestres*
> *Ac desiderio pugnandi bella lacessunt.*[42]

From Nithard's passage and other sources, it seems clear that the focus on horsemanship was not limited to the Franks, but prevalent with other tribes as well.

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[38] *…ex cuiusdam Flavii Vegetii Renati libello […], cavens scilicet prolixitatem et ne forte ea scribere viderer quae tempore moderno in usu non sunt*; Hrabanus Maurus, p. 450 [Dedication]; Bachrach, *Carolingians*, p. 86. In Carolingian times, a knowledge of the military literature of Antiquity was part and parcel of a young nobleman's education: *ibid.*, pp. 72-75. Nettles, *Mamluk*, pp. 114-116.

[39] "A horseman can be made from a young age, but from an adult rarely or not at all": Hrabanus Maurus, p. 444 (Chapter III).

[40] Nithard (III. 6.), p. 38; Gassmann, *Cavalry*, p. 151; Bachrach, *Merovingians*, p. 121-131; Bachrach, *Carolingians*, pp. 124-130. William the Conqueror's victory at Hastings 1066 was premised on the success of just such a manoeuvre (Bachrach, *Carolingians*, p. 178). The manoeuvre is already attested to the Celtic/Germanic tribes in Arrian's *ars tactica* (p. 95; Speidel, *Caesar*, 112-113). Gillmor, *Training* (pp. 10-17), details such cues as rapid successive lead changes and collection in 10th C manoeuvres and actions described (also Willekes, *Steppe*, p. 244, 282). Clearly, once the couched-lance charge was introduced, this skill was no longer universally practiced – 15th C Burgundian knights were surprised to see Gascons and Italians execute *volte-faces*: Schnerb, *bourgogne*, p. 81.

[41] Hyland's contention that in Europe, the horse only became a war-horse in Carolingian times and had until then been mere transport (*Warhorse*, p. 57), is contradicted.

[42] *Carmen de bello Saxonico*, p. 1227, line 170: "The lively knights canter forward from the king's host / Rejoicing and arcing the necks of their horses / Taking turns to advance and fall back / And double skilfully in fast mounted turns / And in a desire to fight, challenge battle." "Arcing necks" suggests the manoeuvre was done at a collected canter; at other times, authors use *laxis habenis* ("with loose[d] reins") to denote headlong flight or giving the horse its head in pursuit.

Individual horsemanship skills too are recorded:[43]

> … *coepitque vertibilem equum modo impetus vehementi dimittere, strictis modo habenis retrahere. … Cumque in eo esset, ut mutuis sese vulneribus figerent, more solito Bagoarius equo versili varios perplexosque per amfractus coepit discurrere, quatinus iis argumentis Hubaldum posset decipere. Verum cum hac arte terga verteret, ut mox rediens Hubaldum ex adverso percuteret, equus, cui Hubaldus insederat, vehementer calcaribus tunditur et per scapulas, antequam reverti Bagoarius posset, lancea ad cor usque perforatur. Hubaldus igitur freno Bagoaricum percipiens equum…*

Or the following from the *Ligurinus*:[44]

> … *vanamque superbus / Ostendans artem, rapido modo turbine vectus / Quadrupedantis equi, nunc certa lege reductis / In gyrum frenis, sinuosa volumina torquens / …*

European sources throughout the period refer to Iberian horses as the preferred or at least highly regarded;[45] Charlemagne sent his colleague-in-office Harun al-Rashid, among other things, a gift of Iberian horses.[46] William the Conqueror supposedly rode an Iberian

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[43] Liudprand, *Antapodosis*, p. 20 (Cap. XXI – from the 889 war between Berengar I of Friaul, king of Italy, and Duke Wido III of Spoleto): "… he [the Bavarian] began to now let his agile horse surge forward, now rein it back hard. … When they were in such a position that either of them could wound the other, the Bavarian began to run through his accustomed routine of varied and perplexing turns with his agile horse, confusing Hubaldus with these actions. Yet as he turned his back on Hubaldus in one of these moves, so that he might, in soon reversing, strike Hubaldus at a disadvantage, Hubaldus gave the horse on which he sat a sharp kick with the spurs and struck the Bavarian through his shoulder-blades to the heart before he could turn around. Hubaldus then took the Bavarian horse by the bridle…"; Gillmor, *Training*, p. 13.

[44] Gunther Poeta, p. 398: "…and proudly showing vain art, [he was] carried in rapid gait in the whirl of his four-legged horse, now by firm technique of tightened reins into a circle, winding tangled paths, …".

[45] I.e. from the parts of the Peninsula then again under Christian control: Bumke, *Höfische Kultur*, p. 239-240; Gladitz, *Breeding*, pp. 160-164; Hyland, *Warhorse*, *passim*. Davis (*Warhorse*, p. 53) refers to a passage in Ermoldus Nigellus (Liber II, line 475-476, p. 487), involving Frankish horses: *Donat equos varios praestantia colla ferentes, / quorum vix poterant scandere dorsa sui* (He [Emperor Louis I] gives as gift various horses carrying their necks high, whose backs they could hardly mount). Davis doubts the horses were so tall, as contemporary illustrations show smaller horses.

[46] Notker Balbulus in the *Gesta Karoli Magni*, II 9 (p. 63): *Porro autem imperatori Persarum direxit indefessus Augustus equos et mulos Hispanos, pallia Fresonica alba, cana, vermiculata vel saphirina, quae in illis partibus rara et multum cara comperit* (Further then the indefatigable King ordered to be sent to the Emperor of the Persians horses and mules from Iberia, Friesian capes in white, grey, scarlet and sapphire, which in those parts are rare and very expensive).

horse,[47] as did Richard the Lion-Heart in the Fourth Crusade.[48] In Heinrich von dem Türlin's Arthurian romance from the early 13th C, Sir Kay travels to "Alab" to obtain Iberian horses.[49] Ambassadors of the Queen of Spain in 1235 brought Emperor Frederick II "exceedingly beautiful chargers and magnificent gifts".[50]

II.4. High Middle Ages: The Normans in Southern Italy and Sicily

Around 1040, the Normans in Southern Italy under Robert "Guiscard" decided to leverage their military prowess for their own benefit, and no longer for that of their erstwhile employers. In a series of engagements, the Normans succeeded in defeating Byzantines, Lombards, Papal forces, and – on Sicily – Saracens or Moors to win dominion over the island, Calabria and Apulia.

Unfortunately, very little information has come to us about these engagements, though it appears reliably sure that the Norman heavy cavalry played a key role in the Norman successes. In the long drawn-out fighting on Sicily, very small numbers of Norman knights repeatedly beat cavalry-heavy Saracen forces.[51]

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[47] Wace, p. 329, lines 7557-7562: *Son boen cheual fist demander, / Ne poeit l'en meillor trouer: / D'Espaigne li ont enueie / Vns reis par mult grant amistie, / Arme ne presse ne dotast, / Se sis sires l'esperonast* (Then the duke called for his good horse; a better could not be found. It had been sent him by a king of Spain as a token of friendship. Neither arms nor throng did it fear, when its lord spurred on – Wace, translation Taylor, p. 167).

[48] Gladitz, *Breeding*, p. 164.

[49] Heinrich von dem Türlin, *diu crône*: *Her Kay li senetschas / der reit gein Hyspanje / Und brahte gein Britanje / Vil manig gut schnelles marck / Hohes schönes und starck / Das artus zu dem hove gab / Man brahte ÿme von alab / Vil manige[n] mule blantzen /* … (Sir Kay the seneshal rode toward Iberia and brought to Britain much good and fast stock, tall, beautiful and strong, which Arthur made gifts of at court; they brought from Alab many white mules…). "Alab" is presumably Álava, in the Spanish Basque region. Bumke, *Höfische Kultur*, p. 239.

[50] *Ibidem nuncii regine Hyspanie affuerunt, qui pulcherrimos dextrarios et magnifica munera attulerunt*; *Chronica regia Coloniensis*, p. 264.

[51] For the section Theotokis, *Norman Dukes*, pp. 154-188; Metcalfe, *Muslims*, pp. 88-100. Also Nicolle, *Technology*, pp. 408-410. The Hohenstaufen kings of Sicily retained a personal bodyguard of Saracens, referred to in the journals of Mattheo de Giovenazzo. Southern Italy was renowned for horse breeding in the 14th C: Davis, *Warhorse*, pp. 62-63.

The 11th C *Carmen in victoriam Pisanorum* supports the notion of fleet Saracen horses (p. 62): *Docti retro et sueti fugendo respicere, valent melius in fuga hostes interficere, leves super omnes gentes, in giro volubiles, macris equis insidentes, corporibus ductiles.* (Trained to retreat and used to looking back in fleeing, they [the Saracens] are better at killing enemies in retreat, they are lighter than anyone else, with agile bodies, they turn on a dime sitting on their skinny horses).

II.5. Military Manoeuvring – Tournaments

In the early days of tournaments, into the 11th C, the designated tournament site was "an area between two towns", and the tournament not a series of set-piece matches, but of two opposing forces. Into the 14th C, tournament organisers were careful to specify whether an event featured merely jousting, or included a *mêlée*, which could feature teams of scores of horsemen each.[52] If we are reading this correctly, the early, and the later *mêlée*, tournaments were an opportunity to train large-unit manoeuvres.[53]

III. THE NEIGHBOURS – BYZANTINES AND ARABS

III.1. Byzantines

After the disintegration of the Roman Empire in the West, the Roman Empire in the East (Byzantium) turned military practice into a science; military commands became a respected career, general officers were expected to contribute to academic military literature in a process not unlike modern staff colleges.[54]

Kunselman writes the following about Byzantine cavalry in the early 7th C, describing the forces confronting the Arab armies:[55]

> The Byzantine army was built around the mobility of the cavalry. Light cavalry provided by the *themes* and some *fedorati* patrolled the vast frontiers and conducted raids against enemies. The Imperial heavy cavalry acted as a strategic reserve and would move to trouble spots as needed. […]
>
> The core of the Byzantine army was the very well equipped and professional Imperial cavalry. This was a multi-purpose force, which could both fight at a distance or charge with shocking force into an enemy army. This force had several names over the centuries, including *Scholae, Comitatus,* and *Kataphraktoi* but it was always a highly professional and elite force.
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> The professional soldier of the Imperial cavalry was the best-trained and equipped warrior of his age. He trained to "shoot rapidly mounted on his

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[52] Initially up to 200 per side: Barber/Barker, *Turnier*, 23; one of the last true *mêlées*, in 1393, featured teams of 50: Brown, *White Bear*, p. 319; a site large enough to accommodate 100 moving horses is huge – by comparison, a polo field measures 270x150m for eight horses.

[53] Barber/Barker, *Turnier*, 21-23; Gillmor, *Training*, pp. 18-20; Nettles, *Mamluk*, p. 201.

[54] On the tactical manuals Dennis, *Byzantines*, p. 166-167; Nettles, *Mamluk*, pp. 110-114.

[55] Kunselman, *Arab-Byzantine War*, pp. 62-63; footnotes in the quoted text are mine. Cardini, *radici*, pp. 430-435. Comprehensively on the Byzantine army up to 1081: Treadgold, *Army*.

horse at a run."[56] He performed regular formation drills, including wheels and turns with large units. He was protected with hooded coats of mail and helmets and armed with sword, bow and two cavalry lances "of the Avar type." Even the horses had "protective pieces of iron about their heads and breast plates of iron or felt." He rode in a saddle equipped with stirrups and solid seat to provide a good platform for fighting. The professional cavalry was expected to have cloaks, tents, and at least two servants with extra horses.

The major drawback to the Imperial heavy cavalry was the cost. […] The heavy cavalry probably numbered about 40,000 in the mid 7th century […].

Following the losses to the Arabs in the 7th C, Byzantium introduced the *tagmata*, corps of professional troops, both cavalry and infantry, which could be used to reinforce the troops of the *themata* in defence or offence. The *tagmata* and other improvements in military organisation into the 11th C managed to halt and partially reverse Byzantine territorial losses in eastern Anatolia, Armenia, the Balkans and the Mediterranean.

The Byzantine heavy cavalry cataphracts charged in dense formation at pace – trot or slow canter –, without shouts or additional noise-making, with maces, swords or lances, held high over-hand, not couched, and shields covering their horses' heads. Archers in the rear ranks provided covering fire. The objective was to hit the enemy formation *en masse* – the "shock" effect European knights also sought to achieve.[57]

After decades of neglect, the units of the *themata* and *tagmata* were finally destroyed in the battles of Manzikert 1071 against the Seljuk Turks and Dyrrhachium 1081 against the Normans. The Byzantine forces by the time of the Crusades consisted mainly of mercenaries.[58]

III.2. Arabs

The mix of ethnicities in the Roman provinces of Syria, Palestine and Egypt already during the Principate encompassed sedentary Arab tribes; the Empire traded actively with the Arabian Peninsula, Yemen, Oman, and beyond. The Army lists contained various Arab units, from *equites* to regular *alae* to horse-archers to infantry.[59]

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[56] The heavy horse-archer appears to be a Byzantine innovation under Justinian I in the 6th C: Dennis, *Byzantines*, p. 166.

[57] Dennis, *Byzantines*, p. 176; Persian cavalry: Farrokh/Khorasani, *Savârân*; Khorasani, *Iran*.

[58] Generally Theotokis, *Dukes*, pp. 84-134; Treadgold, *Army*, pp. 39-42.

[59] Nicolle, *Technology*, pp. 256-259. The *notitia dignitatum*, commonly dated to the early 5th C, list several Arab or Saracen horse units, as well as camel formations: Shahîd, *Prolegomenon*, pp. 52-63.

The Empress' Bodyguard – a cavalry unit raised in Palestine and called "σαρακηνοι" or "saraceni" – defended Constantinople against Gothic forces seeking to exploit their victory at Adrianople 378.

In the early 7th C, newly Muslim pastoralist Arab Bedouins from the Arabian Peninsula began invading the Byzantine and Persian Empires; from the Byzantines, they conquered first Syria and Palestine, then also Egypt. From the Persians they captured first Mesopotamia, and then overran the remainder of the Persian Empire.

The Arab forces that established themselves in Syria, Palestine and Mesopotamia were predominantly infantry;[60] among the Bedouin Arabs, horses were rare and expensive to keep. To the extent horses were used in battle, it was for quick raids and rapid escape back into the desert; alternatively, the fighters moved into position mounted, but dismounted to fight. It was not until the conquest of Persia and the civil war among Harun al-Rashid's successors that Islamic forces began to feature substantial numbers of cavalry.[61] It is inconceivable that the Arabs did not learn a great deal from their mounted opponents whom they met.[62]

A further development of early 9th C Arab armies is the inclusion of Turkish light cavalry, feared and famous for their horse-archery skills; their mounts are recognised as tough, hardy and fast, but not for their beauty or elegance.[63]

Ammianus Marcellinus describes the "Saracens" as fighting in loincloths, which is scarcely believable for a professional *schola*. Zosimus, describing the same event, is more neutral: Woods, *Saracen Defenders*. Whether the "Saracens" were Arabs, or when the identification took place, is still debated: Woods, *op. cit.*; Retsö, *Arabs*, pp. 505-525; Shahîd, *Prolegomenon*, pp. 123-141.

[60] Lev, *Muslim Infantry*, p. 185; Nicolle, *Technology*, p. 260. Arab archers were effective and respected but probably fought on foot: Hill, *Camel*, pp. 37-38. As elsewhere, infantry subsequently continued to form the mainstay of Arab armies: Nicolle, *Technology*, pp. 386-422.

[61] Nicolle, *Technology*, pp. 268, 301, 337-355; Hill, *Camel*, pp. 36-37; Chandler, *Warfare*, p. 84; Nettles, *Mamluk*, p. 102. Late 8th C Khurasan is noted for supplying proper heavy cavalry units: Kennedy, *Armies*, p. 105, and the Abbasid *furusiyya* literature, as guide for first the Abbasid *ghulam* and then the Mamluke *faris*, starts at this point: Nettles, *Mamluk*, pp. 24-26. As the border between Byzantines and Arabs stabilised in Cilicia and along the Taurus in the 8th C, a sophisticated bilateral strategy of raids developed: Settia, *Rapine*, pp. 12-13. See e.g. Nicephorus Phocas' *de velitatione bellica* from the late 10th C; Chapter 6 (pp. 194-195) deals with mounted raiders. In southern Arabia, infantry warfare persisted into the 10th C: Nicolle, *Technology*, pp. 369-370.

[62] Bachrach, *Carolingians*, p. 176; Nicolle, *Technology*, p. 285. The reasons for the Arab successes against Persia and Byzantium are complex, but all sources referenced emphasise that it was not due to Arab numerical, tactical or material superiority. Arabian military treatises offer no help – we know that some translations of Persian manuals existed in the 8th and 9th C, but none have survived; one curiosity to survive is the 10th C summary of an earlier treatise that appears to be a translation or adaptation of a Byzantine treatise: Kennedy, *Armies*, pp. 111-114. Persian cavalry in the 7th C: Farrokh/Khorasani, *Savârân*, p. 295. Nicolle, *Technology*, p. 280, proposes that the Arabian was a 7th C Syrian cross between the lighter Barb and the heavier Persian types. On Persian (Nesean) types: Willekes, *Steppe*, pp. 217-225 and 235-249; also Vegetius, Part II.1.

[63] Kennedy, *Armies*, pp. 123-124 – the horses are called "nags" or, more charitably, "ponies".

IV. THE ENCOUNTERS – THE MUSLIM INVASION OF IBERIA AND THE CRUSADES

IV.1. The Muslim Invasion of Iberia

In the early 8th C, the newly established Muslim conquerors of Northern Africa[64] saw an opportunity to exploit the weaknesses of the Visigoth rulers in Iberia; a small Berber, mostly infantry 711 invasion force was able to beat the cavalry-heavy Visigoth host in battle, and, with reinforcements, proceed to conquer most of the Peninsula.[65]

Davis is emblematic for the proposition that horse breeding in Iberia fell into precipitous decline with the collapse of the Roman Empire in the West, and only began to recover after, and thanks to, the Muslim invasion and their introduction of Barbs or Arabians (or both) to the Peninsula, either of which would have been new to Europe; to prove his point, he refers to the Life of St. Corbinian (c. 670 – c. 730), written in the second half of the 8th C by Arbeo of Freisingen (before 723 – 784), in which an Iberian horse is particularly commended.[66] Even if one assumes the story of St. Corbinian's horse is a recent invention of Arbeo's, and it does not date back to St. Corbinian's lifetime before the Muslim invasion, the Umayyad breeders would have had to work fast to not only improve the stock, but also create a "brand" so strong that Arbeo would refer to the horse as "Spanish" or "Iberian" (and not as "Barb" or "Arabian").

Solinski on the other hand relates the following anecdote from Ibn Bakr al Tartushi, in the 11th C: A Moorish cavalry border patrol happens upon a Spanish horseman who

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[64] Despite the Vandal invasions, North Africa was thoroughly romanised: Rummel, *North Africa*.

[65] Thompson, *Early Germanic Warfare*, pp. 10-11; Collins, *Visigothic Spain*, pp. 117-143; Nicolle, *Technology*, pp. 291-293; Pérez, *Crónicas*; Sanjuán, *Al Andalus*, p. 177; Rouighi, *Berbers*, p. 74-75; what exactly happened in the course of the Muslim conquest of Iberia is frustratingly unclear, but it seems the remote north-western Asturias region held out against the invaders. That the Berber were not famous for their horsemanship is suggested by e.g. Claudian's *de bello Gildonico* (p. 130): *cetera nudus eques. sonipes ignarus habenae; virga regit. non ulla fides, non agminis ordo* ("no other armour has the horseman. His steed knows not the rein; a whip controls it; there is no faith, no order in the ranks" – p. 131); Nicolle, *Technology*, p. 350; also, the *Chronica Mozarabe* of 754 refers to a cavalry engagement 741 where Caliph Hisham sent a force containing mainline Arab cavalry to suppress the Berber Revolt, which was destroyed by Berber infantry in loincloths at the battle of Bagdoura (p. 363; Rouighi, *Berbers*, p. 78; Sanjuán, *Al Andalus*, p. 179) – the Berbers' horsemanship may have been basic, but it seems they knew how to deal with cavalry.

[66] Davis, *Warhorse*, pp. 49-50: the passage (Arbeo, cap. 16 / p. 205) reads: *Cum autem Trigentinum castrum vir Dei pervenisset, Husingus Longobardorum rege ibi constitutus princeps, cum quendam amyssarium cavallum forme viri Dei dequorum vidisset, concupivit; quem dum emere non potuit, furto silenter abstrahere iussit* (As the man of God came to the castle of Trient, Husingus, appointed prince there by the King of the Lombards, coveted the man of God's horse when he saw the beauty of its form; but as he could not buy it, he ordered it stolen secretly). Further down, the horse is referred to as "Iberus". Echoing Davis: DiMarco, *War Horse*, pp. 89-90.

challenges all to single combat. Three of the patrol's riders take up the challenge, but one by one are vanquished by the Spaniard and his agile horse. Exasperated, the patrol leader seeks advice, and a senior officer eventually produces a wispy codger on a wiry old horse from the border regions of the far north of the Peninsula. The codger rides up to the Spaniard and after flurry of movement returns with his head. The senior officer declares that in all the Moorish army, there is scarcely a rider capable of such a feat, and yet that is what it took to best the Iberian jennets.

The "northern border" would have been the border to Asturias/León; Solinski suggests that the codger would have been riding a horse used to dealing with the semi-wild cow herds or even a bullfighter, a tradition at that time restricted to remote areas of the Peninsula. In any event, the story – related by a Moor – is scarcely indicative of vastly superior Moorish horsemanship or mounts, or of inferior Iberian horses or riders.[67]

As shown in Part II.1, effective heavy cavalry remained a key component of the forces of the Germanic Successor Kingdoms throughout; the dismounted battle order of Charles "Martel" against Abdul Rahman al Ghafiqi's *chevauchée* at the Battle of Tours and Poitiers 732 was a deliberate tactical choice, having carefully studied Moorish tactics, and not born of necessity due to a lack of cavalry.[68]

The speculation that the invasion resulted in the wholesale importation of Arabian stock into Iberia, and from that infusion the establishment of Iberian horses as esteemed mounts,[69] is not borne out by either DNA evidence or historical records. The invasion force had very few horses, and such as were, apparently were predominantly Barbs (and Barb DNA had been present on the Peninsula for over a millennium).[70] The Muslim

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[67] Solinski, *Grundlagen*, p. 30-31; the Spaniard is referred to as a "Rum", i.e. a Byzantine – the story is contained in the *Siraj al-Muluk* of 'Abu Bakr Muhammad ibn al-Walid at-Turtushi. The North-Western parts of Spain were probably never under Moorish control and provided the base already in 722 for the *Reconquista* – Sanjuán, *Al Andalus*, pp. 182-185. Davis, *Warhorse*, p. 51, also hails this area as a source for quality horses.

[68] Bachrach, *Carolingians*, pp. 170-178; Cardini, *radici*, pp. 457-459 (pointing out there is no proof the Arabs were mounted); the battle appears to have been more important for Carolingian politics than as a military fixture: Sanjuán, *Al Andalus*, p. 182.

[69] E.g. Hyland, *Warhorse*, p. 57: "… the résumé of the rapid conquest of Spain shows there was an exceptionally heavy introduction of new equine blood into Spain. The three main elements introduced – Barb […], Turkmene and Arabian – were the warhorses of the era"; Ayton, *Horses*, p. 192: "The Islamic conquest of Iberia and Sicily had, after all, brought superior oriental breeds and an advanced equestrian culture to the attention of the West. The Moors introduced to Spain the Barb, the Turkmene, and the Arabian…"; Davis, *Warhorse*, p. 37; on pp. 49-50, Davis allows that nearly all horses brought by the Muslim invaders were Barbs (with 12 Arabians). Similarly Nettles, *Mamluk*, pp. 106-107, without source reference.

[70] Jansen *et al.*, *mtDNA*, p. 10908; Lopes *et al.*, *Lusitano horse*, p. 201; Royo *et al.*, *mtDNA*, p. 668 – mtDNA studies cannot determine the direction of gene flow; likely, gene flow from the Iron Age

conquerors certainly appreciated the Visigothic cavalry culture, integrated it and took over and expanded the already renowned Iberian studs.[71]

IV.2. The Crusades

The Crusades were initially a clear military and strategic success; that the Crusader States eventually failed was as much due to infighting and phenomenally idiotic tactical as well as strategic decisions as it was to military, political and logistical challenges.[72] While the Crusaders had to adapt to Saracen and Turkish cavalry tactics, it cannot be said that the mounted Crusaders were unable to get to grips with their opponents. Both Byzantines[73]

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on was approximately equal both ways – which fits with the historical narrative, as Iberian cavalry was used extensively by both sides in the Punic Wars: Quesada, *Military*, p. 230-231; see Fn. 35.

[71] Nicolle, *Technology*, pp. 423-440. Glick (*Spain*, pp. 268-269) shows that technical terminology in Iberia features both arabified Romance and romanified Arabic words, and posits a fusion of Visigothic and imported Arab equipment, weaponry and styles (Nettles observes a similar fusion of Arabic, Byzantine, Persian and Mongol terminology in the *furusiyya* literature: *Mamluks*, p. 12). Hyland, *Warhorse*, p. 54.

[72] Humphreys, *Mamluks*, p. 3 and *passim*; Chandler, *Warfare*, pp. 93-94.

[73] France, *Western Warfare*, p. 220-221; Kazhdan, *Latins and Franks*, pp. 87-88; Anna Komnene, 5.6.2: *Καὶ γὰρ ἀνὴρ Κελτὸς πᾶς ἐποχούμενος μὲν ἀνύποιστος τὴν ὁρμὴν καὶ τὴν θέαν ἐστίν* (Translation Dawes, p. 92): "For every Frank [Celt] is invincible both in attack and appearance when he is on horseback". The Byzantines also hired Frankish mounted contingents, used them in combat and appreciated their mounts (7.7.4): *Καταλαμβάνουσιν οἱ παρὰ τοῦ Φλάντρα ἀποσταλέντες ἱππεῖς ἔκκριτοι ὡσεὶ πεντακόσιοι χάρισμα κομίζοντες τούτῳ ἵππους ἐκκρίτους τὸν ἀριθμὸν ἑκατὸν πρὸς τοῖς πεντήκοντα· ἀλλὰ καὶ ὅσους τῆς προκειμένης αὐτοῖς χρείας εἶχον ἐπέκεινα ἀποδεδώκασι τούτῳ τιμῆς. Ὁ δὲ βασιλεὺς ἀξίως δεξιωσάμενος τούτους ἱκανὰς ἀπεδίδου τὰς χάριτας* (Translation Dawes, p. 129): "The horsemen sent by the Count of Flanders, about five hundred picked men, arrived and brought as a present to the Emperor one hundred and fifty selected horses: moreover they sold him all the horses they did not require for their own use. The Emperor welcomed them very graciously and returned hearty thanks." 10.3.5: *Οἶδε γὰρ ἐπ' ἀληθείᾳ δόρυ κραδαίνειν καὶ ἀσπίδι περιφράττεσθαι· καὶ ἱππαζόμενον ἄν τις αὐτὸν ἐθεάσατο, οὐ Ῥωμαῖον εἴκασεν εἶναι, ἀλλὰ Νορμανόθεν ἥκειν* (Translation Dawes, p. 172): "For of a sooth he [Nicephorus] knew how to brandish a spear and cover himself with a shield; and anyone seeing him ride, would have conjectured that he was not a Roman [i.e. Byzantine] but had come from Normandy". Franks in Byzantine service: Theotokis, *Dukes*, pp. 127-133.

and Saracens[74] were respectful of the capabilities of Frankish cavalry, and Frankish cavalry had many signal successes on the battlefield.[75]

Saracen tactics relied on harassing the enemy troops with Turkish horse-archer skirmishers in order to provoke a disintegration of the formation, to then exploit the lack of cohesion with Arab heavy cavalry.[76] Where Crusader commanders were able to maintain formation discipline – as Richard the Lion-Heart was on the march from Acre to Arsouf –, the Saracen horse were a nuisance but not dangerous.[77]

A vignette from the First Crusade illustrates the proposition: having ensured that he could not be encircled, Bohemund advanced on the Turks and *Turci vero et Arabes, qui contra Flandrensem comitem veniebant, ut videre quod non iam sagittis eminus, sed cominus gladiis res gerenda foret, in fugam versi sunt. Persecutusque est eos comes per duo millia; atque ut in agro manipulos messis, sic in hoc spatio caesorum corpora resupina jacere videres.*[78] The passage does not suggest that the Crusader horses were lumbering dullards, incapable of keeping up with the fleet and agile local horses.

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[74] Usama *passim* (e.g. p. 54 and p. 73); DiMarco, *Warhorse*, p. 95; Boit, *Turkish Bow*, p. 19-20. Abou Bakr's *Nâceri* (ca. 1339) is frequently quoted as evidence of Saracen disdain for Frankish horses, where they are described as "bad [and soft]" (I 2; Hakimi, *Nâceri*, p. 15; Perron, *Nâcérî*, p. 17). The two other references to "Frankish" horses with Abou Bakr are more neutral: III, 7 *in fine* describes their physical attributes in a neutral tone and that they are "not easily startled" (Hakimi, *Nâceri*, p. 47; in Perron, the reference is replaced by a reference to the Zinji or Zanzibar horse, *Nâcérî*, p. 389); in IV 6, Abou Bakr criticises the curved neck of European horses, not as a physical disadvantage but as a beauty flaw – Hakimi, *Nâceri*, p. 52; Perron, *Nâcérî*, p. 409. The Mamluke Sultan an-Nasir Muhammed, Abou Bakr's patron, was keen to establish the Arabian as the remount of choice for his Mamluke cavalry – Nettles, *Mamluk*, p. 35.

[75] E.g. Dorylaeum: France, *Western Warfare*, p. 213; Gillmor, *Training*, p. 17; though opinions on Dorylaeum vary widely: Theotokis, *Dukes*, pp. 265-266. Boit, *Turkish Bow*, pp. 6-7: up to the First Crusade, the Turkish "angular" bow was too weak to penetrate Crusader mail and gambesons from afar, the rider had to come so close that he was exposed to the devastating Crusader cross-bows. This led to the development of the more powerful "smooth" Turkish recurve bow.

[76] Theotokis, *Dukes*, pp. 263-264; Nettles, *Mamluk*, pp. 148-150; Nicolle, *Technology*, p. 452. This was essentially a Byzantine tactic: Dennis, *Byzantines*, p. 172.

[77] Chandler, *Warfare*, pp. 94 & 101; France, *Western Warfare*, p. 213, 219; Boit, *Turkish Bow*, pp. 124-126 and 141-146.

[78] Raimund de Aguilers (Cap. VI / p. 244): "yet the Turks and Arabs who confronted the Count of Flanders turned to flee as they saw that the matter was to be settled up close with swords rather than arrows from afar. The Count [Bohemund] pursued them for two miles; and as you'd see sheaves lie reaped in the field, so you'd see the bodies of the dead strewn in that space". Compare this to Ayton (*Horses*, p. 190): "The horses … bred in Western Europe … seemed clumsy and unmanoeuvrable to the Turks. They were less intelligent, less sensitively trained, and less well suited to endurance in a hot climate than the Seldjuks' light-moving Turkomen and Arab horses." Even the "hot climate" argument is not persuasive when one thinks of the Crusaders' Southern French, Iberian, Sicilian, Neapolitan, Apulian and Calabrian stock.

In terms of horses and horsemanship, so far as Europe was concerned, the Crusades were a non-event. Clearly, the Crusaders faced competent cavalry on good mounts, whether their opponents were Arab or Turkish. But the Crusaders did not return to Europe with masses of Arabian studs in tow.[79] Nor did they raise light cavalry formations armed with short recurve bows – to the extent the mounted man used ranged weapons, it was the slow but substantially more powerful cross-bow;[80] mounted longbowmen, a common feature of the Hundred Years' War, were light horse.

The hit-and-run raid was indeed the preferred Arab tactic in the 7th C, but at that time relied as much on the camel as on the horse.[81] Within a couple of centuries after the initial Arab conquests, and certainly by the Crusades, the Arab horseman was as "heavy" (or nearly so) as his Frankish counterpart, horse armour was common as well, and he also fought mainly with the lance.[82] Arab armies did use large contingents of light horse-archers, but these were preferentially recruited from the Turks and Kurds, with their own distinct horses.[83]

Despite the sheer cost and logistics of bringing trained European remounts to Palestine, the Crusaders were keen to keep the supply line open – which they surely would not have bothered with if European horses were inferior to local ones.[84]

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[79] Though there were some: Gladitz, *Breeding*, pp. 16-17; Nettles, *Mamluk*, p. 164.

[80] The bow was well known in Europe and Carolingian regulations required mounted warriors to have bows; but it never caught on: Cardini, *radici*, pp. 435-437. In the Latin East, the Crusaders did raise formations of horse-archers, the Turcopoles (e.g. *Règle du Temple*, Nos. 169-170/pp. 127-128), mainly from Byzantine and local Turkish populations; how "light" these were, is hard to determine, as they were integrated into the Frankish cavalry for major actions: France, *Western Warfare*, pp. 219-220; Nicolle, *Technology*, p 461. For the cross-bow, its (re)appearance in Norman Southern Italy in the 11th C and use during the Crusades: Amatuccio, *Interscambio*.

[81] Kunselman, *Arab-Byzantine War*, p. 58; Hill, *Camel*, pp. 39-40 and *passim*. The horse does not begin to feature in pre-Islamic Arabian epigraphy (outside of the sedentary Arab areas of the Roman and Persian Empires) until the first century AD: Maraqten, *Hunting*, p. 225; Davis, *Warhorse*, p. 37. Arrianus Alexandrinus' *Periplus* (probably 1st C) lists horses and mules as exports to Yemen (pp. 12-14); see also Fn. 19.

[82] Boit, *Turkish Bow*, p. 46-48; Lev, *Muslim Infantry*, p. 196-197; Nicolle, *Technology*, p. 345; Usama *passim* – to the extent that Usama is unable to tell the difference between Crusader and Saracen until hailed up close by his "adversary": p. 173. Arab archers were initially on foot: Hill, *Camel*, pp. 37-38; it was professionalised heavy cavalry, in the guise of Qutuz, Baybars and their Egyptian Mamlukes, that put an end to the Mongol expansion at Ain Jalut (1260) – Boit, *Turkish Bow*, pp. 51-53; Nettles, *Mamluk*, pp. 66-68; on the politics Humphreys, *Mamluks*, pp. 11-16.

[83] France, *Western Warfare*, pp. 212-213, though it would be too simple to limit the Turks to light horse-archers: Nicolle, *Technology*, pp. 441-466.

[84] Hyland, *Warhorse*, p. 148. The *Règle du Temple* reserved all imported remounts to the first choice of the Master (No. 84/pp. 78-79); it also allows the Master (No. 77/p. 75), the Marshall (No. 101/p. 88), the Commander of Jerusalem (No. 120/p. 100) and the commander of the Turcopoles (No.

V. CONCLUSIONS

V.1. European Horses

Osteological and archaeological evidence as well as the literature suggest that the European destriers throughout the period stood at about 145-150 cm (14½ -15 hands), with rare outliers up to 155 cm / 15½ hands, and were of light to medium build. I have not found any archaeological evidence or literature for the stock the Moorish invaders of Iberia would have had with them. For the Crusades, since Arab arms and armour were not significantly different from the Crusaders', there is no reason to assume that horse size or weight were significantly different[85] – though there must still have been a difference in conformation, or the Crusader efforts to constantly replenish the stocks of European remounts at considerable cost would not have made sense.

V.2. European Horsemanship

The shift from a light, auxiliary cavalry raised from non-Roman clients to mainline heavy cavalry began already in the first century and intensified in the 3rd C, after Rome had encountered strong mounted invaders, and as Rome integrated horse-inclined Germanic tribes into the Empire. The driver was not the superiority of cavalry in battle – infantry remained the numerically predominant arm, and experienced, disciplined infantry continued to win battles against well-mounted cavalry. The development seems to be more due to the change in operational doctrine, the shift from static defence at the border to a mobile defence in depth.

This doctrine remained applicable throughout the Middle Ages; technological advances and changes in government organisation brought adaptations, but the fundamental dynamics that ultimately led to European warfare being dominated by the heavily armoured knight and his lance were in place in Late Antiquity. There is no evidence of discontinuity. The encounters with Islam – be it the Moors in Iberia or the Saracens

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169/pp. 127-128) to ride *turquemans* – whether these are considered highly valuable is doubtful, as the rule for the Commander of Jerusalem says he, in addition to his allotted destriers, *en leu d'une beste mulace puet avoir I turqueman ou I bon roncin* (may have instead of a mule one *turqueman* or one good rouncey); c.f. Hyland, *Warhorse*, p. 151. Domínguez/Martínez, *caballos hispanos*, pp. 479-481: Papal bulls ensured the availability of Iberian remounts for the war effort and forbade the supply of military technology – including Iberian horses – to the Saracens.

[85] DiMarco, *War Horse*, p. 90. Hyland (*Warhorse*, p. 114) contends (repeated by Ayton, *Horses*, p. 193) that a Saracen horse of 14 or so hands (140 cm) would have weighed 700-900 lbs (300-450 kg), while a Crusader horse, though somewhat taller, supposedly tipped the scales at 1,200-1,300 lbs (550-600 kg) – this is non-sense (ref. Fn 35). There is disagreement in literature as to how "heavy" Arab cavalry was prior to the Crusades; by or as a consequence of the Crusades, there is unanimity that Arab armour and barding was as or nearly so heavy as the Crusaders' (e.g. Nicolle, *Technology*, p. 447), so horses had to be approximately the same build.

during the Crusades – had no appreciable effect on the development: not on the horses used in Europe, horsemanship, weaponry, tactics, or military organisation.[86]

This continuity also explains another phenomenon: The persistence of Late Antiquity military and veterinary literature. This persistence was not due to a lack of originality on the part of mediaeval man, but because the literature remained relevant – and there is evidence that at least in the field of equine veterinary medicine, Europe was up-to-date or even advanced to the point that Byzantine authors would defer to it. By the 9th C, Arab veterinary literature, until then largely focussed on the reception of Greek texts, began moving beyond reception and advanced the science – at least so far as horses were concerned – in its own right.[87]

Modern academics generally do not delve into the subject of horse types or breeds – it is a thankless task, as breeds in the modern sense are an artefact of the 17th C; up to the Baroque, it is thought that the focus was on identifying promising individual animals with desirable traits (combat aptitude for the *destrarius*, gait for the *palafredus*, etc.). While that is no doubt fundamentally true, the consistent evaluation by contemporary authors of animals from a certain geographical background in terms of size, strength, speed, colour, or attitude, does suggest that "breed definition" was more advanced in the Early and High Middle Ages than we can document (or may care to admit).

V.3. Summary

The purpose of this paper was not to prove the Arabian as an inferior horse, or replace it with the Iberian horse as the "noblest breed" – and in any event, the types available on the Peninsula were so diverse already in Antiquity that the term is too generic to be useful as a breed description. The purpose was to analyse the proposition that the horses available in Europe were uniformly inferior, and that concomitantly European horsemanship was backward and crude – a state of affairs that was not corrected until European contact with Arabs in Iberia or in the context of the Crusades.

A review of the DNA evidence, archaeological finds and literary sources demonstrates unequivocally that the proposition is false. The actual picture coming into focus is far more complex – it involves a number of important players (Berber, Byzantines, Kurds, Normans, Persians, Turks, Visigoths) that receive short shrift in the bipolar Franks-Saracens narrative; it reveals the enduring influence of Late Antiquity Roman knowledge and skills – which in turn assimilated older Celtic, Greek, Persian and other influences –

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[86] For lance tactics: Speidel, *Warriors*, p. 124; Nettles (*Mamluk*, pp. 20-21) suggests the Crusaders' cavalry superiority led to a serious preoccupation with military literature in Ayyubid Egypt.

[87] Artan, *Ahmed I*, p. 265; Özen/Yaşar, *Veterinary Manuscripts*; Lignereux, *bibliographie*; Saker/Weninger, *Tiermedizin* – despite the enormous economic, cultural and military importance of the camel, there is apparently no corresponding veterinary literature. Nettles, *Mamluk*, pp. 116-120.

on all of the parties concerned; and shows that the movement of ideas, practices, material culture and genes was a give-and-take, not a unidirectional flow.

Technological progress in the Early Middle Ages meant that the horse's usefulness increased even further; in High Middle Age Europe, the horse was not a luxury, the preserve of an aristocracy – it was ubiquitous.[88] This meant there was a rich palette, a deep reservoir of horse types to choose from.

It is abundantly clear that horses and horsemanship were a Celtic-Germanic "thing" – the Romans already in the late Republic neglected their autochthonous cavalry; the cavalry formations of the Principate and Late Antiquity were raised first in the provinces from Celtic, later also from Germanic tribes at the Empire's border or re-settled within the Empire. After the disintegration of the Roman Empire in the West, the Germanic tribal kingdoms established in the former Roman provinces preserved both the traditional Germanic joy for horsemanship and the breeding and tactical know-how elaborated by the Romans.

Clearly, this article could not delve into such much-debated matters as different levels of "horseyness" among various Germanic tribes; where such questions had no impact on the narrow issues of this paper, I have left them aside. Even so, much research is still required to fill in the blanks; relevant literature is abundant for Late Antiquity, but between then and about 1250, there is a yawning gap. Hyland generally does a remarkable job assembling the sources, but her conclusions are all too often at odds with the facts she establishes. Gladitz' *Horse Breeding in the Medieval World* is highly commendable, but he is strongest only once he is able to refer to the wealth of Norman records for England. While historians agree that the period saw the emergence of heavy cavalry as the militarily and socially dominant feature in Europe, there is a strange silence on the determining part of that team: the horse.

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[88] … with corresponding traces in literature: Boniface, *Horse Power*; Hyland, *Warhorse*, p. 93.

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