THE DEVELOPMENT AND DECLINE OF
ROMANO-BYZANTINE ARCHERY FROM THE FOURTH TO THE
ELEVENTH CENTURIES

A Thesis
Presented in Partial Fulfillment of the Requirements for
the Degree Master of Arts in the
Graduate School of the Ohio State University

By
Paul William Westermeyer, B.A.

The Ohio State University
1996

Master's Examination Committee:
Dr. John F. Guilmartin, Advisor
Dr. Nathan Rosenstein
Dr. Birgitte Soland

Approved By
Advisor
Department of History
ABSTRACT

An examination of the gradual adoption of the mounted archer as a primary weapon system by the Romano-Byzantine armies shows that a combination of social and military factors are responsible for both its rise and abandonment. This adoption occurred not as a revolution but rather as an evolution tracing the development of the basic Roman, and then Byzantine military organizations from the reforms of Diocletian to the collapse of Byzantine military power at Manzikert. The composite bow is a very complex weapon system in both its construction and employment, the creation of the bow requires trained craftsmen and is an art quite distinct from the more traditional arms production methods of the early Roman military. The bow’s effective use in battle requires training from youth, especially when fired mounted. The Romano-Byzantine adoption of this weapon is the only case, at least in the West, where a society without a tradition of mounted archery has successfully created an army of native mounted archers. To a large degree the success of the Empire from the Fifth century on depended upon the success of its mounted archers.
Dedicated to my wife;

Kelly Westermeyer
ACKNOWLEDGMENTS

This work would not have been possible without the help and support of many people, I cannot thank them enough.

Dr. John F. Guilmartin began advising me before I had even officially entered the Graduate program. He has been free with advice and still willing to let me follow often strange ideas until they were no longer fruitful.

Dr. Timothy Gregory, my undergraduate advisor, first opened my eyes to the wonders of Byzantine history, and supported my first tentative steps towards this thesis in his courses. Without his guidance I would still be lost among the historiography of the period.

Erik Ecklund and Kevin Osterloh, fellow students, were willing to speak for hours on this and other subjects. My thoughts were clearer thanks to their insightful criticisms.

My classmates in the Seminar in United States Military History provided helpful criticism, and were very tolerant of a subject far removed both chronologically and geographically.

Finally, I would like to thank my wife, whose support enabled me to continue this project when it seemed impossible to finish.
VITA

March 2, 1968.......................... Born-Cincinnati, Ohio

1990...................................... Enlisted, United States Marine Corps

1992...................................... Honorable Discharge

1994...................................... B.A. History, The Ohio State University

Major Field: History

Studies in

Military History

Ancient History

Medieval History
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abstract</td>
<td>ii</td>
</tr>
<tr>
<td>Dedication</td>
<td>iii</td>
</tr>
<tr>
<td>Acknowledgments</td>
<td>iv</td>
</tr>
<tr>
<td>Vita</td>
<td>v</td>
</tr>
<tr>
<td>List of Illustrations</td>
<td>vii</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Chapter 1</td>
<td>4</td>
</tr>
<tr>
<td>Origins and Styles of the Composite Bow</td>
<td>4</td>
</tr>
<tr>
<td>Construction of the Composite Bow</td>
<td>9</td>
</tr>
<tr>
<td>Implications of Construction Methods for</td>
<td></td>
</tr>
<tr>
<td>Roman Bow Production</td>
<td>12</td>
</tr>
<tr>
<td>Chapter 2</td>
<td>16</td>
</tr>
<tr>
<td>Rise of Roman Archery</td>
<td>16</td>
</tr>
<tr>
<td>Recovery and Survival in the East</td>
<td>22</td>
</tr>
<tr>
<td>Rise of the Theme System</td>
<td>30</td>
</tr>
<tr>
<td>Golden Age of Byzantium and the</td>
<td></td>
</tr>
<tr>
<td>Decline of Byzantine Archery</td>
<td>33</td>
</tr>
<tr>
<td>Conclusion</td>
<td>43</td>
</tr>
<tr>
<td>Appendix: Terminology of the Bow and Arrow</td>
<td>45</td>
</tr>
<tr>
<td>Chronology</td>
<td>48</td>
</tr>
<tr>
<td>Bibliography</td>
<td>49</td>
</tr>
</tbody>
</table>

vi
<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Composite Bow versus Self Bow. After Boit. p71</td>
</tr>
<tr>
<td>2</td>
<td>Yrzi Bow. After Coulston. p330</td>
</tr>
<tr>
<td>3</td>
<td>Qum Darya Bow. After Coulston. p331</td>
</tr>
<tr>
<td>4</td>
<td>Stave Construction Stages. After Coulston. p332</td>
</tr>
<tr>
<td>5</td>
<td>Terminology of the Bow. After Coulston. p329</td>
</tr>
<tr>
<td>6</td>
<td>Arrow Terminology. After Coulston. p333</td>
</tr>
</tbody>
</table>
Introduction

Procopius remarks early in his *History of the Wars* that Byzantine soldiers used "...each weapon in the fighting according to the particular need of the moment, shooting with bows or thrusting with spears or wielding swords...to the needs of the situation."

To the modern eye this appears a logical and wise policy, yet it was a unique style in Roman military traditions. The following thesis seeks to place Procopius' remarks within their historical context, explaining how the Byzantines came to use this method of warfare and how its adoption allowed them to maintain their boundaries against a variety of numerically superior foes until the Eleventh century. The central part of this new tactical system was the composite bow. It is the use of this weapon which set this new, Byzantine tactical system apart from previous Roman practice. Finally, it examines the reasons for the abandonment of the weapon system to which Procopius referred and the resulting consequences.

The thesis begins by examining the origins, styles, and construction methods of the composite bow in general, followed by a discussion of a specifically Romano-Byzantine production system. This section is based on archaeological and contemporary written sources, connections must also be drawn from sources outside the period to fill the many gaps in the record.

I will then place the physical characteristics of the composite bow within an historical framework by following the development of Imperial military policy.

---

through the centuries. This section is based on contemporary written sources, including the writings of Procopius, Vegetius, Ammianus and others. In addition to the literary evidence, there is a relative wealth of archaeological evidence for the early portion of the period under consideration. The composite bow is an artifact which leaves very little evidence of its passing, the majority of its components being organic. Notwithstanding, throughout the confines of the Roman world a large number of bone laths have been found. By using comparative evidence from regions where intact bows managed to survive, as well as latter evidence from Turkic and Chinese sources, we can develop a picture of Roman bows in which we can be reasonably confident.

While Romano-Byzantine archery has received very little attention from scholars (W.E. Kaegi and J.C. Coulston excepted) there is a great deal of literature concerning Late Roman and Early Byzantine military organizations. I have used these secondary sources to establish a historiographical context for the results of my primary research.

An examination of the gradual adoption of the mounted archer as a primary weapon system by the Romano-Byzantine armies shows that while military factors were responsible for both its rise, its abandonment was the result primarily of social factors. These changes occurred not as a revolution but rather as an evolution. This is evident in tracing the development of the basic Roman, and then Byzantine military organizations from the reforms of Diocletian to the collapse of Byzantine military power at Manzikert. The composite bow is a very complex weapon system in both its construction and employment; the creation of the bow requires trained craftsmen and is an art quite distinct from the more traditional arms production methods of the early Roman military. The bow’s effective use in battle requires training from youth,
especially when fired mounted. The Romano-Byzantine adoption of this weapon is the only case, at least in the West, where a society without a tradition of mounted archery has successfully created an army of native mounted archers. To a large degree the success of the Empire from the Fifth century on depended upon the success of its mounted archers.
Chapter 1

Origins and Styles of the Composite Bow

The composite bow is an early improvement on one of mankind's most ancient weapons, the bow and arrow. The bow and arrow was developed at the beginning of the New Stone Age, approximately 8000 B.C. These first bows were "simple" or "self" bows, composed of a single piece of wood and a sinew or vine string. Man quickly learned which types of wood produced the bows with the longest range and the greatest "pull", as well as which materials were best suited for strings, arrows and arrowheads. Self bows have been used by many peoples, including the native cultures of every continent. Only under the most favorable circumstances does the typical self bow produce sufficient damage to kill a man, though they often produced disabling wounds.2 (Figure 1 compares a self bow to a Composite Bow)

The exact date of the composite bows introduction is unclear but it is possibly as early as 3000 B.C., and certainly no later than 1400 B.C. Regardless, the composite bow became an important part of warfare on the Eurasian land mass at an early date.3 The firepower provided by the composite bow was first joined with the mobility provided by the chariot. One of the earliest artistic depictions of composite bow shows an Assyrian warrior stringing the

---

2 For more on the initial development of archery see Edmund Burke. The History of Archery, and Yigael Yadin. The Art of Warfare in Biblical Lands in the Light of Archaeological Study.

3 I am unaware of any composite bows among those peoples with little or no contact with the peoples of the Eurasian land mass, certainly it was not known or developed by the natives of the Americas.
bow with an assistant, and then wielding the bow while mounted.\(^4\)

Composed of horn and sinew glued to a wooden frame, the composite bow utilized the compression, expansion, and stretching properties of these materials to produce a pull reaching 150 pounds, though only the strongest men could use bows with that high of a pull effectively.\(^5\) In comparison, the pull of a self bow seldom exceeds 20 pounds. Comparing the two in both the strung and unstrung positions illustrates dramatically the higher amount of energy stored within a strung composite bow.\(^6\) (figure 1)

---


5 A bows “pull” or “weight” is number of pounds of force necessary to draw the string back to the full length of the arrow. Modern hunting bows use a pulley system to allow those of average strength to draw bows with a pull of 200 pounds. Most composite bows of antiquity had a pull of 75 to 80 pounds, many reached 100 pounds. In his thesis on Turkish composite bows of the Crusading Era, Bernard Boit states that “smooth” Turkish composite bows commonly were well over 100 pounds in pull. Bernard Boit, *The Fruits of Adversity: Technical Refinements of the Turkish Composite Bow during the Crusading Era*. p83-84.

6 The most prominent exception to the generalizations I have offered is the Welsh longbow which appears during the Middle Ages. The Welsh Longbow was a weapon of great military effectiveness, as is shown by its prominence in many English victories of the Hundred Year’s War. In fact, it is not a self bow, though it is made of one piece of wood, because it was manufactured from a slat of wood containing both heartwood and sapwood. This combination produces an effect very similar to that of the disparate materials of the composite bow.
Several styles of composite bow have been identified within the region and time period this study covers. The Yrzi bow (figure 2) represents the Mesopotamian/Levantine archery tradition, a working replica of the Yrzi bow achieved a pull of 60-70 pounds. Found at Baghouz on the Euphrates and dated between the 1st century B.C. and the 3rd century A.D. the Yrzi bow falls within the Parthian sphere of influence. However, the ear lathes are identical in style to those found in Roman sites, as most early Imperial Roman archers were

---

7J.C. Coulston. “Roman Archery Equipment” Production and Distribution of Roman Military Equipment, p239-40. Coulston objects to the classification of all early Imperial bows as Yrzi types, citing archaeological finds in the Dura area that indicates a differing Sassanid style bow. His arguments are convincing, but the two styles are both Levantine and share the distinguishing characteristic of Ear Lathes, which the contemporary Scythian style lacked. For the purposes of this study the Sassanid and Yrzi types may be considered two branches of the same Levantine style, and will be treated as one in the text.
auxilia recruited in the Levant the predominance of the Levantine style bow through the Middle Empire seems likely.

Figure 2
After Coulston. p330.

A competing style was the Scythian/steppe tradition. There are no archaeological finds that illustrate the early phases of this tradition, evidence for this style is drawn from Crimean tomb reliefs and frescoes. This weapon lacks ear lathes, the ears curling forward to prevent the string slipping off of the ears instead. The weapon was smaller than those of the Levantine tradition,
and likely less powerful as well since it lacked ear lathes and the corresponding mechanical advantage. With the probable exception of some Bosporan and Thracian troops this style did not see use in the Early and Middle Imperial periods.8

The Steppe tradition began to replace the Levantine tradition with the arrival of the Hunnic tribes and a new style of bow. The style is not properly called Hunnic, however, but rather is known now as the "Qum-Darya" after the Han Chinese site where a complete specimen of this bow was discovered. (Figure 3) The bow was dated 1st century B.C. to the 3rd century A.D., just as the Yrzi bow. It's size was 140-150cm, barely half as long as the typical Scythian type. The Qum-Darya type does make use of ear lathes, as well as grip laths (the Yrzi bow lacked grip laths), for a total of 7 laths. This stiffening of the grip would have reduced the amount of "kick" and allowed for greater accuracy than a Levantine bow of the same pull.9 The style's dispersion across the steppe can be traced through the many lath finds. It is identified in Alanic graves along the Volga, dated to the 3rd-4th centuries A.D, marking its first Western appearance.10

8 Coulston. p241. This weapon entered into the classical art tradition, seen even today in many representations of Cupid. This artistic convention limits the usefulness of much ancient artwork in regards to archery.

9 Grip laths stiffen the portion of the bow where the archer grips the bow. This stiffening reduces the vibration and shaking which occurs when the string is released and the working limbs of the bow spring forward. Reduction of this shaking and vibrating causes less of this motion to be transferred to the arm, and thus prevents this affecting the accuracy of the arrow.

10 Coulston. p242-244. Qum-Darya style materials appear in archaeological sites from Korea to the Crimea. Coulston also identifies an "Avar" type bow, using 12 laths and completely enclosing the grip. This style begins to appear in the Sixth century A.D. The influence of the Avars on Byzantine military equipment is not, in my opinion, as profound as Coulston suggests. While it is true that Maurice's Strategikon specifically mentions several pieces of equipment "in the Avar style" that should be standard for cavalry, the bow is _not_ described as an Avar type weapon. It seems likely that Qum-Darya style bows saw use alongside the newer "Avar" styles, there seems no indication of a significant difference in performance between the two. They will be considered as one style for the purposes of this paper.
Construction of the Composite Bow

While none of our sources on construction techniques are contemporary with the period under consideration, the basic materials are unchanging. Construction techniques therefore tended to be similar regardless of the region and time period. Our best comparative evidence comes from "Essential Archery for Beginners", an Mameluke text attributed to one "Taybugha" (dated to the 14th or 15th century A.D.) and the practices of a Chinese bowyer still working in the traditional fashion in the 1940s. The similarities between these two sources, separated both by time and geography, are strong enough to justify

---

11 Saracen Archery. p.xxxv-xxxvi.
12 Coulston. p.221.
applying the same techniques to a Romano-Byzantine context. The construction process described below can be followed in Figure 4.

STAVE CONSTRUCTION STAGES

Core and Ear Laths

Horn Application

Sinew Application

Unbound (Tilering Stage)

Bound and Strung

Figure 4
After Coulston. p332.

---

13 Coulston, p248. Coulston’s examination of the comparative evidence is the best available, with the noted exceptions this account follows his. The account in Saracen Archery, p11-19 does not include the evidence from the Ch‘engtu bow industry of the 1940s.
The first step in constructing a composite bow was to prepare the wooden core. In the Levant, mulberry, maple, and cornus wood was preferred, the wood's most important attribute being the ability to absorb glue well. To enhance this ability the wood was often deeply scored. The laths were prepared at this time as well, carved from either bone or antler. Physical evidence suggests that the ear lathes were the first part glued to the core.\textsuperscript{14}

The glue used for the construction was derived by boiling fish tendons, skimming off the liquid, and then evaporating the solution until it attained a viscous consistency. It was then cooled, jelled, and placed in containers where it could be stored indefinitely. When needed it would be warmed to a more liquid consistency. Turkish bowyers preferred glue made from the roof of the mouth of the Danubian Sturgeon, which they claimed set slower and stronger. This cannot be proven correct by the available evidence, but there seems to be no reason to doubt these craftsmen.\textsuperscript{15}

The horn was the next material prepared, it was cut to the desired length and then scored to facilitate gluing. It was best if each limb held one piece of horn, but it was possible to use multiple smaller pieces if one piece of sufficient size was not available. The horn chosen needed to resist shearing, the horns of Western European domestic animals were unsuitable but many Asian species provided horn with the proper characteristics.\textsuperscript{16}

Once the horn had dried it was time for the sinew to be applied. taken from the back and neck tendons of deer and cattle, the sinew was dried, combed, and beaten with a mallet into long flax-like strands. These strands

\textsuperscript{14}Coulston. p250-251.
\textsuperscript{15}ibid.
\textsuperscript{16}Coulston p252-253. The Indian Buffalo, Armenian wild sheep, Asiatic Mouflon, and domestic goat all provide horn suitable for use in the construction of a composite bow.
were then soaked in warm glue before being applied by hand to the wooden core. They were worked into an homogeneous layer, then allowed to dry. This process was repeated three times before the final reflex was placed on the bow. After 2-6 months of drying the sinew was hard enough to file, and excess glue was removed.\textsuperscript{17}

At this point the bow was ready for "tillering". Bent gradually, the bow was continually heated and reheated to increase flexibility until it was, eventually, strung. It was then placed upon a tiller or wooden staff which was used to hold the bow in the drawn position while custom adjustments were made by heating and filing.\textsuperscript{18}

In China and the Levant the stave would now be bound with birch bark in a spiral pattern. The Yrzi and Qum-Darya bows are bound in sinew, it is possible that sinew binding was later covered by birch bark. Once the binding glue was dry a varnish or lacquer was applied to the bow to protect it against moisture. This lacquer was often painted over with artistic designs.\textsuperscript{19}

\textbf{Implications of Construction Methods for Roman Bow Production}

A composite bow produced under the above methods would take about a year to complete, usually beginning in the fall.\textsuperscript{20} That same bow, treated carefully, would last for the archer's lifetime and beyond-Ottoman bows constructed in the 18th century are still capable of being fired today.\textsuperscript{21} The bow had then both a long construction time, and at least potentially a long life. Bows could be constructed in quite large batches, but any bow manufacturing

\textsuperscript{17}Coulston. p253-254. Also Boit. p79.
\textsuperscript{18}Coulston. p255.
\textsuperscript{19}ibid.
\textsuperscript{20}Saracen Archery. p15-16.
\textsuperscript{21}Coulston. p248.
facility would require at least a year of start up time before it could begin to produce bows. This produced a difficult logistical problem that tended to leave employment of the bow in the hands of societies with a strong tradition of archery. Troops from these societies could provide their own bows upon entering service, as well as the limited number of bowyers needed to replace those weapons destroyed in battle or practice. For a society without these traditions establishing a corps of native archers was very difficult.

During the Republic and early Principate, Rome was able to provide for its limited bow needs by recruiting auxilia from societies with a tradition of archery, such as the Cretans or Syrians. These troops brought their own weapons and essentially provided for themselves outside of central, imperial control.

The reforms of Diocletian changed this process. A system of imperial arms productions centers was introduced, the fabricae.22 These centers were staffed by the fabricenses, hereditary guildsmen who made up, after the army and civil service, the third largest group of Imperial employees. The new system was completely centralized, it was a crime for one of the fabricenses to leave their position and their children were likewise locked into this career. The centers themselves were placed throughout the Empire in a systematic manner, on the European frontier each zone was supported by two centers producing body armor, and one producing shields. This method of arms production continued (though in a truncated form) until the Sixth century.23

Concerning composite bow production, there is only one factory listed in the Notitia Dignitatum as producing bows, and two others which are listed as

---

22The reforms of Diocletian not directly related to arms production will be related in a latter section.
producing arrows. All three of these were in Europe, none appear in the lists for the East, yet the eastern portion of the Empire contained a larger number of archers, according to the Notitia Dignitatum. Units originally recruited in the East had been stationed in the West, away from their society for several generations. As a result, many had been forced to recruit locally. Cut off from their societies traditional means of bow production, and in an area where construction of the composite bow was difficult, there must have been a perceived need for a central bow production center. Therefore production of these valuable weapons followed the basic pattern established in the fabricae, bowyers from the East being relocated to Italy for this purpose. The fabrica itself was located at Ticinum, as suitable horn for the bows needed to be imported from the East and Ticinum was a relatively central point to receive this raw material and export the finished bows to the troops throughout Europe.24

In the East fabrica producing bows do not appear. It is possible this is a result of a lack in the sources, but it is more likely that they were not needed. Archery for both war and hunting had maintained a long tradition in this region, and all of the raw materials needed for composite bow production were readily available. Considering the still limited use of the bow by Roman armies when the fabrica are first established, it seems reasonable to assume that bow procurement continued in the manner described above, and perhaps as a tax-in-kind.25

After the Seventh century confident appraisal of Byzantine arms production becomes nearly impossible, the sources mention very little and the archaeological record remains for the most part unexamined. In the case of the

\[24\] James, p254. and Coulston, p259.
\[25\] ibid. A tax-in-kind involves collecting goods and services, instead of money, from the population.
composite bow, at least, it seems likely that Byzantium suffered a severe reduction in production when it lost access to its most prolific bow production centers following the Arabic conquests of Syria, Egypt, and the Levant. This likely resulted in an increase in the price of composite bows, and a corresponding reduction in their use.26

Chapter 2

The Rise of Roman Archery

Rome's first major contact with the composite bow provided a painful lesson, when Parthian horse archers delivered a humiliating defeat to the legions led by the Triumvir Crassus in 53 B.C. Crassus, his son, and the vast majority of his forces were destroyed. After Cannae, it easily rates as the second greatest defeat suffered by the forces of the Roman Republic. The Empire latter found ways to deal with the Parthian (and later Persian) threat, using a combination of fortifications, auxilia, and diplomacy to keep the eastern frontier intact. It was, essentially, a successful strategy.27

It was with the the reforms of Diocletian and Constantine that archery began to gain ground within the Imperial sphere. While it is relatively unclear which emperor introduced which aspects of the many reforms, the military effects of their reforms were far reaching. The old legions were reduced to the status of limitanei, militia quality troops (mostly infantry) stationed permanently along the border. The real military power of the state rested in the comitatenses, a mobile field army that comprised both infantry and cavalry units. The localized nature of the limitanei was conducive to specialization,

and the numbers of archers, both infantry and cavalry, steadily increased. By the fourth century the *Notitia Dignitatum* recorded that fully one sixth of the army fulfilled specialist roles (for example, archer, heavy horseman, or camel cavalry). Mounted archers (*equites sagittarii*) were found in both the eastern and western halves of the Empire. Of increasing importance were the *foederati*, barbarian tribes that enlisted as one unit under their commanders, instead of individually. They brought a mercenary flavor to the army that was increased by the advent of *bucchellarii* or small, private armies.²⁸

Arms and equipment for this period varied widely, according to the time, type and location of the individual units. Standard infantry in the period typically carried a *spatha* (longsword), *lancea* (spear), and shield. Javelins and *plumbatum* (a lead weighted dart) were used as well. Archers used composite bows, initially these would have been the of Levantine tradition but with the appearance of the Huns the newer, more accurate Qum-Darya style began to appear.²⁹ It is likely that both styles were used side by side, even within the same units. The amount of armor the troops wore varied widely, ranging from none to full suits of mail. The *comitatenses* had the best weaponry and armor, after *scholai* or imperial household troops. The *foederati* were armed and equipped according to their national customs, and the *bucchellarii* were armed

²⁸David Nicolle. *Romano-Byzantine Armies 4th-9th Centuries*. p4-6. Also G. Ostrogorsky. *History of the Byzantine State*. p42-44. Note that despite the evident increase in specialization, archaeological and monographic evidence shows that even units not designated *sagittarii* would have been familiar with the use of the bow, if only for siege warfare and in defense of their stronghold. Coulston. p282-287.

²⁹This is shown by the dispersal of find finds in Roman sites, as well as evidence drawn from other archaeological sources (such as tomb reliefs). An in depth discussion of this evidence, as well as a list of all Roman archery related archaeological finds can be found in J.C. Coulston. “Roman Archery Equipment” *Production and Distribution of Roman Military Equipment*. p17
according to the vagaries of their employer.\textsuperscript{30}

The \textit{comitatenses} was composed of an increasingly large proportion of
cavalry, one reason for this increasing reliance on mounted troops was the
decline in infantry quality. Arther Ferrill’s hypothesis that the fall of the Empire in
the West was caused by strategic errors and a decline in infantry ability is
supported by a passage in Vegetius, which relates how Roman infantry had
ceased to wear protective armor and lost their famous discipline.\textsuperscript{31} Vegetius
states that the Roman cavalry was equal to the barbarians in ability and better
than it had been during the earlier periods of Roman history, the training and
spirit that had been found in the infantry was now found in the cavalry.\textsuperscript{32} The
cavalry was well armed and armored, the \textit{clibanarii} (armored horsemen) and
their mounts were enclosed entirely in metal. Other Roman horsemen, such as
the \textit{cataphractii}, were well-armored as well, though not quite to the extent of
the \textit{clibanarii}. The \textit{spatha} and \textit{kontos} (lance) were the primary weapons,
though a significant number of cavalry units were archers equipped with
composite bows, especially in the East. However, infantry archers still
outnumbered horse archers even in the \textit{comitatenses}.\textsuperscript{33}

Vegetius is a major source for understanding the Roman armies of the
late 4th and early 5th centuries. Written some time between 383 and 450, his
\textit{Epitoma Rei Militaris} is more a comment on the state of affairs in the

\textsuperscript{30}D. Nicolle. \textit{Romano-Byzantine Armies 4th-9th Centuries}. p38-40. and John Warry. \textit{Warfare in
the Classical World}. p209. Dr. David Nicolle is a scholar who concentrates on Arabic military
history. His work, and that of Warry, is designed for a popular, as opposed to scholarly,
audience. I find them to be comprehensive and clear, as well as readily available. The three works
of Nicolle cited within this paper each are based upon archaeological, as well as textual evidence,
and include substantive, useful bibliographies. I consider Warry’s work an essential primer for
warfare in antiquity, both are cited for points that either a) are not generally contested by scholars
or b) illustrate information from sources that go beyond this paper’s scope.

\textsuperscript{31}Vegetius. \textit{Epitoma Rei Militaris}. 3.20.

\textsuperscript{32}Vegetius. 3.26.

contemporary Roman army than an account of the "ancient army" as Vegetius claims.34 The work is clearly intended not as a history but rather as a treatise examining how the lessons of the ancient legion could be used to address contemporary problems, as Vegetius himself admits when he states, regarding cavalry, "...the present state of knowledge is sufficient."35 Vegetius excludes what he feels is irrelevant or more advanced than the older policies he is describing.

Given the above considerations, his inclusion of a small section on archery is very interesting. Vegetius calls for "About a third or a quarter of recruits...be trained...using wooden bows and mock arrows."36 If we accept that Vegetius is expressing solutions to the problems that he sees, then this passage infers that the late Roman army lacked sufficient bands of archers, and that this lack was construed by Vegetius as a weakness. A closer look at the surrounding text, however, reveals descriptions of training with swords, javelins, slings, and lead weighted darts.37 These passages address the overriding theme in Vegetius: the rejection of foreign mercenaries and the recreation of the fighting spirit of the ancient legion.38 The passage on archery itself makes no statements on contemporary practice, but dwells rather on the use of archers by Scipio Africanus against the Numantines (133 B.C.) and Claudius Pulcher at Capua (211 B.C.).39 This is clearly in keeping with his stated purpose of compiling the military science of the ancients for his Emperor's perusal, and only slight evidence that there is a lack of archery skill

34Vegetius, Ancient Synopsis.
35Vegetius, III.26.
36Vegetius I.15.
37Vegetius I.11-17.
38Milner, N.P. Vegetius: Epitome of Military Science, pXIX-XX.
39Vegetius I.15.
within the army.

Vegetius' comment that "multitudes" of Gothic archers caused large numbers of casualties is problematic. He clearly was not calling for more archers in the Roman army, but rather for the infantry to wear more armor.\footnote{Vegetius 1.20.} The value of the passage is certainly open to doubt, as there is no evidence that Vegetius was ever a soldier or witnessed a battle and in fact he emphasizes that he was compiling literary records and has no personal knowledge of military affairs.\footnote{Vegetius I. Preface. On Vegetius' lack of military experience see Milner, pXXI-XXV.} Evidence from his other work, Digesta Artis Mulomedicinae, does indicate that he was at least familiar with the barbarians whose use as mercenaries he often recommended against.\footnote{Miner. pXXI-XXII.} In any case the evidence in this passage shows neither an observed need for archers nor any plan for increasing their numbers.

It is possible that Vegetius was trying to subtly point out a flaw in the Roman army. He does not, however, show this degree of subtlety in his account of ancient equipment, where he describes the soldiers of his day as "...not being able to endure the labor of wearing the old protective armor...", who also "...refuse training and hard work..." and are thus "butchered...like sheep." Vegetius had no problem with being blunt about the morale and training problems he sees in the Roman army of his day. There is no reason to believe that he would be any less direct about a need for archery, if he saw such.

Other evidence in the work indicates the existence of archers in the late army; he asks what a "foot-archer" is to do without armor.\footnote{Vegetius 1.20.} The bulk of the evidence in his work, however, indicates an army still equipped for the most part with the
Roman standard of sword, spear, and javelin.\textsuperscript{44}

Many battles and skirmishes attended the collapse of the Empire in the West and it might be expected that archery would figure prominently in some of these, especially after the Huns make their appearance. In fact, with the exception of its traditional role along the Persian frontier, archery continued to be a supporting arm, superseded in siege warfare by the larger engines and in the field by close combat infantry and the emerging \textit{cataphractii}. In Ammianus' accounts of two pre-Hunnic invasion battles, Strasbourg and Adrianople, it is clear that neither side possessed a comparable force of archers. The arrival of the Huns not only heralded the arrival of a more accurate bow (see earlier notes on construction) it also introduced a need for the weapon in the West, where Rome's opponents had lacked serious missile weapons.\textsuperscript{45}

The battle of the Catalaunian Fields (451 AD) has been seen as both meaningless and as decisive historically.\textsuperscript{46} Fought by the Roman Generalissimo Aetius with an alliance of Romans, Franks, Visigoths, and Alans against Attila's Huns and their Germanic allies, it is considered the final victory of the Roman Empire in the West. The Huns and Alans were renowned for their abilities as mounted archers, but the battle evolved more as an infantry battle than a cavalry engagement. The Huns themselves, considered the finest horsemen at the time, committed a large portion of their troops as infantry, they simply lacked the pasturage in the Hungarian plains to maintain the completely mounted forces for which they were famed.\textsuperscript{47} The cavalry on either side

\textsuperscript{44}See for example Vegetius. II.15. Also note that Vegetius specifically states that \textit{pilums} are no longer in use. Vegetius. I.20.

\textsuperscript{45}For a short description of these two battles see Delbrück. p261-284 or Ferrill. p56-64.

\textsuperscript{46}Ferrill. p150. Ferrill sees the battle as decisive, and points out that Delbrück, for example, considered it so unimportant he did not even include it in his narrative.

\textsuperscript{47}Ferrill. p142-143.
appears to have acted not as mounted archers, but instead as shock troops. In fact the Roman infantry, which Attila is said to have ordered his men to ignore, combined with the Franks to threaten the Huns flank and force Attila to retreat into his laager. At this point, Attila’s movements are said to have been restricted by "...bowmen placed within the confines of the Roman camp."  

Recovery and Survival in the East

The works of Procopius cover a large part of the reign of Justinian (527-565). There are thus about fifty to one hundred years between Procopius and Vegetius, depending upon when Vegetius is dated. During that time the empire in the West completely collapsed. The barbarians ceased supporting puppet emperors, and in 476 Odoacer disposed the last Roman Emperor in the West, Romulus Augustulus. While the Roman army in the West vanished during this time, in the East it continued to transform and can begin to be called Byzantine. *Foederati* were now indigenous Roman troops as well as barbarian recruits, and were recruited on an individual, rather than tribal basis. The army retained its mercenary character despite this recruiting change. The old forms of *limitanei* and *comitatenses* still existed in theory, yet they were greatly changed in practice. The *limitanei* persisted, especially in Syria and the Eastern portion of the Empire, but were now organized into small units of *numerii* based within provincial towns. The field army consisted now of *Foederati* (light cavalry or infantry), *comitatus* (*hippo-toxotai* [horse archers] and *cataphractii*) and the general’s personal *buccellarii*. The *buccellarii* were now

---

49 Jordanes. XL.213.
50 Milner. pXXV-XXIX.
central to the *comitatus* or "personal armies" each general was required to maintain as the heart of his field army. Field armies now contain more cavalry than infantry, and the two branches work very closely together. The distinction between the various types of units is often confusing in Procopius, who named units most often by their nationality instead of identifying them by type.

Procopius leaves no doubt as to the armament of the troops, they "...go into battle wearing corselets and fitted out with greaves..." and carry "...their arrows...the sword...and there are some who have a spear attached to them...", Procopius describes these troops as "bowmen" who are "expert horsemen" while defending their valor against "...those who reverence and worship the ancient times, and give no credit to modern improvements." More importantly to this purpose is the comment that the present bows have "...an impetus to kill...shield and corselet alike having no power to check its force." These are clearly bows that in Procopius' estimation are both powerful and an improvement over the archery of the past.

Archery plays an important part in nearly every battle that Procopius describes. At Daras arrows are exchanged as a necessary prelude to the battle, with both sides firing a "vast cloud" of arrows although Procopius admits that "...the missiles of the barbarians flew much more thickly." The importance of this exchange is shown by the fact that Procopius notes the wind direction

---

52Nicolle. p6-8.
58Procopius. I.XIV.35-36. Note Procopius most likely observed these particular battles personally.
and the degree to which it affects the archery of the Persians, points he was unlikely to remember if they were of little significance at the time. The Battle of Callinicum began with an exchange of arrows that were "...shot from either side in very great numbers..." and "...caused great loss of life in both armies." Chosroes' attack on the town of Petra also involved a barrage of arrows, but Procopius mentions that the Roman arrows did more harm because of their greater elevation, again showing an attention to the details of archery. The predominance of archery in these battles with the Persians should not be surprising, since the Persian preference for archers is well chronicled in the ancient world. What is interesting is the importance placed on Roman archery, which Procopius leads us to believe was in some ways superior.

Earlier Roman armies had always attempted to adapt themselves to the needs of the locale they fought in. Vegetius gives us an excellent example of archery adoption concerning Scipio Africanus and the Numantines. In fact, especially after the defeat of Crassus (53 B.C.), Roman troops in the East indubitably contained a larger percentage of archers than elsewhere. The unique importance of archers in the Roman army in the 5th, 6th, and 7th centuries increased when the opponents of the Romans lacked numerous archers. Procopius describes the Vandals as "...neither good with the javelin nor with bow." The Goths he says have only foot-archers, a fact Belisarius used to his advantage during the siege of Rome by using horse archers to

---

59Ibid.
60Procopius. I.XVIII.31.
61Procopius. History of the Wars. II.XVIII.15-16. Incidentally John, the Roman commander, was killed in this exchange.
62Vegetius. I.15.
63Ferrill, Arthur. The Fall of the Roman Empire. p79.
64Procopius. III.VIII.27.
65Procopius. V.XXVII.27-29.
entice the Goths close to the walls. Once the Goths appear they are simply targets for the bowmen and artillery on the walls.\textsuperscript{66} An attempt by the Romans to break the siege of Rome was successful as long as the Romans maintained their distance, because “...the barbarians kept falling in great numbers before their archery.”\textsuperscript{67} During Totila's siege of Rome archery again played an important role, putting the Goths to flight at least once.\textsuperscript{68} Clearly, archers were very important to Byzantine tactics, even in areas where archery was not a traditional means of waging war.

The Byzantine army was composed of cavalry and infantry in a roughly equal split in the Sixth century AD.\textsuperscript{69} This has often been interpreted as evidence of the decisiveness of the cavalry arm, as both arms relied heavily, but not exclusively, on the bow. Additionally there was a great deal of cross-training, “infantry” units often fought mounted and “cavalry” units often fighting dismounted. This caused Delbrück to argue that the differences between the two arms had blurred. He also argues that cavalry was the “predominant and decisive arm”.\textsuperscript{70} Both the outcome of the battle of Taginae and certain Byzantine military treatises show, however, that infantry were still quite capable of decisive action.

The battle of Taginae (552 AD) between the Byzantines under Narses and the Goths under Totila illustrates the way the Byzantines utilized their archers. The battle occurred in the Appenines on a flat plain between the two armies, and a small hill in this plain was of particular importance. The Gothic

\textsuperscript{66}Procopius. V.XXVII.4-15.
\textsuperscript{67}Procopius. V.XXIX.16-18.
\textsuperscript{68}Procopius. VII.XIX.19-23.
\textsuperscript{69}J.B. Bury. History of the Later Roman Empire. 77-78.
\textsuperscript{70}Delbrück. Vol II 346.
army was composed of horseman wielding sword and lance, as well as an infantry force in reserve. The Byzantines were represented by a typical field army (described earlier). The night before the battle Narses sent a force of fifty infantrymen to hold the hill against the Goths, to which Totila responded the next morning by throwing a series of cavalry squadrons against them. "The wall of shields and spears of the fifty men was so thick and tight that it brilliantly repulsed the attack" according to Procopius.71 Narses' trust in the ability of his infantry to withstand the onslaught of the Gothic Cavalry was not remarked on as exceptional or strange, showing that spear armed infantry was still considered capable of withstanding cavalry at this point. The rest of the engagement follows this pattern as the main body of the Goths repeatedly charges the Byzantine center and is repulsed. Inability to break through the Byzantine archers on the flanking hills caused large numbers of casualties. The Goths were repulsed several times and then routed by a general offensive action by the Byzantines.72

In its broad outlines, the later Battle of Casilinus (554 A.D.) against the Franks was similar. The Franks attempted to push through a line of Byzantine infantry, failed, and were shot down by infantry and horse archers on the flanks. This account comes to us through Agathias, in general a poorer source than Procopius, but there is no reason to suspect the general outlines of his account.73 Narses won at both Taginae and Casilinus using this combination of infantry and mounted archers, while Belisarius' early successes in maintaining a Byzantine presence on the Italian peninsula involved a judicious

71Procopius 4.29-32.
73Delbruck. Vol II 369-374. Delbruck did suspect Agathias' account, but his points were minor and concentrated on Agathias' misinterpreting the Frank's battle formation. He didn't dispute the basic fact that the Franks tried, and failed, to penetrate the Byzantine center and were then surrounded and destroyed. Agathias was not an eyewitness nor a soldier, unlike Procopius.
use of mounted archers as well. Justinian's conquest of Italy may well have been impossible without mounted archers to act as an equalizer to the greater numbers of the Byzantines' enemies.

The importance of archery was not, however, universal. In the battles that Procopius describes in Africa archery is conspicuously absent. When Solomon faced the same Moorish tactic that prompted Procopius' earlier comment on the Vandals' lack of archers, it was not bows but rather swords that made the difference and allowed the Roman victory. Indeed, in each of the battles described above, both in Africa and in Italy, the final push involved spear and sword. This is one of several strong indications in Procopius that many of the Romans were not bowmen. Besides a multitude of references to spearmen, he mentions in his account of the battle of Callinicum that "...their missiles were incomparably more frequent...the Persians are almost all bowmen and they learn to make their shots more rapidly than other men." We can infer that, on this occasion, many in the Roman army were not bowmen. This battle occurs quite early in Procopius account and in Belisarius' career. It is possible that the use of archers was still relatively new in the Roman armies at that time. The lack of archery as a decisive force in the African campaign followed by its importance in the Italian campaigns might indicate that this is the period when most of the transformation from sword and spear to bow, sword and spear occurred.

If the number of Roman bowmen is uncertain, their quality and the quality of their bows is not. In comparing the effects of the Roman arrows with the Persian, it is the power of the Roman bows which overcomes the rapidity of

---

74 For example: Procopius. IV.III.10-17.
75 Procopius. IV.XI.47-56.
76 Procopius. I.XVIII.31-38.
fire the Persians achieve with their "...weak and not very tightly strung..." bows.\textsuperscript{77} Roman horse archers in the Gothic War are considered on par with the Hunnic mercenaries by Belisarius,\textsuperscript{78} although the comment "practically all the Romans...are good mounted bowmen..."\textsuperscript{79} probably refers to the Roman cavalry and not the army as a whole.

Further evidence of the composite bow’s growing importance is found in the \textit{Anonymous Byzantine Treatise on Strategy} (henceforth ABST). This work, dated most likely to the latter part of Justinian’s reign,\textsuperscript{80} is a thorough tactical and strategic manual. It was most likely written by a retired, educated officer or engineer\textsuperscript{81} and is thus more reliable than, for instance, Vegetius on military affairs. His comment that the soldiers of his day were "...not...making use of tactics...if that were so, what purpose would be served by this book?",\textsuperscript{82} implies that his sections on archery were written because it was not widely practiced or that standards were low.

Unlike Vegetius, the ABST contains no suggestions for training with spear or sword; instead it contains sections on the training of archers in three

\textsuperscript{77}Ibid. Delbruck chose to ignore this entire section of Procopius as “factually incorrect”. I find his arguments unconvincing, he discounted Procopius without addressing Procopius’ status as an eyewitness to the Battle of Daras, wondering how the Persians (heirs to the Parthians and Carrhae) had allowed archery (a traditional weapon of war in their society) to lapse so badly that they were bested by Roman archery. Yet by the Battle of Daras the Romans had been in contact with the Huns (and the more accurate Qum-Darya style bow) for over 150 years. Lacking an ingrained tradition of composite bow manufacture it is possible they adapted to the new weapons more quickly than the Persians. Remember that the long potential life of the composite bow meant that at least some Levantine style weapons built in the early part of the Hunnic arrival would still be in use. Of course, more importantly, Procopius does not actually say that the Persians were bad archers, but rather that they fired more quickly and with less power. Considering that, with the exception of the Byzantines, their likely enemies wore little or no armor an emphasis on rapidity of shooting over the power of individual shots is logical. Delbruck. p346-347.

\textsuperscript{78}Procopius. \textit{History of the Wars. V.XXVII.26-29.}

\textsuperscript{79}Ibid.

\textsuperscript{80}Dennis, George T. \textit{Three Byzantine Military Treatises}. p3.

\textsuperscript{81}Ibid.

\textsuperscript{82}ABTS 15.5-15.
different aspects. These are accuracy, power, and rapidity. Each of these sections contain practical procedures for improving these aspects of Byzantine archery. In addition to these training suggestions, the work includes ideas for using archers against cavalry. Cavalry forces are described as shock troops, not as bowmen, though the section on archery mentions that troops should be able to shoot on horseback. The work also shows that Narses was not alone in his trust of the infantry: "We should station the infantry in the center of the entire army with the cavalry on both sides of them." Considered alone it is impossible to determine if the work reflects widespread trends, but taken with its contemporary Procopius it certainly makes a strong case.

The ABTS also describes the proper way for an infantry unit to defeat cavalry. The first ranks should "...keep up a continuous fire with the bow, aiming at the feet of the enemies horses...as the enemy come close...pick up their spears from the ground, hold them tightly, and with increased energy and courage they should advance against the enemy." This tactic clearly requires well trained and disciplined troops, and shows clearly the confidence that Byzantine commanders began to have in their troops.

The ABTS begins to codify the tactical innovations of Belisarius and Narses, changing these individual stratagems into a coherent method of warfare that, with refinements, would serve the Empire for three more centuries.

83ABTS 45, ABTS 46, and ABTS 47.
84ABTS 36.
85ABTS 17.20-25.
86ABTS 44.15-20.
87Anonymous Byzantine. Treatise on Strategy. 35.1-35.
88ABTS 36.1-20.
Rise of the Theme System

The number and status of early fifth and sixth-century Roman archers may be uncertain, but that is hardly the case later on, in the *Strategikon*, mounted bowmen are the most important troop type described. The *Strategikon* has traditionally been attributed to the Emperor Maurice, though many doubt he actually wrote it himself. Its dating is more certain; internal evidence indicating it was likely written between 592 and 610. The *Strategikon* is of critical importance to the study of the Byzantine military, as it describes the results of the military reforms attributed to Maurice and Heraclius. These reforms returned the Byzantine army to the status of a regular, imperial army, reducing the significance of the private mercenaries and barbarians who were so prevalent in the fifth and sixth centuries. The effectiveness of this reorganization is evident in the Byzantine's triumph over Rome's ancient enemy, Persia, during the reign of Heraclius, and marred by the subsequent successes of the Arabs. Its eventual success was borne out by its longevity; In the Tenth century the Emperor Leo VI copied the system with little change in his work *Tactical Constitutions* and Byzantine armies continued to be organized along these lines until their collapse in the eleventh century.

The style is similar to that of the earlier work, purposefully simple. The author is quite clear here: "...we have paid no attention to the niceties of graceful writing or fine sounding words. This is not something graceful we are doing. Our concern rather, has been with practicality and brevity of expression." This emphasis makes the *Strategikon* our single best text for the

---

89 Dennis, George. *Maurice's Strategikon*, pXVI-XVII. See also Maurice, *Strategikon*. Prologue. While the authorship of the work can not be confidently ascertained, its status as an official imperial document is indicated by the opening statement and general tone of the Prologue. Note that the work will be attributed to Maurice in these footnotes for ease of use.

90 *Strategikon* Book I Introduction.
Byzantine military. The *Strategikon* is organized along lines similar to a military manual today: each chapter is given a simple, descriptive title and the work follows a logical outline. It begins with the basics—officer titles and responsibilities, the recommended size of each unit, a listing of military crimes and appropriate punishments, and the equipment requirements for each type of soldier. In brief, it performs the functions of a modern table of organization and equipment. It then moves on to the various formations and their appropriate use as well as addressing common battlefield problems such as controlling troops in battle, laying and responding to ambushes, and the importance of protecting the baggage train.

Two separate reforms occur during this period. One, the adoption of the tagmata as a fighting unit is documented within the *Strategikon*, though any reforms actually started by Maurice himself were soon nullified by the civil war that ended his reign and the Sassanian invasion which followed. When the Emperor Heraclius took over the army was in sorry shape. He found the troops were "...lazy, cowardly, disorderly, and undisciplined..." when he finally managed to arrange matters so he could campaign against the Persians. The efficacy of his training efforts is evident in his stunning success over the Persians.91

The army Heraclius led to victory over Persia was defeated shortly thereafter by the Arabs, a surprising and ironic turn of events that has inspired much historical debate. Notoriously short of horses, the Arabs used tactics in these early battles which show heavy signs of Byzantine influence. Specifically, the Arabs used infantry in close formations armed with bows and spears (similar to those described in the ABST). These tactics clearly caught the Byzantines by

---

surprise, as pre-Islamic Arab infantry had traditionally been composed of light skirmishing troops. The Byzantines continued to fight using the sophisticated tactics of the *Strategikon*, but were consistently forced to fight under disadvantageous conditions due to logistical concerns and the disorganization of the region following the war with Persia. The Arabs were quick to exploit even small Byzantine mistakes; at the critical Battle of Yarmuk the Arabs took advantage of a small break in Byzantine lines that occurred when the cavalry attempted to perform one of the *Strategikon*’s complicated maneuvers.

After Heraclius and the Arab invasions the true reform of the Empire’s military organization began, the beginnings of the theme system. Under the Theme system the army was again divided into two forces, one a standing, imperial force known as the Tagmatic troops, based around Constantinople. The other force was the Thematic armies, a body of warriors drawn from administrative districts throughout the Empire. The Thematic armies were used to defend their individual theme, but they also could be employed outside, to reinforce the Tagmatic forces when needed. The troops of the Thematic forces were *stratiota*, small landholders who held a hereditary land grant, the

---

92 D. Nicolle, *The Armies of Islam 7th-11th Centuries*, p9-12. Note that the Arabs created cavalry as quickly as the could acquire horses. By the time the initial conquest ended there was little difference in weapons or style of war between the Arabs and their Byzantine opponents. D. Nicolle, *Armies of the Muslim Conquest*.
94 The exact dating and author of these reforms is hotly contested by Byzantinists. The first mention of a “theme” comes in Theophanes, *Chronographia*, 300. (concerning the beginning of Heraclius’ reign) but the reference is most likely anachronistic. The theme system really begins to take shape following the initial Arab invasions. See W.E. Kaegi, *Byzantium and the Early Islamic Conquests*, p279-285. for a discussion of some of the issues involved.
95 Also a title used to indicate a regular, tactical unit-later replaced by *banda*.
96 These should not be confused with the *pronoia*, who appear in the 11th century and will eventually supplant the *stratiota*. The *pronoia* system in its fully realized form falls outside the chronological scope of this paper, but was essentially a form of Byzantine feudalism that supported an armored, noble heavy horsemen on a non-transferable hereditary peace of land. Ostrogorsky sees the collapse of the themes and the rise of the *pronoia* system as a major cause in the eventual Byzantine fall.
stratiotike ktemata. This grant carried with it a military obligation, in addition to which the stratitai was paid (though sporadically). The theme were commanded by a strategus but the thematic troops owed an allegiance (technically) to the Emperor directly. In addition to periodic patrol duties and call ups during emergencies, they were required to train regularly with their weapons and tactical formations. The tagmatic and thematic armies returned the concept of regularized tactical units to the Empire, missing since the collapse of the West.97

The troops themselves were trained in archery styles remarkably similar to those described in the ABTS.98 Only young foreigners, "...unskilled with the bow..." were exempt from carrying one.99 All Romans were "...required to possess bow and quiver..." along with two lances.100 These were not light cavalry or foot, since troops were to wear armor and carry "...lances of the Avar type..."101 By the end of seventh century the mailed archer/lancer was the keystone of the Byzantine army’s combined arms approach, completing the transformation that occurred in the sixth century.

Golden Age of Byzantium and the Decline of Byzantine Archery

In the eighth and ninth centuries Byzantine Empire underwent a surprising revival, surviving raids and invasions on all fronts to again become an expansionist power. The first half of the eighth century saw the development of the famous “Shadowing War” tactics, a guerrilla strategy devised by the Byzantines to off set their relative weaknesses along the frontier. Based upon

98Maurice. Strategikon. 1.1.  
99Maurice. Strategikon. 1.2.  
100ibid.  
101ibid.
the local, thematic troops this style of warfare encouraged hit and run tactics, and continued to emphasize the use of archery as a means of responding to larger, but less skilled forces. The exact methods were preserved in a Byzantine military manual, after the tactics had become obsolete due to the Byzantine resurgence.

The work under consideration is known by the descriptive title *Skirmishing*. Commissioned by the Emperor Nikephoros Phokas it was apparently completed after his death in 969. While the author of the work can not be known with surety, there is circumstantial evidence that indicates it was written by Leo Phokas, a successful Strategos or general on both the European and Anatolian frontiers of the Empire. The work presents a system of warfare designed to allow a small, skilled force to maintain if not territorial integrity, then at least political control of a region in the face of a superior foe.

It is organized along lines similar to the *Strategikon*, and was likely intended as a supplement to that work. Each chapter is straightforward and practical; the titles speak volumes themselves: “Watch posts. How far apart they ought to be from one another.”, “Enemy movements. Occupying difficult terrain in advance”, “Controlling the water in the passes ahead of time.”, and “Shadowing and following the army.” This careful attention to the details of a campaign is evidence that the writer intended his work to be used as a guide rather than as a theoretical work.

From the latter part of the eighth century until the eleventh century

---

102 Nikephoros is referred to as both the patron of the work and as the “revered emperor” (aoidimos) a term used for deceased rulers. Dennis. *Three Byzantine Strategic Treatises*. p140. 
103 While several other members of the Phokas family are praised (notably Bardas Phokas and Nikephoros himself) Leo is not mentioned by name. However two of the three specific battles mentioned were won by Leo and most of the tactics described were used by Leo, according to the history of Leo the Deacon. The dates match Leo as the author as well. Dennis. *Three Byzantine Strategic Treatises*. p139-140.
Byzantium was again on the offensive. Under a string of competent soldier Emperors large portions of the lost provinces were returned to the Empire including Crete and, for a time, Northern Syria. These advances culminated with Basil II's (976-1025) defeat of the Bulgars, which established Byzantine dominance of the Balkans. These large offensive wars were obviously beyond the scope of the shadowing war stratagems, the new style is found within another Byzantine military treatise.

*Campaign Organization and Tactics* was written within 25 years of *Skirmishing*, yet it presents a very different style of warfare. Where *Skirmishing* rarely rises above the level of the banda or company and never goes higher than the Thematic or provincial army a Strategos might command, *Campaign Organization and Tactics* deals exclusively with the operation of large armies led by the Emperor himself. It seems to have been written as a handbook of advice for a young and/or inexperienced Emperor preparing to embark upon an important campaign. Some historians have attributed it Nikephoros Ouranos and believe it was intended for Basil II. Its dating would thus fall between 991 and 995. As is usual when dealing with ancient texts the scholarship is not in universal accord and the evidence does not permit the drawing of satisfactory conclusions.

In many ways *Campaign Organization and Tactics* is a summary or condensed version of the *Strategikon*. The same topics are covered, albeit in a broader sense. The reader is advised on how to equip the troops but not presented with the detailed equipment list present in the earlier study. In a similar vein other chapters address the problems of moving through narrow defiles, utilizing and acquiring spies, and training the army. The army organization and weaponry appear nearly identical to that expressed in the
Strategikon, evidence that, in theory at least, little had changed since Maurice’s reforms.

Byzantine inability to counter Turkic archery was a significant factor in the catastrophic Byzantine defeat at Manzikert and the subsequent Turkish conquest of much of Anatolia. This is surprising, given the emphasis that the Byzantine military manuals place on archery training. Kaegi sees a clear Turkic tactical advantage in their use of the composite bow which allowed the Turks to exploit the opportunities the Byzantines presented them with prior to and following Manzikert. He implies that the only credible tactical response available to the Byzantines was to develop their own skilled loyal horse archers, which by this point they lacked.  

Kaegi carefully compiled his evidence for the superiority of Turkic archery over that of the Byzantines. He begins with an often ignored engagement, the Battle of Dazimon (23 July 838). Kaegi identifies this battle as the first significant encounter between the Byzantines and the Turks. The Byzantines, under the Emperor Theophilus (829-842), met the army of the ‘Abbasid Caliph Mu’tasim (833-842) near the town of Dazimon in the Anatolic Theme. According to the Byzantine historian Joseph Genesius, Mu’tasim’s army included 10,000 Turkish mercenaries. These mercenaries had a decisive effect on the battle, first stopping the Byzantine advance with their arrows and then routing the Byzantine forces. Theophilus himself would have perished, according to George Cedranus, if a heavy rain had not fallen and

---

104 W.E. Kaegi “Contribution of Archery to the Turkish Conquest of Anatolia” Army, Society, and Religion in Byzantium. The article was first published under the same title in Speculum, XXXIX. 1964.
106 ibid.
107 ibid.
weakened the Turkic archery. In Kaegi's opinion only internal difficulties prevented Mu'tasim from marching on Constantinople that year.

Kaegi then touches on the Tactica of Leo VI (886-912), from which he takes a quote indicating a neglect of archery at the beginning of the tenth century. Kaegi admits that archers were available during the height of Byzantine power at the end of the tenth century, but he points to a general decline in the Byzantine army after Basil II (963-1025) leading to the Byzantine deficiencies in archery at Manzikert.

After noting several passages that described the effectiveness of the archery of both the Turks and the Pechenegs, Kaegi describes the pivotal Battle of Manzikert (1071 A.D.). In Kaegi's brief account it is fear of Turkish archery which compels the Byzantine Emperor, Romanus IV Diogenes (1067-1071 A.D.), into the retreat which treachery then turned into a rout. Indeed, Kaegi understates his case on this point. The Turks maintained the initiative throughout the battle, forcing the Byzantines again and again into a charge which led them further from their bases and yet still failed to bring them to grips with the Turkish archers. There existed only two methods for dealing with numerous, competent horse archers in the pre-gunpowder period. The first

---

108 Water loosens and stretches the sinew string of a bow, this allows the bow itself to move towards its unstrung shape and weakens the pull. The result is a bow with less range and less momentum or killing power. The heavy rain itself would have also decreased visibility and absorbed much of the arrows impetus. The effect of rain and moisture on missile weapons has often had an important effect on the course of battles in the pre-gunpowder era. The most well known example is the battle of Crecy (1346) where the poor showing of the Genoese crossbowmen in the battle's opening stages is attributed to a sudden downpour wetting their strings.


involved coming to grips as soon as possible with horse archers, in order to neutralize the firepower of their bows and force them to accept losses. The second alternative involved facing them with archers of your own, whether afoot or mounted, who could then reply to fire with fire and again force the horse archers to accept casualties. The key, in both instances, was to remove the ability of the horse archer to inflict damage while receiving none in return. By the time of Manzikert the Byzantines had only a few, relatively unskilled archers to deploy against the Turks, they were forced to attempt to close with the Turks. Unable to close with the Turks, Romanus IV Diogenes was forced to sound the retreat, a dangerous maneuver for any army, and one which was disastrous for the Byzantine army, riddled with treachery and low morale.112

There are a multitude of causes for Byzantium’s defeat at Manzikert, a simple lack of archery cannot be said to have been the sole cause of the defeat. However, an army armed and trained in the methods of Belisarius and Narses, an army whose troops used sword, spear, and bow as required, would have been less affected by the Turkic archery. That much, at least, of the danger would have been lessened.

Kaegi concludes his argument by restating that he sees archery as a military factor which acted in concert with the other causes Byzantinists have presented to allow the Seljuk conquest of Anatolia.113 This is clearly Kaegi’s

112 W.E. Kaegi “Contribution of Archery to the Turkish Conquest of Anatolia” Army, Society, and Religion in Byzantium. p106. While Turkic archery is acknowledged as a factor by most historians, other factors were also responsible for the Byzantine defeat, including treachery and strategic blunders. Note that the Byzantines actually outnumbered the Turks, a rare advantage for Byzantium. My account follows a good, comprehensive account of the battle, Alfred Friendly. The Dreadful Day: The Battle of Manzikert 1071.
main point, but another question more pertinent to this topic remains: Why did the practice of archery deteriorate so drastically within the Byzantine army, especially since its importance is still emphasized within the Byzantine military treatises?

Kaegi's short statement that the army in general declined after Basil II falls far short of explaining this phenomenon. The standard view on the causes of this general military decline, presented in Ostrogorsky, is the rise of the aristocracy and collapse of the stratiotas. Perversely, however, the aristocracy is identified as the "military" party. The rise of a feuding, independent aristocracy with strong military ties and aspirations often leads to an overall decrease in military effectiveness. The civil war which followed the Battle of Manzikert demonstrates the logical outcome of this trend. It does not, however, explain by itself the decline in archery skill which contributed to the Byzantine defeat.

Military aristocracies by their nature encourage the development of individual military skills such as archery and horsemanship. The personal skills which were trained into the Thematic troops could be as well gained through the traditions of a military aristocracy. In fact, the Seljuk Turks were ruled through just such an aristocracy and produced their incredible mounted archery skills not through organized training but rather through tradition, familial training, and culture. From the beginning of the theme system the army shifted more and more into the hands, often literally, of the aristocracy, losing a great deal of its cohesiveness, its discipline, and its morale. The decline of


\[115\] Military aristocracies encourage competition among their members in regards to individual military skills because their position within society nearly always rests upon a monopoly of socially sanctioned violence. Examples of this include the knights of Western Europe and the Samurai of Japan. I am unaware of any military aristocracy which did not encourage the development of individual military skills.
Byzantine archery came about not from aristocratic incompetence, but rather aristocratic indifference.

Archery skill was simply not a part of the ethos of these provincial aristocrats. As the central authority (the emperor) had less and less control over the army's training, provincial aristocratic values asserted themselves. This aristocratic culture held to military virtues that were not compatible with the use of the bow as a weapon of war. Expressed best in the *Digenes Akrites* 116, these values grew out of the frontier mentality that accompanied the raids between Byzantium and Islam. The values were shared by the Byzantine's opponents, traditional accounts of Umayyad heroes portray them in a manner similar to *Digenes Akrites* .117

The *Digenes Akrites* shows a provincial culture with a reverence for what we would consider the Homeric heroic idea. Digenes even uses a club while fighting lions and bears in a manner similar to that of Hercules. The role of archery is played down even more than in the Homeric stories, which show Odysseus slaying his unwanted dinner guests with his great bow. A careful survey of the *Digenes Akrites* produced only two minor references to archery.118 The list of wedding gifts in Book IV includes a sword, spears, and shields, but no mention of a bow or arrow of any type.119 Throughout the work, close personal combat is shown as the warrior ideal; "For spear I did not take to them, nor bow, but drew my sword and came within arm's length."120 This

---

116 *Digenes Akrites* is an epic poem, written in Greek. The dialect is more "common" than that found in works from Constantinople, the poem is considered to represent the attitudes of the provincial aristocracy. It dates to the 9th or 10th century. Ostrogorsky p149.


118 The survey was conducted personally, using J. Mavrogordato, trans. *Digenes Akrites.* The two minor references can be found on p95 Bk IV.1417 and p205 Bk VI.3163-4.


120 *Digenes.* p205 Bk VI.3163-4.
preference is paired with a disdain for those who strike at a distance or from behind. When his horse's hindquarters are struck by a spear from behind, Digenes exclaims "Wait for me face to face if you be a soldier, and bite me not by stealth like a mad whelp."\textsuperscript{121}

The combat scenes of the \textit{Digenes Akrites} could be put down to archaising by later redactors were they not so uniform in the various versions. Moreover, several other sources collaborate this view of the aristocratic view on military virtues. Anna Comnena's \textit{Alexiad} shows the same aristocratic culture, though the ability to stand firm under archery fire became a virtue as well in the aftermath of Manzikert. Kaegi points out that the Byzantines generally got the better of their opponents in close combat, provided they had not been weakened by archery fire previously.\textsuperscript{122}

Byzantine archery did not simply disappear overnight. In fact Kaegi asserts that the bow was once again the weapon of choice for Byzantine armies by 1143.\textsuperscript{123} The Byzantine archers present during the crisis of the eleventh century were overpowered in both skill and numbers by the Turkish horse archers. They simply failed to cover their heavier comrades from the debilitating fire of the Turks. Byzantine commanders tried to rectify the situation by hiring foreign mercenaries, a practice much maligned by modern historians. This practice, though not necessarily doomed, failed to achieve noticeable results in the crisis of the eleventh century.\textsuperscript{124} The rise of the provincial aristocracy may not have been the clear deathblow to Byzantium that Ostrogorsky suggests, but

\begin{footnotes}
\item[121] \textit{Digenes}. p195 Bk VI.2976-7.
\item[122] W.E. Kaegi. "Contribution of Archery to the Turkish Conquest of Anatolia" \textit{Army, Society, and Religion in Byzantium}. p100, 102, 103, 106.
\item[124] The desertion of the Pecheneg mercenaries at Manzikert helped precipitate the Byzantine defeat.
\end{footnotes}
it did weaken the Byzantine armies in the area they most needed strength against the Turks. Unopposed by native horse archers, the Turks used their tactical advantage to exploit the operational and strategic opportunities created by dissension in the Byzantine ranks. The Empire was thus deprived of a rich and strategically important region. Byzantine survival from this point was possible, but much more difficult.
Conclusion

The Romano-Byzantine Empire adopted the composite bow as its primary weapon because the bow's tactical characteristics lent themselves well to the preferred indirect (and later guerrilla) strategies employed by Late Roman and Byzantine armies. Originally adopted as preventive measure against its use by Rome's opponents, it evolved into an important force multiplier which allowed the outnumbered forces of Justinian I to reconquer Italy and North Africa. Later Byzantine generals recognized the advantages this system presented, and systematized it. Thus transformed from the tactical innovations of Belisarius and Narses into the sophisticated methods described within the Strategikon this tactical system was an important part of Byzantine theory for centuries.

The centralized authority of the Empire allowed it to overcome the difficulties inherent in raising, training and equipping a native force of archers in a society where the composite bow was not a traditional weapon. By coopting craftsmen for regions where the bow could not normally be prepared, and providing the materials needed to these regions, the Romans brought about the only historical period where the composite bow was widespread throughout Northern Europe.

As the Empire resurged in the Ninth and Tenth centuries the culture of the local, landed nobility began to gain greater influence, and skill with the composite bow began wan. By the time the Seljuk Turks arrived Byzantium no
longer possessed a corps of trained, native horse archers capable of opposing them. With political and social turmoil negating Byzantium's other means of countering the Turks much of Anatolia was lost, and the Byzantine Empire ceased to be the premier power of the Mediterranean.

The success of the Romano-Byzantine armies in utilizing the composite bow was a factor in the survival of the Empire until the Eleventh century. This survival in turn allowed the preservation of much of our knowledge concerning Antiquity as well as shielding the developing nations of Northern Europe from Islamic incursions. The use of a single weapon, or even a single tactical system cannot be ascribed as the sole cause of Byzantium's continued survival, yet this study does show that the successful application of a tactical system can create opportunities a society can exploit to increase its chances of survival in the face of difficulties outside its control, such as the appearance of Islamic military power in the Seventh century. Conversely, failing to maintain a viable tactical system can undermine gains such as those made in the Tenth century.
Appendix: Terminology of the Bow and Arrow

Like all weapons a composite bow has a specific nomenclature, for use while discussing the bows various functions and parts. The arrow is the simplest, it consists of a stone or metal head attached to a stele or shaft. The whole is guided in flight by the fletching on the end. The nomenclature of the bow is more complicated: The grip is where the bow is held, the limbs being the portion of the bow above and below the grip. At the end of each limb, is an ear, the bowstring attaches to the bow at those points, resting in the nock. Between the ear and the grip on each limb is the working limb. The ears may be covered by bone or horn ear lathes. Ear lathes strengthen the bow at a critical pressure point and act as a lever, allowing use of a bow of greater pull or weight. A bow's pull or weight is number of pounds of force necessary to draw the string back to the full length of the arrow. The belly of the bow is the side facing the archer, the back faces away. Grip laths are similar to ear lathes but placed around the grip. Lathes are the pieces that most often survive archaeologically. Figure 5 illustrates the terminology for the bow, and includes information on what each portion of the bow is made from, while Figure 6 does the same for the arrow.125

125 This terminology is standard; see Saracen Archery p6-7.
BOW TERMINOLOGY

Figure 6
After Coulston. p329.
Figure 6
After Coulston. p333.
### Chronology

All Dates A.D. except as noted

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>53 B.C.</td>
<td>Battle of Carrhae. Marcus Crassus defeated by Parthians. This marks the first Roman contact with the composite bow in a major battle.</td>
</tr>
<tr>
<td>27</td>
<td>Augustus establishes the Principate.</td>
</tr>
<tr>
<td>284-305</td>
<td>Reign of Diocletian.</td>
</tr>
<tr>
<td>311-337</td>
<td>Reign of Constantine.</td>
</tr>
<tr>
<td>312</td>
<td>Battle of Mulvian Bridge.</td>
</tr>
<tr>
<td>357</td>
<td>Battle of Strasbourg. Julian defeats Germans under Chnodomar</td>
</tr>
<tr>
<td>378</td>
<td>Battle of Adrianople. Valens defeated by Visigoths.</td>
</tr>
<tr>
<td>451</td>
<td>Battle of Catalaunian Fields. Attila defeated by combined Imperial and Gothic forces.</td>
</tr>
<tr>
<td>527-565</td>
<td>Reign of Justinian I</td>
</tr>
<tr>
<td>530</td>
<td>Battle of Daras. Belisarius defeats the Persians.</td>
</tr>
<tr>
<td>533</td>
<td>Belisarius defeats Vandals and returns Imperial rule to Africa.</td>
</tr>
<tr>
<td>535-554</td>
<td>First Belisarius, then Narses leads Imperial forces in recovery of Italy.</td>
</tr>
<tr>
<td>537-538</td>
<td>Siege of Rome. Belisarius besieged by Witiges.</td>
</tr>
<tr>
<td>552</td>
<td>Battle of Taginae. Goths defeated by Narses.</td>
</tr>
<tr>
<td>554</td>
<td>Battle of Casilinus. Franks defeated by Narses.</td>
</tr>
<tr>
<td>c602-628</td>
<td>War between Persian and Byzantine Empires.</td>
</tr>
<tr>
<td>610-641</td>
<td>Reign of Heraclius</td>
</tr>
<tr>
<td>627</td>
<td>Battle of Nineveh. Heraclius defeats the Persians.</td>
</tr>
<tr>
<td>633</td>
<td>First serious Arab attacks on Imperial territory.</td>
</tr>
<tr>
<td>635</td>
<td>Damascus falls to the Arabs.</td>
</tr>
<tr>
<td>636</td>
<td>Battle of Yarmuk. Imperial defeat leaves Syria and Palestine open to Arabs.</td>
</tr>
<tr>
<td>641-642</td>
<td>Arabic conquest of Egypt.</td>
</tr>
<tr>
<td>674-678</td>
<td>First siege of Constantinople by the Arabs under Muawija. First use of Greek Fire.</td>
</tr>
<tr>
<td>717-718</td>
<td>Second Siege of Constantinople by Arabs.</td>
</tr>
<tr>
<td>838</td>
<td>Battle of Dazimon. Byzantines defeated by Arabs with Seljuk mercenaries.</td>
</tr>
<tr>
<td>1071</td>
<td>Battle of Manzikert. Byzantine military power smashed by Seljuk Turks.</td>
</tr>
</tbody>
</table>
Bibliography

**Primary Sources**


Secondary Sources


__________. *The Byzantine Empire*. Fisher Unwin Ltd. London, 1892.


