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*Logistics of Warfare in the Age of the Crusades: Proceedings of a Workshop held at the Centre for Medieval Studies, University of Sydney, 30 September to 4 October 2002* edited by John H. Pryor

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Logistics does not normally fall within the purview of the history of science, although the Pentagon defines it as ‘the science of planning and carrying out the movement and maintenance of forces’ [U.S. Joint Chiefs of Staff Organization 1988, 206]. This is science in the same sense as it was used in the late 19th century to denote any systematic activity with rules and principles that are subject, at least in part and often unstated, to numerical manipulation. In 1878 a professor of military engineering, Col. J. B. Wheeler drew the distinction between art and science for his students, cadets in the U.S. Military Academy at West Point: principles, analyses, rules,

all these belong to the ‘*Science of War*’. The application of these great principles and rules belongs to the ‘*Art of War*’.  
[1878, 7: emphasis in original]

Another army officer, Capt. Henry Metcalfe, expressed the meaning of science and art for many 19th-century thinkers in his classic 1885 management treatise. Science and art were allied but distinct. ‘Art seeks to produce certain effects, Science. . . [to investigate] the causes of these effects’. Regardless of the art, he continued, ‘there always seems room for a corresponding science, collecting and classifying the records of the past so that the future operations of the art may be more effective’. Arsenal administration, Metcalfe’s specialty, provided a concrete example: it ‘is in great measure an art, and depends upon the application to a great variety of cases of certain principles, which, taken together, make up. . . the science of administration’ [Metcalfe 1885/1960, 47].

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The idea that logistics forms a distinctive area of military science and the art of war scarcely existed in Western military thought before the mid-19th century, and even now junior officers may have trouble understanding its importance, as retired Maj.-Gen. Julian Thompson of the Royal Marines reminds us. Logistics, he writes,

was a subject about which I knew nothing during the early part of my career. It was only after graduating from the British Army Staff College at Camberley, that I was forced to take an interest in what, hitherto, I had regarded as something strictly for quartermasters, or 'blanket stackers'. I was posted to the headquarters of the Far East Land Forces, based in Singapore, on the staff of 'Q' Operations, the staff branch responsible for seeing that the logistic plans and operations in the theatre meshed in with the operations requirement; and for directing the efforts of all the theatre logistic services to that end. The colonel at Camberley responsible for my division commiserated with me on my ill fortune in not landing one of the more glamorous operations jobs, and I agreed with him. [Thompson 1991, xi]

Only as a senior officer did he come to appreciate the importance of logistics. Armchair generals talk strategy, begins one of the several versions of the old aphorism, but real generals talk logistics.

Unfortunately, with rare exceptions, that straight talk by real generals about logistics appears to be confined to active duty. When they turn to writing memoirs or military history, they seem as likely as anyone else to remain silent on just those issues that often dominated their professional lives—feeding, clothing, equipping, sheltering, transporting, paying, and meeting all the other needs of the troops, the practical work required to deploy, sustain, use, and refit armed forces. Like most of us, they prefer to recount great deeds and extraordinary events, not the humdrum routine of everyday military life. Historians have largely tended to follow suit. Military writing has been preoccupied with, as Arthur Bowler observed a generation ago in his remarkable study of British army logistics in the American Revolution,

the exploits of men on the field of battle while condemning to limbo by the process of neglect the more prosaic activities

of contractors, commissaries, quartermasters, sutlers and administrators generally. [Bowler 1975, 3]

Lack of glamour notwithstanding, the historical study of logistics, at least for 20th-century wars, has grown considerably, even leaving aside the product of staff studies seeking lessons learned, which have proliferated since the late 19th century, as exemplified by James A. Huston's history of army logistics [1966] or the contribution to the U.S. Army's Vietnam Studies series by Lt. Gen. Joseph M. Heiser, Jr. [1974: cf. Shrader 1992]. Martin van Creveld's broad survey [1977] and the collection edited by John A. Lynn [1993] have helped define logistics as a field of historical study. But work on pre-19th century logistics remains sparse, largely because the material for such studies must be sought piece by piece in the archives of modern Western states. Bowler's book [1975] on British army logistics shows what can be done, as does Geoffrey Parker's astute study [1972] of Spanish logistics in the Netherlands wars of the 16th and 17th centuries. The almost complete absence of quantitative data for armies before the 16th century forces the historian who wishes to understand the logistics of pre-modern armies to expand the available evidence with reason, speculation, and careful calculation. It can be done, as demonstrated by Donald Engels [1978] in his study of the logistics the Macedonian army under Alexander the Great and by Jonathan Roth [1999] in his more recent analysis of the logistics of the Roman Army at war.

Now John Pryor and his colleagues have assembled from a 2002 workshop a collection of 13 papers on the *Logistics of Warfare in the Age of the Crusades*. As the conference organizer and book editor, Pryor has set a clear agenda. Based on his brief description of the conference in his preface, his introduction, and the points emphasized in his concluding chapter, the book's thesis may be stated as follows: quantitatively considering the role of logistics in medieval warfare in general, and the Crusades in particular, can significantly expand our understanding, even if attempts at quantification must rely on limited data and assumptions that may prove faulty. Pryor's introduction is in fact a case study intended to demonstrate exactly what that entails. Although something of a departure from his earlier work, which centered on naval logistics, the gap proves smaller than one might have expected [e.g., Pryor 1982, 1993, 2001]. Taking a specific military movement, Bohemond's slow march from the Adriatic

shore to Constantinople in 1096–1097, Pryor seeks to quantify the amounts of food and other resources required by men and animals, partly by a careful reading of the appropriate primary and secondary sources, and partly by applying what is known about the logistics of more recent infantry and cavalry movements. He considers the nature of the route, the numbers of men and animals, how much room they required, the hours of daylight, the provisioning of galley crews and crusaders, the conversion of wheat to flour to bread, animal feed at rest and at work, provision carriage, and grazing. Quantification of this kind requires numerous assumptions, some of which may well be wrong, but is very suggestive about how one might provide real substance to the logistics of a medieval army.<sup>1</sup> Pryor's concluding digest is perhaps less a summary of the conference papers than an opportunity for him to reinforce these points with reference to the work of his fellow panelists.<sup>2</sup>

Half the remaining twelve articles follow Pryor's lead more or less closely. Bernard Bachrach's contribution adheres most closely to the Pryor model. He begins with a strong plea for paying attention to logistics and a critical review of the existing literature. If his analysis seems a little sketchier than Pryor's, the reason may be that he includes much of his substantial body of work on the logistics of medieval armies by reference rather than detailed repetition [e.g., Bachrach 1993, 1999, 2005]. Here he offers a quantitative discussion of the Crusader force, its situation at Nicaea, the 95-kilometer march to Dorylaion, and its combat-ready arrival, concluding that the crusaders must have relied extensively on Byzantine supplies and logistic organization.<sup>3</sup> Charles Glasheen looks at a different march from the First Crusade, that of Peter the Hermit and his minions from Cologne to Constantinople. Plumbing the textual sources to determine (in so far as possible) who and how many accompanied Peter the Hermit, what time of year they traveled, and what route they took, Glasheen discusses the range of possibilities for supplying

<sup>1</sup> Chapter 1: 'Introduction: Modelling Bohemond's March to Thessalonikē', by John H. Pryor (Centre for Medieval Studies, University of Sydney), 1–24.

<sup>2</sup> Chapter 14: 'Digest', by John H. Pryor, 275–292.

<sup>3</sup> Chapter 3: 'Crusader Logistics: From Victory at Nicaea to Resupply at Dorylaion', by Bernard S. Bachrach (Department of History, University of Minnesota), 43–62.

such a host. Considerations of access to grain and meat through purchase, forage (or pillage), and gift, as well as their bulk, means of transport, and spoilage lead him to conclude tentatively that the crusaders probably carried most of their own provisions through the Germanies, relied chiefly on supplies they bought through Hungary, and enjoyed imperial largesse during the final stages of their journey.<sup>4</sup>

Like Pryor and Bachrach, John Haldon is no stranger to the study of medieval military logistics [e.g., Haldon 1997, 1999]. His contribution complements Bachrach's study in particular, but several others as well, by identifying and quantifying the major factors in Byzantine logistics, which also helps clarify the logistics of crusading armies passing through Byzantine lands. Among the critical factors in understanding Byzantine logistics that Haldon cites were the demographic context, the rate of agrarian production and types of crops, the direct impact of transient military populations on particular regions, the mapping of troop movements to the terrain through which they passed, the possible tracks and roads they followed, the associated effects of climate and season, and the weight of provisions that could be transported on foot, pack animals, or wheeled transport.<sup>5</sup> Several articles in this collection discuss or allude to the problems of buying provisions, but Alan Murray addresses the topic directly. The critical and problematic role of physical coin in the medieval economy is the focus of his enlightening discussion of the financial underpinnings of First Crusade logistics. He offers a detailed account of the availability of local coinage, its acquisition by crusaders, money changing and rates of exchange, regional uses of silver and gold, the establishment of markets, and the growing problems of bearing the increasing weight of coins from plunder, tribute, and gift even as numbers of crusaders and animals declined.<sup>6</sup>

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<sup>4</sup> Chapter 7: 'Provisioning Peter the Hermit: From Cologne to Constantinople, 1096', by Charles R. Glasheen (Department of History, University of Northern Florida), 119–129.

<sup>5</sup> Chapter 8: 'Roads and Communications in the Byzantine Empire: Wagons, Horses, and Supplies', by John Haldon (Centre for Byzantine, Ottoman, and Modern Greek Studies, Birmingham University), 131–158.

<sup>6</sup> Chapter 12: 'Money and Logistics in the Forces of the First Crusade: Coinage, Bullion, Service, and Supply, 1096–1099', by Alan V. Murray (Institute for Medieval Studies, University of Leeds), 229–249.

Other articles address logistical aspects of crusading more qualitatively than those so far considered, though they are by no means devoid of calculations. Working on his fine history of the First Crusade, John France [1994] came to appreciate the importance of military logistics. Here he relies on the relatively abundant data on provisioning provided in the sources for the Second Crusade to approach the question of logistics through a narrative of both the march overland and the naval expedition, with major attention to the provision of food. Although less concerned with detailed calculation than Pryor, Bachrach, or Glasheen, France's logistical angle of vision still manages to throw new light on the nature of the crusade.<sup>7</sup> Logistics may also help explain how crusaders destined for Egypt instead attacked Constantinople in the Fourth Crusade. Thomas Madden [1993, 2003] is best known for his work on the rise of Venice and its role in the Fourth Crusade. Here he credits the Venetians with honoring their contractual obligation to provision the crusaders for up to a year, then explains why the crusaders failed to pay what they owed, lost Venetian support, and increasingly found themselves forced to react to the shortage of food, either actual or prospective, rather than to policy or strategy. This in turn led them to become embroiled in Byzantine dynastic politics with such disastrous results.<sup>8</sup>

Although naval aspects of the Crusades appear in a number of articles, the logistics of seafaring crusaders provides the focus of two articles, neither of them notably quantitative. Ruthy Gertwagen adds to an already long list of articles on eastern Mediterranean ports and harbors [see Gertwagen 1996, 2000, 2004]. This one presents a general review of military transport in the eastern Mediterranean that emphasizes the special importance of frequent watering stops and the trials of sea transport for men and horses. The main goal is identifying the places where galleys and transports traveling eastward might stop to replenish stores, rest crews, and find shelter.<sup>9</sup>

<sup>7</sup> Chapter 5: 'Logistics and the Second Crusade', by John France (Department of History, University of Wales Swansea), 77–93.

<sup>8</sup> Chap. 11. 'Food and the Fourth Crusade: A New Approach to the 'Diversion Question,'" by Thomas F. Madden (Department of History, St Louis University), 209–228.

<sup>9</sup> Chapter 6: 'Harbours and Facilities along the Eastern Mediterranean Sea Lanes to Outremer', by Ruthy Gertwagen (Oranim Academic College, Israel), 95–118.

Contrary to modern perception, overland routes from northern Europe to *Outremer* and back tended to be easier and quicker than the sea lanes, according to Richard Unger, the well-known medieval maritime historian [Unger 1994, Hattendorf and Unger 2003]. The difficulties of the sea passage to the eastern Mediterranean helps explain the readiness of northern crusaders to shift their attention to the pagans, mainly Slavs, who dwelt along the rivers leading to the Baltic, especially after the pope granted them the same remission of sins that applied to crusades against Muslims.<sup>10</sup>

Two articles in the volume make no gesture toward quantification, and seem to me marginal at best to the study of military logistics as well. John Dotson studies the transformation of Genoese and Venetian fleets during the first half of the 13th century, from a mix of oared warships of various sizes and large armed sailing ships to more homogenous galley-dominated war fleets, which seems interesting and persuasive, but only slightly and indirectly addressed to logistics. The same may be said of Benjamin Kedar's intriguing little treatise on early Muslim and European maps, which grants Muslim maps a greater degree of sophistication and potential utility than European, but dismisses both as so remote from modern concepts (and accuracy) as to provide little basis for logistic planning.<sup>11</sup>

Finally, two of the authors address non-Western armies, one quantitatively, the other less so. Reuven Amitai [1995] is the author of an important book on the Mamluk-Mongol war of the late 13th century. Here he attributes Mamluk success in turning back Mongol incursion chiefly to Mongol logistic problems. He seconds the thesis advanced by John Masson Smith, Jr., in 1984 that limited forage and water in Greater Syria precluded the Mongol assembly of an army large enough to compensate for the individual Mongol soldier's inferiority to the Mamluk professional soldiery [see also Morgan 1985].

<sup>10</sup> Chapter 13: 'The Northern Crusaders: The Logistics of English and Other Northern Crusader Fleets', by Richard W. Unger (Department of History, University of British Columbia), 252–273.

<sup>11</sup> Chapter 4: 'Ship Types and Fleet Composition at Genoa and Venice in the Early Thirteenth Century', by John E. Dotson (Department of History, University of Southern Illinois at Carbondale), 63–75; chapter 9: 'Reflections on Maps, Crusading, and Logistics', by Benjamin Z. Kedar (Institute for Advanced Studies, Hebrew University of Jerusalem), 159–183.

Even a one-sided Mongol victory, as in the 1299 Battle of Wādī l-Khaznadār, could not be exploited because Mongol forces had to withdraw to summer pastures.<sup>12</sup> Most of Yaacov Lev's essay on infantry in Muslim armies deals with Fatimid Egypt, centering on the role of slave soldiers (predominantly black) as the primary infantry force and the ethnic tensions which roiled the military establishment, a subject for which he is well known [see Lev 1987, 1997]. Only with the end of Fatimid rule in 1171 did mounted archers supplant infantry as the backbone of Egyptian armies. This change followed directly from the introduction of the land-for-service *iqta* system as the exclusive basis for supporting a standing army. Provincial magnates, who now disposed of the bulk of resources, preferred to furnish cavalry, while the sultan could no longer afford to maintain loyal slave forces, mainly infantry. Basing his judgment on the literary sources, Lev concludes that the desert between Egypt and Palestine posed no serious obstacle to medieval armies, whether on foot or mounted.<sup>13</sup>

The importance of the subject of medieval military logistics and the difficulties of doing it justice are both manifest in this exceptional volume. On the positive side, editor and publisher have gone to unusual lengths to make it a unified work. The book contains a special section of 14 full-page maps plus a gazetteer covering all the articles, especially important for a book devoted in great part to the discussion and analysis of troop movements over considerable distances across lands and seas familiar only to experts. It also sports a glossary of technical terms, a consolidated bibliography, and a full index. Pryor has also contributed a final chapter that summarizes the main points made by the several articles and identifies the major outstanding problems. Like all collections, this one is uneven, though here it is not so much a question of quality, which is uniformly high, but of relevance to the central topic. If medieval military logistics has not yet received its full due in *Logistics of Warfare in the Age of the Crusades*, this volume clearly points the way toward more ambitious and more systematic work. Following the 2002 conference on which

<sup>12</sup> Chapter 2: 'The Logistics of the Mongol-Mamlūk War, with Special Reference to the Battle of Wādī l-Khaznadār, 1299 C.E.', by Reuven Amitai (Department of Islamic and Middle Eastern Studies, Hebrew University of Jerusalem), 25–42.

<sup>13</sup> Chapter 10: 'Infantry in Muslim Armies during the Crusades', by Yaacov Lev (Dept of Middle Eastern Studies, Bar-Ilan University), 185–207.

this book was based, the University of Birmingham became the base, along with Princeton University, for an international project on medieval logistics that extends far beyond what might be considered purely military matters, to the production, distribution, and use of resources, and ultimately embracing entire social and economic structures.<sup>14</sup> The proceedings of the project's first workshop were recently published: Haldon 2006 focuses specifically on the geographical and geophysical substrate of logistics.

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<sup>14</sup> Go to <http://www.medievallogistics.bham.ac.uk/> (Birmingham) or [http://his.princeton.edu/people/e91/medieval\\_logistics.html](http://his.princeton.edu/people/e91/medieval_logistics.html) (Princeton).

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