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"Exhaust my wagon horses today, you won't eat tomorrow": Exploring David Eddings' application of military logistics in *The Belgariad*

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Abstract: In The Belgariad*, David Eddings devotes an extraordinary amount of attention to the subject of military logistics. References abound to supplies, and their importance to soldiers in the field, and Eddings clearly intends to base his invented universe upon sound logistical foundations. But could these logistical systems, so elaborately described by Eddings, function in practice? To answer this question this paper applies logistical modelling methodologies to two scenarios that feature prominently in* The Belgariad*. These models study the logistical structures Eddings describes, determining whether they could have feasibly supported and sustained the vast armies that feature in his universe. It discovers that Eddings' employment of logistical concepts, whilst admirable, is highly inconsistent in practice. However, by further examining the wider scholarly material fantasy authors interested in the topic might draw upon, it concludes that the field provides fantasy authors with a highly fragmented and confusing picture of the operation of logistical systems within medieval contexts.*

Keywords: David Eddings, The Belgariad*, logistics, military, medieval*

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Military logistics, by its very nature, can be a tedious subject. It is inherently a study of numbers: soldiers and material, carrying capacities and supply lines. It does not naturally command attention the way, say, battles and politics can. It is not surprising then, when such issues are occasionally relegated to the side-lines in fantasy literature. These books are written to entertain after all. It is more surprising, however, to discover that even amongst the ranks of professional historians the subject of logistics has traditionally received scant recognition. Since fantasy authors regularly draw influence from history, to explore how logistical concepts are depicted in fantasy literature it is necessary to also examine how historians treat the subject as well. In doing so it will be seen that

the adage that "amateurs study battles whilst professionals study logistics" might not be so accurate after all.

This paper studies the depictions of medieval military logistics within the fantasy literature of David Eddings. Eddings notably possessed personal military experience, serving in the national guard for three years and spending a further two on deployment at a US Army base in post-Second World War Germany (Nicholls 77). He subsequently devoted a surprising amount of attention to the subject of logistics, and his novels are replete with copious references to supplies and their importance to armies in the field. This paper explores two scenarios in particular; the first is the invasion of Mishrak ac Thull that forms part of the climax of *The Belgariad* series, and the second is the siege of the Stronghold, an important incident in the pre-history of the events described in *The Belgariad*.

Employing modelling techniques, these scenarios will be examined in terms of their logistical feasibility. These models balance numerous different variables, including carrying capacities of soldiers and animals, and daily food and water requirements, in order to estimate how long an army could sustain itself in the field. They inevitably require certain assumptions to be made as, for instance, for all the logistical detail Eddings provides, he never relates the nutritional value of Sendarian wheat. However, as predictive models they are powerful tools for examining and assessing the movement of armies through space.[1]

In any case, the intent is not to laboriously pick Eddings' work to pieces, but rather to broadly explore whether he was able to maintain coherent consistency in the use of military logistics as a narrative element within the fantasy world he describes. In turn, these examples will be used to compare how contemporary medieval historians approach the subject of logistics, in order to analyse the resources fantasy authors interested in depictions of logistical structures in their universes might draw upon.

"Gritty realism"

Eddings contends that he knew from his teens he would be a writer, although commercial success eluded him till his forties (Eddings, and Eddings, *The Rivan Codex* 27). His major influences were what he calls the "Medieval Romantics", Chaucer and Sir Thomas Malory in particular, and by his own admission in populating his world Eddings largely drew upon popular Anglo-Saxon, Scandinavian and Germanic mythologies (Eddings, and Eddings, *The Rivan Codex* 10-23). Drawing upon his college education in contemporary American fiction, Eddings interestingly asserts in the preface to a repackaged compilation of *The Belgariad* that, in his opinion, "high fantasy lacked the gritty realism of *The Grapes of Wrath* or *For Whom the Bell Tolls*, so in a sense, our fantasies have been an experiment in form – "Realistic Fantasy", perhaps, or Fantastic Realism, take your pick" (*The Belgariad, Vol. 1* ix).

One example of this "gritty realism" is the inclusion of "pickpockets, thieves and prostitutes" into the narrative, which Eddings argues pushed the "boundaries of prissiness" that he felt overly inhibit the work of J. R. R. Tolkien (Nicholls 80). However, Eddings himself acknowledges that many of these characters, and the stereotypical "Good vs. Evil" plot of *The Belgariad*, are little more than well-worn clichés (*The Belgariad, Vol. 1* ix). Critics have therefore tended to dwell upon the shortcomings of Eddings' characterisations. In particular his reliance upon a derivative Medieval Romantic setting has elicited accusations of eurocentrism, in which a "White

[1] These models are largely derived from the equations developed by John Haldon. See Haldon, *Warfare, State and Society in the Byzantine World, 565-1204*, Appendix 3.

Saviour" defends the established order from collapse at the hands of an exotic, "Oriental", other (Young 45).

However, an overlooked aspect of Eddings' "gritty realism", or "Realistic Fantasy", can be found when we turn our attention to logistics, for here a surprising wealth and depth of detail abounds. Eddings devoted as much, if not more, attention in his novels to the subject of logistics as he does to the actual fighting; of the need to properly water and rest mounts, the difficulties of moving soldiers and material in the field, and the necessity of maintaining coherent lines of supply. There is even a reference to the importance of sanitation and field latrines: not exactly a common topic in fantasy literature (Eddings, *Enchanter's End Game* 70). But is all this attention given to logistics mere window dressing, added to provide a veneer of complexity, or do they describe scenarios that are practically feasible?

Logistics and medieval historiography

That Eddings drew largely upon his own military experience is supported by the fact he would certainly have found little reference to logistical issues in the texts of the 'Medieval Romantics' which heavily influenced his work.The significant influence of Eddings' wife, Leigh Eddings, who also possessed military experience, must also be acknowledged and David credits Leigh with the addition of many logistical details (*Riven Codex* 351).

Medieval texts as a rule only very infrequently refer to the subject of logistics. Amongst those few that do are Byzantine *Taktika*, military manuals written for the benefit of inexperienced generals, which were themselves heavily influenced by the Roman strategist, Vegetius. Others are works written with a clear instructional purpose, such as Odo of Deuil's, *De profectione Ludovici VII in orientem*, an account of the mistakes made during the Second Crusade that led to its ultimate failure. Although even here the author typically attributes the failure of the expedition to Byzantine machinations, rather than poor logistical planning.

Otherwise, references in medieval sources to logistics are few. One compelling reason arguing for the scarcity of such material is that the authors of medieval texts were typically not experienced soldiers themselves, or indeed often have any practical military experience whatsoever, but rather were court or church educated scholars with little interest in the minutiae of waging war. Their depictions of war, and life on campaign, drew heavily upon their own classical literary influences, such as Herodotus, Thucydides, and Livy, and therefore typically focused instead on politics and battles, and continued the classical tradition of inventing heroic pre-battle speeches to enliven their accounts.

A further explanation is that the audience of these sources were likewise little interested in such matters. The audience of these texts is always an important consideration, and material that might be considered uninteresting or unimportant was in danger of either being ignored, or deliberately cut by scribes. The great twelfth century historian, William of Tyre, suffered from both. His history of the Crusader States, *Historia rerum in partibus transmarinis gestarum* (History of Deeds Done Beyond the Sea), was written with a didactic purpose: to warn against the threat Saladin posed if he was allowed to continue his consolidation of power. His audience, however, were only interested in hearing (for medieval texts were read aloud to an audience) of the great and noble deeds of the Franks in Outremer, and thus his warning went unheeded. Furthermore, an entire chapter of his *Historia*, devoted to his experiences in Italy in 1169-70, was deliberately cut from the manuscript by subsequent copyists, and thus has subsequently sadly been lost to history (Davis 70-77).

Logistics and contemporary historiography

The scarcity of logistical material in primary sources has, in turn, directly impacted upon scholarly study of the topic. Such is their paucity that it has been claimed that those historians interested in military logistics have already mined medieval texts to exhaustion for all the information they can provide (Pryor xii). It will be noted that many of the references in this work draw upon Roman examples, since unlike in classical studies the modern study of medieval logistics has moved little beyond its formative stages. In 1977 Martin van Creveld gave the discipline a jolt with his seminal *Supplying War: Logistics from Wallenstein to Patton*, which, particularly through the employment of hypothetical mathematical modelling, challenged many of the assumptions historians have long held on military logistics. Historians have subsequently busied themselves with refuting many of Creveld's methods, stimulating lively debate on the topic for the first time since the early twentieth century.

Yet it is still the case that only very few historians have given the topic of medieval logistics serious consideration. Indeed, it has been argued that most studies of medieval history are conducted in a logistical vacuum (Pryor xii). Why it remains so lamentably under-explored is an interesting question. Part of the answer is no doubt the fact that logistics is inherently a rather dry topic, and therefore tends to be avoided. This is not an unfair assessment, and has been demonstrated in practice. Prior to the outbreak of the First World War, lecturers at the Imperial War College in Britain mostly taught their charges, future staff officers, the works of classical strategists such as Clausewitz and Jomini. This is because this was a topic that interested them personally, and one their students evidently preferred to study. Too late it was found, after the outbreak of war, that Britain had a surfeit of officers versed in the principles of grand strategy, but not in the application of more mundane staff work. This resulted in widespread organisational chaos for British forces on the continent until an adequate logistical administration could be improvised (Brown 17-41).

A further argument is that contemporary western scholars have little patience for either physical geography or logistics because science and technology have, to an unprecedented degree, liberated them from dependence on either (Pipes 2). Today we have little personal familiarity with the importance of supplies, fodder or water, because the modern world has largely rendered such considerations redundant. Travelling vast distances is now a trivial exercise, which can lead to historians, and fantasy authors alike, falling guilty of equating medieval horses with modern cars, capable of travelling hundreds of kilometres and only pausing periodically to refuel. This, at least, is one charge that Eddings largely avoids.

Another argument is that the modern historiographical orientation of medieval studies does not easily allow the study of physical geography, and by extension examination of the practical difficulties associated with moving pre-modern armies through geographical space. Contemporary historiography is heavily influenced by what has been called the "Cultural turn"; the study of micro-histories and interactions of people within extremely narrow temporal and spatial limits (Suny 1479). Logistics does not easily lend itself to such discourses, and its study is therefore almost entirely absent from modern academic curriculums. The orientation of contemporary academia towards cultural histories also explains how, whilst Eddings work has received copious criticism from social and cultural perspectives, his employment of logistics as a narrative element has to date been entirely ignored.

Contemporary medieval historiography has therefore largely eschewed the study of military logistics. The few works that exist on the subject tend to focus on disparate sections of the whole topic, and often largely disagree with one another on central issues, such as required daily rations for soldiers and animals, or the relative importance of water whilst on campaign. The study of military logistics in the ancient world is somewhat richer, with dedicated treatments of Alexander

the Great's campaigns, or the logistical infrastructure of the Roman Empire, although even here vast blind spots remain, and the study of water logistics, for instance, remains almost entirely untouched.

Consequently, for the fantasy author, such as Eddings, who wishes to employ more grounded examples of logistical structures in their own work, there is not much of a foundation to draw upon.This lack of available information has no doubt played an important role in the relative absence of sophisticated logistical structures in modern fantasy fiction, as many authors understandably lack either the practical experience or literary influences to feel confident in treating the subject adequately.The impact of this lack of readily available information becomes especially evident when we examine depictions of logistics within *The Belgariad* in closer detail.

Scenario One: The invasion of Misthrak ac Thull

The first scenario to be examined concerns one of the culminating events of *The Belgariad*. To briefly summarize: to distract attention from a small group of heroes who are attempting to sneak into enemy territory carrying a vital artefact, an army is raised and marches upon the enemy directly. A secondary goal of the campaign is to cover the movement of a fleet of warships as they are ported overland, till they could be launched into the Sea of the East and thereafter prey upon the enemies' shipping.

The army that is assembled to perform this task is vast, gathered over many months from the major population centres of the 'Good' nations; Cherek, Drasnia, Sendaria, Arendia, Algaria, and Tolnedra. It moves "like a great sea", marches in a column "a mile wide", and the supporting baggage train stretches back "miles into the horizon" (Eddings, *Enchanter's End Game* 68, 70, 80). Clearly, we are dealing with enormous numbers here. Cleverly, however, Eddings declines to ever give a fixed number to the army's size. Numbers have had an intoxicating effect on historians ever since Herodotus' incredulous calculation of Darius' invading Persian army at more than five million soldiers (480). Such numbers, however, often only serve to highlight the author's inability to grasp logistical realities. If Heredotus' figure had been correct, for instance, it has been calculated that the baggage train accompanying Darius' army would have stretched from Greece back to Persopolis (Delbrück 118-120). By declining to give a fixed number to the forces involved, Eddings escapes similar accusations of over-enthusiasm. At least on this occasion.

Whilst this complicates the task of investigating the supply demands of this force, the sheer detail Eddings provides on thelogistical arrangements made makes an estimation possible. Assembling and maintaining this grand army required a monumental logistical effort which, the narrative makes clear, touched upon all aspects of society, with those who were not directly involved in the fighting instead occupied in the supply effort; obtaining provisions and equipment, and moving them to the front where they were needed (Eddings, *Enchanter's End Game* 87).

The detail Eddings provides as to the functioning of the logistical apparatus which supported this army is surprisingly deep, but does it all work in practice? Let's assume that the army consisted of 30,000 infantry and 5,000 cavalry, and was accompanied by a further 15,000 camp followers, such as waggoneers, blacksmiths, medics, pages, and so on.[2] This gives a total size of 50,000, which given the fantasy context is probably too small, and is far smaller than the army which shall be considered in the second scenario, but provides a round total to work with. In a medieval context this would have been an extremely large and unwieldy force, for reasons that shall soon become apparent.

The lynchpin of the enormous supply effort necessary to sustain this force were hordes of slow moving four-wheeled wagons, which either accompanied the army itself, or carried material to

[2] A 3:1 or 4:1 ratio of soldiers to camp-followers was standard in Roman legions.

pre-arranged supply depots. Such wagons are extremely efficient at moving material over long distances, far better than pack animals, and were used extensively by Roman legions for this purpose. Indeed, the famous Roman highways which crisscrossed much of their empire were constructed to allow them to accommodate such heavy wagons in all seasons of the year (McCormick 76). In *The Belgariad* universe the role of the Roman Empire is assumed by the Tolnedrans, and it is their great highways which carry this tremendous weight of traffic.

The supply effort was coordinated around two main supply depots. The first was located on a river, within lush open fields, and near to the friendly fortress which will be discussed further in the second scenario: The Stronghold. The second was located on the edge of hostile territory, on top of a mile-high cliff known as the Escarpment. This supply strategy focused upon the collection of 30 days of supplies at the first depot, and two weeks of supplies at the second, with this 45-day total regarded as the army's "margin of safety" (Eddings, *Enchanter's End Game* 81).

The first supply depot, described as a "virtual city of tents and stacked equipment", was fed by wagons and flat-bottomed barges that plied the Aldur River (Eddings, *Enchanter's End Game* 80). The latter involved the collection of supplies in the Western nations, transporting them by wagon overland along the Great North Road to the town of Aldurford, and then porting them upriver (for the Aldur flows to the north) to the first supply depot. Manoeuvring barges against the current is difficult, but could have been achieved either by poling, or drawing the barges by teams of horses or oxen located on the river banks. The supply depot itself was highly organised, with streets readily laid out so that once the barges arrived they could be quickly unloaded onto waiting wagons and efficiently distributed.

Eddings describes a highly sophisticated supply collection and distribution system. His knowledge of the operation of supply depots is likely drawn from his own military experience, and the employment of river barges renders the entire operation at least functionally believable. Transporting material by water is far more efficient than overland, and historically has always been preferred for this reason. Wagons, on the other hand, are quite slow moving, and when pulled by oxen are only capable of reaching 2 kilometres per hour. When pulled by horses, as was the case here, they can reach speeds of 4.5 kilometres per hour, in line with standard infantry marching rates (Roth 211). However, this does not include the time needed to rest, water and feed the horses, which further slows progress. Eddings acknowledges this necessity and notes that when wagons were used the horses were rested every hour (*Enchanter's End Game* 69).

As Eddings makes no reference to foraging, it is assumed the army carried with it its entire supply needs. Rations would have largely consisted of wheat, baked into the typical soldiers 'biscuit', which is twice baked bread that is extremely hardy and long lasting, if not terribly appetising. There is no consensus as to how much wheat the average soldier required per day in the field, with estimates ranging from as low as 750 grams to 1.7 kilograms. A rough estimate of 1 kilogram of wheat per day is sufficient, meaning 50,000 soldiers required 50,000 kilograms of wheat per day (Haldon 124-6). This diet would be supplemented with meat and vegetables, and Eddings mentions that Algarian horsemen provided the army with a ready supply of fresh meat (*Enchanter's End Game* 80).

Next, we have the equipment the army brought with it. Eddings relates that "boots, arrows, spare swords, and the like" were all required (*Enchanter's End Game* 80). Also necessary were such items as tents, spare harnesses, lances, horse shoes and blacksmithing tools. If we compare it to the equivalent needs of a Roman legion in the field, its *impedimenta*, a force of 50,000 would have required approximately 250,000 kilograms of equipment (Roth 81-4*)*. Another vital item armies carried with them is money. During the Third Crusade, for instance, the money soldiers brought with them constituted an important, and extremely cumbersome, component of the army's

baggage train (Murray 364). Eddings, however, makes no mention at all of money being carried with the army, and so it will be discounted in this model.[3]

Finally, we need to consider the dry fodder requirements of the horses, such as barley, millet or oats. Dry fodder is an essential component of a horse's diet, especially those that are being heavily worked, such as was the case here. An estimate of the daily needs of medieval horses, which were typically smaller than modern horses, is 2.5 kilograms per day (Haldon 283). 5,000 cavalry would actually total 10,000 horses, as each required at least one remount, a detail Eddings also notes when he mentions they were occasionally ridden by the infantry (*Enchanter's End Game* 119).[4] This, therefore, equates to 25,000 kilograms of dry fodder per day.

Thirty days of supplies at the first depot, therefore, amounts to 1,500,000 kilograms of food, 750,000 kilograms of dry fodder, and 250,000 kilograms of equipment, giving a total of 2,500,000 kilograms. If the four-wheeled wagons Eddings describes were fundamentally the same as those used by the Romans, they could each transport approximately 650 kilograms, so the depot would take 3,846 wagon loads to fill (Bachrach 717). It then would require a further 115 wagon loads each day to continuously maintain thirty days of supply at hand. This clearly entailed an enormous effort, and Eddings describes the roads of the Western nations as being swarmed with caravans of wagons, all directed towards meeting this enormous demand (*Enchanter's End Game* 69).

This analysis is sufficient for the first supply depot but the second introduces two new factors. This depot was located in extremely arid terrain, described as being comprised of "rock, sand, a few thornbushes and no water" (Eddings, *Enchanter's End Game* 102). Whilst at the first supply depot the lush grassland and adjacent river would have provided plentiful green fodder and water, at the second these would need to be provided for the army. Horses require about 7 kilograms of green fodder, and approximately 30 litres of water, per day. For soldiers on the march there is no fixed consensus as to how much water is required, but 6 litres per day might be considered reasonable. These two new requirements therefore add 600,000 litres of water per day for the soldiers and horses, and 70,000 kilograms of green fodder. To assemble 15 days of supply, on top of food, equipment, and dry fodder, equals 11,425,000 kilograms. Or 17,576 wagon loads.

Clearly matters are now becoming much more complicated, but even here Eddings might be accorded the benefit of the doubt. Much of this supply was moved from the first depot to the second in ships. These were placed in cradles, drawn by horses, then through a complicated series of pulleys lifted up the side of the escarpment. Indeed, as noted, one of the main objectives of the entire campaign was to get these ships into the Eastern Sea, where they could prey upon the enemies' supply lines. So, with the extra carrying capacity provided by these ships, even this monumental supply effort may be regarded as feasible.

One final calculation here needs to be made, and that is the army then took a week to march from the second supply depot to where the ships were to be launched into the Mardu River. This was across the same barren, waterless, plain, and so all necessary supplies would need to be carried with it. This includes water, and Eddings explicitly states that water was carried in the accompanying wagons (*Enchanter's End Game* 119). To make this final calculation easier it will be assumed that all non-essential equipment was left behind in the camp, with soldiers only bringing that which they could carry on their backs.

The army therefore would have required 4,795,000 kilograms to sustain it on its week-long march, or 7,376 fully loaded wagons. This is an incredible number of wagons for a medieval army to take into the field. The Byzantine Emperor Manuel II Komnenos is estimated to have taken 3,000

[3] Eddings uses money, and soldier's pay in general, as a strong motivating factor that compels the Tolnedran legions to join the campaign. But thereafter the subject is never raised again.

[4] War horses were seldom ridden whilst on campaign in order to avoid injury, and were instead lead by a squire. The remount would be ridden instead.

wagons on a campaign into Asia Minor in 1176, which slowed progress to the extent that it directly contributed to the disastrous defeat the army suffered when ambushed at the Battle of Myriokephalon (Haldon 198). To further put this into perspective, if the road the army followed was only wide enough to allow two wagons to travel side by side, the baggage train alone would be approximately 36 kilometres long.[5]

However, once again the ships which were being pulled to the river could have also been used to carry supplies, dramatically cutting down on the number of wagons needed. Once the force reached the Mardu River, and the ships launched, the wagons were left behind, as they threatened to only slow the army down (Eddings, *Enchanter's End Game* 119).

This entire scenario, therefore, whilst extremely complicated logistically, was not perhaps utterly impossible in practice. If the army had been smaller than the 50,000 estimated here, its supply demands would naturally have been reduced. Larger and they would explode to simply unworkable proportions. This analysis is also far from comprehensive. One factor that has not been considered is the fodder and water needed to supply the wagon horses, or those drawing the ships. This introduces the ultimately fatal law of diminishing returns, as the benefit of each additional wagon declines in proportion to the increased water and fodder requirements they introduce. But as a simplistic model this suggests that the scenario Eddings describes was at least plausible, if not enormously complex.

Scenario Two: The siege of the Stronghold

The second scenario under consideration is of a far different nature. It concerns an event that occurred some 500 years prior to those recounted in *The Belgariad.* In it, the evil god Torak invaded the West with a vast horde of Angaraks under his command.[6] This army descended upon the Stronghold and after failing to take it by storm, settled down to siege it for eight years. After this time, with the army reduced to half its number, the siege was lifted.

Far less detail surrounds this event than does those described above in *The Belgariad*, but enough to still analyse it logistically. Especially since, unlike in the first scenario, we have hard numbers for the size of this army. At the beginning of the siege it numbers 500,000 soldiers, and so by the end, worn down by hunger and attrition, only 250,000 remained. Further, we know that as it marched to the Stronghold, this army rounded up almost the entire cattle herd of Algaria and butchered it for food. At this time Algaria was the chief supplier of beef to all the other Western kingdoms, and as a result suffered economically for many years after the siege, till its herds were repopulated. Eddings even relates that the beef shortage in the West led to the economic rise of the Kingdom of Sendaria, which could sell its pork at great profit instead (Eddings, and Eddings, *Rivan Codex* 176). As usual, Eddings has a keen eye for logistical detail.

Nevertheless, this scenario is far less plausible than the one previously described. In *The Belgariad* it is specifically stated that this army gave up the siege owing to a shortage of supplies. As the character Silk describes it, "They say that his army was like a sea of Angaraks dashing itself to pieces against the walls of the Stronghold. They might still be here, but they ran out of food" (Eddings, *Castle of Wizardry* 50). This account is corroborated by Lady Polgara, who spent much of these ten years in the Stronghold itself, thus Eddings cannot be excused of employing the common trope of an 'unreliable narrator' (Eddings, and Eddings, *Polgara the Sorceress* 648).

Using the same modelling as before, the besieging army of half a million soldiers, over eight years, would have required 1,460,000,000 tonnes of food as a bare minimum to sustain itself, or 2.2

[5] Roman highways were seldom wider than 5.5 meters, which was just enough to allow two wagons to pass each other.
[6] The Angaraks populate the eastern continent in Eddings' universe, which is under the dominion of the God Torak.

million wagon loads. The captured cattle would have undoubtedly helped, and an ox provides, on average, 200 kg of meat once butchered (Roth 29). A mere 7,300,000 head of cattle, then, might have been sufficient to sustain this army.

It must also be considered that the besieging army was itself under siege. The Algar horsemen still retained control over the grasslands and regularly raided the besiegers camp. The Stronghold itself merely served as a convenient target for invaders; most of the Algar population did not reside there, but rather lived as nomads in the grasslands where they could more effectively employ their favoured hit and run tactics. These raids, therefore, would have prevented foraging, or relief columns from reaching the besiegers. It also would have prevented the besiegers from growing large scale market gardens to sustain themselves, such as the crusaders did during the three-year long Siege of Acre (1189-1191).

Clearly this is an impossible scenario, and if it was to be modelled realistically the besieging army would have run out of food far sooner than it did. Eight years is simply an absurd amount of time for a pre-modern army, particularly one of this size, and without the benefit of canned food and mechanization, to lay siege to any one location. Given that further supplies would need to be shipped across the Sea of the East from Mallorea, the scale of this enterprise is akin to the Allied supply commitment to the D-Day invasion, except undertaken without any of the benefits of modern technology and over a far longer period. The question is why Eddings allows this episode, which forms a vital part of the history of the realms he is describing, to appear completely and utterly untenable by any realistic calculation.

"Good" vs. "Bad" Logistics

The answer lies in how Eddings employs logistics as a narrative device. The first scenario centres around the personality of King Fulrach of Sendaria. Whilst all the other kings present in the army are more concerned with matters of battlefield strategy, he is the only one who gives the mechanics of supply any serious consideration whatsoever. An overweight and timid character, he is the most unwarlike monarch present, but on account of his 'logistical genius' proves to be the most important by far, and thus earns the respect of the other kings. In comparison, in the second scenario the god Torak, described as being an awful general who simply throws away his soldiers in pointless attacks, gives no thought at all to the influence of logistics. Even his subordinates, the Grolim priesthood, are unconcerned with supplying their armies and view their soldiers as disposable chaff.

In Eddings' literature logistics is used to supplement the Good vs. Evil dichotomy that underlines his universe. The Good generals devote attention to logistics, and therefore are ultimately unencumbered by it, whilst Bad generals ignore it, and it subsequently decimates their armies. In the first scenario all King Fulrach needs to do is acknowledge the problem the supply issue represents, and in *The Belgariad* he is described as simply "giving a few orders", and thereafter logistics ceases to be a problem (Eddings, *Enchanter's End Game* 69). Torak never deigns to acknowledge the importance of supply and his army subsequently starves. In treating the question of supply in this manner, Eddings downplays the sheer complexity of the supply issues that confronted the Good generals in the first scenario, and in the second ignores the clear fact that it was from the outset a logistical impossibility, no matter how diligent the commanding general may or may not have been.

It is notable that Eddings could have instead simply used magic to solve the problem of supply. J. R. R. Tolkien, for instance, used lembas, effectively a "magic" type of the soldier's biscuit described above, and with which he would have been highly familiar from his time on the Western Front during the First World War, to overcome an otherwise unsolvable logistical dilemma; how were the diminutive hobbits to sustain themselves as they crossed the wastes of Mordor given they

could not feasibly carry enough food to last the whole journey? The God Torak could similarly have just magically created the food his army needed. But this would have run counter to Eddings' setting where magic, even in the hands of Gods, had its limits. It also would have been at odds with Eddings' deliberate choice to make questions of supply a central tenet in the believability, or the "gritty realism", of his invented universe.

Therefore, whilst Eddings admirably adheres steadfastly to the primacy of logistics over magic in his fictional universe, and was clearly highly familiar with logistical nomenclature, the inconsistent application of logistical principles suggests he was not overly familiar with how such concepts worked in practice. Undoubtedly this was because his practical experience of logistics was drawn from modern usage, a consequence of his own military experience, rather than the medieval contexts his stories describe.

Certainly, Eddings appears to believe that pre-modern armies could carry with them all the material they needed whilst on campaign. Contemporary logistical modelling, of the style demonstrated here, has effectively disavowed this notion, and it is instead now believed that medieval armies could carry with them no more than a few weeks' worth of supply at best, with twenty-four days being an upper limit. If it had to carry green fodder, an army could transport no more than five days' worth at the most (Haldon 168-70). This hard limit is exceeded slightly in this discussion since the army Eddings describes made ample use of wagons, but these were little used in the medieval world; the road networks of this period simply could not cope with such heavy vehicles, and pack animals were extensively employed instead. Eddings circumvents this issue by fusing the well-maintained road network of the Roman empire with his otherwise medieval setting. Nevertheless, wagons are not nearly as efficient as modern trucks and lorries, and so a certain degree of creative licence is needed to envision the scenarios Eddings describes actually functioning in practice.

Consistency and World Building

It is this degree of creative license that undermines Eddings attempt to build his fictional universe upon sound logistical foundations. As Tolkien argues in his essay "On Fairy Stories", believable fantasy depends on internal coherence, "upon the nature of Faërie: the Perilous Realm itself, and the air that blows in that country", and rather than operating counter to our own powers of reason, "the keener and the clearer is the reason, the better fantasy will it make." (Tolkien 114) Or put another way, "fantasy is a construction of meaning ... successful fantasy narrative is notable for its strong inner coherence; its rules are not those of the ordinary world, but it never breaks them" (Le Guin 85).

Tolkien himself rendered a world so detailed it is possible to physically map the journey of the Fellowship of the Ring with extraordinary detail. This is impossible in *The Belgariad*, as the narrative and chronology lack sufficient detail to accurately place the actors geographically with any consistency. Eddings' inspiration in creating the world of *The Belgariad* stems from a map of his own creation, which he dismissively refers to as a "doodle", whilst the maps which accompany the books lack any sort of scale. Similarly, he asserts that whilst "geography is interesting ... it needs people to flesh it out, and people need all the assorted 'ologies' to explain why they're doing all these particular things to each other" (Eddings, *The Belgariad, Vol. 1* ix).

It is evident that Eddings' identification of his own works as examples of "Realistic Fantasy" is, in part, owing to his employment of a diverse roster of characters which hail from a vast variety of different backgrounds. Geography is never more than a secondary concern, a backdrop against which these characters interact. Therefore, rather than being grounded in a coherent geographical context, in Eddings' universe logistics exists as an extension of the

personalities of those characters which inhabit it. Thus, in the fate of their respective armies the calm methodical approach of King Fulrach is contrasted with the impulsive mentality of Torak.

It is consequently unsurprising that when examined closely vast logistical incoherencies can appear. As demonstrated in this paper, when subjected to reasoned analysis even important scenarios, such as the siege of the Stronghold, can appear, at best, highly implausible. Ultimately, despite the author employing a wealth of detail, this lack of consistency in the application of even basic logistical principles serves only to undermine the very "gritty realism" that Eddings is attempting to convey.

Conclusion

A solid logistical grounding is not a prerequisite for enjoyable fantasy literature. The subject can tacitly be treated in a casual manner and not ultimately impact upon most reader's satisfaction in the story. However, it can also enormously enrich a setting, providing context and meaning for a character's actions, and lending credibility to the movement of armies through space beyond that of merely moving chess pieces on a board.

But when detailed narratives concerning the question of logistics are presented as being intrinsically important to the plot, such as they are in the works of David Eddings, it becomes more necessary to ensure they describe at least logically feasible scenarios. The vast disconnect in plausibility that exists between the two scenarios described here serves only to undermine the factual believability of the universe Eddings created. Logistical structures in this world are revealed as being not governed by practical realities, but rather the creative needs of the author, and are therefore beholden to his will, working when he needs them to and failing when the plot dictates that they should.

Nevertheless, it would be remiss to judge Eddings' use of logistics too harshly. Whilst he may have been inconsistent in his application of even basic logistical principles, the attention he devotes to the subject and the importance it holds as a plot point within his narratives is in itself laudable. Eddings was clearly familiar with the operation of logistical structures in practice, largely as a consequence of his, and his wife's, own military experience, and errs only when he attempts to extrapolate aspects of these systems into a medieval context he is less familiar with.

Despite occasional missteps, Eddings should be commended for attempting the difficult task of trying to place his fantasy universe upon a justifiable logistical foundation. For it is the case that any fantasy author who turns to the works of professional historians in order to present a more detailed picture of pre-modern military logistics in their own work will find a limited, and often contradictory, corpus of material to draw upon. To even approach the subject therefore requires a great deal of research, patience and, ultimately, courage.

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