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**Wars and epidemics in the books of islamic military school:
Methods of epidemic spreading and prevention during war as a model
Les guerres et les épidémies dans les ouvrages de l'école militaire islamique :
Méthodes de propagation et de prévention des épidémies en temps de guerre comme
modèle**

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Abstract:

This paper explores the historical development of military strategies and the theoretical foundations of using epidemics as a tool of warfare to secure victory during conflicts. The examination of this unconventional form of warfare highlights the intellectual and strategic acumen of Arab Muslim theorists and historians, as reflected in their scholarly contributions from later periods. This research scrutinizes various military theories related to the propagation of epidemics in wartime scenarios and the preventive strategies employed, drawing extensively from seminal texts and military categorizations from the Islamic Middle Ages. The study employs a historical-analytical approach to examine the use of epidemics in warfare. It involves a detailed review of primary sources to understand the strategies and theories of the time. Additionally, secondary sources, including modern historical analyses and scholarly articles, are used to interpret and contextualize these findings. This study revealed the use of epidemics in wars and battles during advanced periods and demonstrated through the writings and theories of historians and Arabs the application of this type of warfare, especially those related to the propagation of epidemics through « air » and « water ».

Keywords: War; Epidemy; Tactic; Islamic Military books.

Résumé

Cette recherche vise à explorer le développement historique des stratégies militaires et les fondements théoriques de l'utilisation des épidémies comme un outil de guerre pour assurer la victoire lors des conflits. L'examen de cette forme de guerre non conventionnelle qui met en valeur l'acuité intellectuelle et stratégique des théoriciens et historiens arabo-musulmans, telle qu'elle se reflète dans leurs contributions savantes des périodes ultérieures.

Cette recherche examine aussi les diverses théories militaires liées à la propagation des épidémies en temps de guerre et les stratégies préventives employées, en s'appuyant largement sur des textes fondateurs et des classifications militaires issues du Moyen Âge islamique.

L'étude adopte une approche historico-analytique pour examiner l'utilisation des épidémies dans les guerres. Elle comprend une revue détaillée des sources primaires pour comprendre les stratégies et les théories de l'époque. En outre, des sources secondaires, y compris des analyses historiques modernes et des articles académiques, sont utilisées pour interpréter et contextualiser ces découvertes.

Cette étude a révélé l'utilisation des épidémies dans les guerres et batailles au cours des périodes avancées et a démontré, à travers les écrits et les théories des historiens et des penseurs arabes, l'application de ce type de guerre, notamment celle liée à la propagation des épidémies par « l'air » et « l'eau ».

Mots-clé : Guerre ; Épidémie ; Tactique ; Livres militaires.

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Introduction:

A comprehensive understanding of historical events, particularly those involving warfare, requires a nuanced perspective that integrates the complexity of human experiences across different eras. Historical conflicts are not merely battles of armies but also reflections of broader societal dynamics and human ingenuity. By examining these events through a critical lens, we gain insight into how past societies navigated their challenges and adapted their strategies. This approach allows us to see past warfare as a culmination of accumulated human experiences and tactics, while also understanding how these historical contexts shape and inform contemporary issues and strategic thinking. By bridging the past and the present, we enhance our grasp of how military practices and human responses evolve over time.

The best approach to understanding historical events is through a critical perspective that considers the past as a culmination of human experiences, while simultaneously viewing the present as manifestations of these accumulated experiences. This approach allows for the interpretation of many phenomena to understand our current reality and its ongoing challenges. Thus, the optimal interpretation of our reality involves embracing both perspectives: viewing the past as a distinctive era with its own particularities and interpreting the present by reflecting on the accumulations left by humanity throughout history.

This study highlights the emergence of epidemics as a fundamental aspect of warfare in the early Middle Ages by analysing Islamic military texts from the Middle Ages that discuss strategies for combating epidemics during military engagements involving multiple factions, thus providing a comprehensive view on the theme of epidemic prevention based on historical military documents.

This paper centers on the following key issue:

- To what extent did military writings during the Middle Ages cover the knowledge areas related to epidemic war strategies and tactics?
- What methods did these writings enumerate for the prevention and mitigation of epidemics during wartime?

This issue is subdivided into the following sub-questions:

- Did these texts include theoretical warfare methods for the dissemination and prevention of epidemics in wars and battles? Or did they merely adhere to explanations that attribute the emergence and spread of epidemics to climatic inevitabilities?
- To what extent did these texts identify the vectors of epidemics during wartime?

1. Introduction to the Islamic Military School Books:

During the Middle Ages, the Islamic world experienced a remarkable flourishing of intellectual and cultural exchange, particularly in the fields of science, philosophy, and military strategy. Scholars and leaders alike valued knowledge as a crucial tool for governance and warfare, leading to the widespread transmission of ideas across vast geographical regions. Military texts played a vital role in this exchange, serving as key resources for both military commanders and political leaders who sought to refine their tactics and strengthen their forces. This rich tradition of scholarship laid the groundwork for the development of sophisticated military doctrines.

The Middle Ages were characterized by a notable openness among historians, which facilitated the exchange of military knowledge across different regions. The extensive authorship and the willingness of leaders to engage in military texts greatly contributed to the exchange of knowledge

between the Maghreb and the Mashriq, as will be explored further. Below are some pivotal Islamic military texts that have significantly influenced the theoretical framework of warfare:

1.1. The Book of Policy *Al-Ishara fi Tadbir al-Imara* by Al-Muradi:

This seminal work is pivotal in the canon of military strategy within the Middle Ages. Comprising of thirty chapters, its most significant sections include the twenty-sixth chapter, « On Wars and Peacemaking » and the twenty-eighth, « On Trickery and Deceit » (Almuradi, *Al-Ishara* :17).

Muhammad ben Hasan Al-Muradi, the author, lived until 489 AH/1095 AD. He was not only a scholar and an imam grounded in the fundamentals of religion but also a poet and a literary figure, which afforded him the distinction of serving as a judge in the Almoravid state during Prince Abu Bakr's tenure (Boulares, 2018 : 49). His multifaceted contributions are documented in various biographies, most notably by Ibn al-Zayyat al-Tadili in *Al-Tashawwuf ila Rijal Al-Tasawwuf* (Ibn al-Zayyat, *Al-Tashawwuf* : 105-106) and by Ibn al-Abbar (Belghith, 2006 : 43).

This seminal work is of significant importance in the study of military strategy in the Middle Ages. It offers comprehensive insights into various facets of warfare, including detailed strategies for managing conflicts and employing deception. Moreover, the book explores the complexities of military tactics and strategic planning, making it an essential resource for understanding how military operations were conducted in that era. Its thorough analysis provides valuable perspectives on the nature of warfare and the strategic considerations that shaped historical military practices.

1.2. *Wasitah al-Suluk fi Siyasat al-Muluk* by Abu Hamu Musa II:

The book is Authored by Abu Hamu Musa II al-Zayani, the seventh Sultan of the Zayyanid state and a native of Granada born in 723 AH/1321 AD. His tenure in Tlemcen began in 760 AH/1359 AD. His military engagements with the Marinid state and his scholarly interactions with contemporary military writings endowed him with insights that culminated in the creation of *Wasitah al-Suluk fi Siyasat al-Muluk*¹. This treatise, infused with both strategic military theories and practical counsel, was directed toward his son, Abu Tashfin II, his successor as Sultan.

The book, particularly in its second chapter titled: « On the Principles of Kingship and its Pillars and What a King Needs for the Success of His Rule » offers a wealth of advice on maintaining power and averting defeat in military engagements. These counsels blend political acumen with military strategies, outlining essential conditions for a Sultan's success and the continuity of his reign (Abu Hamu, *Wasitah al-Suluk*: 79-210).

1.3. *Ash-Shohob al-Lami' fi as-Siyasa an-Nafi'a* by Ibn Ridwan:

Abu al-Qasim ibn Abdullah ibn Yusuf ibn Ridwan, who passed away in 783 AH/1381 AD and was raised in Malaga, gained recognition for his eloquent and astute insights as a scribe under Sultan Abu al-Hasan al-Marini (Boulares, 2018 :115). His reputation led to a commission by Sultan Abu Salem al-Marini to refine the Sultan's political and royal directives (Ibn Ridwan, *Ash-Shohob*:

¹ Mahmoud Bouteraa's opinion on Abu Hamu Musa's familiarity with the following texts: Abu Hamid al-Ghazali's *At-Tibr al-Masbuk fi Nasihat al-Muluk* (d. 505H/1111AD), Al-Turtushi's *Siraj al-Muluk* (d. 520H/1121D), Abdul Rahman al-Shirazi's *Al-Manhaj al-Masbuk fi Siyasat al-Muluk* (d. 589H/1194AD), and Ibn Zafar al-Siqilli's *Salwan al-Muta' fi 'Udwan al-Atba'* (d. 570H/1174AD). Abu Hamu Musa, Al-Zayyani: *Wasitah al-Suluk fi Siyasat al-Muluk*, edited by Mahmoud Bouteraa, Dar al-Shaimaa and Dar al-Numan for Publishing, Algeria, 2012, pp. 36-39.

17). In fulfilling this commission, the book of *Ash-Shohob al-Lami' fi as-Siyasa an-Nafi'a* is an essential guide on the art of governance and military strategy. This book spans twenty-five chapters, with particularly crucial insights found in the third and thirteenth chapters, which address *Ash-Shohob al-Lami' fi as-Siyasa an-Nafi'a* (Ibn Ridwan, *Ash-Shohob*: 389-415).

The significance of *Ash-Shohob al-Lami' fi as-Siyasa an-Nafi'a* by Abu al-Qasim ibn Abdullah ibn Yusuf ibn Ridwan lies in its role as a fundamental reference for governance and military strategy, the book serves as a comprehensive guide on managing political and military affairs, offering clear strategies for planning and executing military operations. Its depth and thoroughness make it a crucial resource for scholars and practitioners in the fields of military and administrative strategy

1.4. Ibn Mankli and his book on war tricks : *Al-Hiyal fi al-Hurub wa Fath al-Mada'in wa Hifz al-Durub*

Muhammad ibn Mankli al-Nasiri, who outlived 779 AH/1376 AD, served as the chief of the Mamluk army during Sultan Sha'ban ibn Hussein's reign. Celebrated for his exhaustive military acumen (Ibn Mankli, *Al-Hiyal*: 5), Ibn Mankli penned numerous influential works, notably The Book of *Al-Hiyal fi al-Hurub wa Fath al-Mada'in wa Hifz al-Durub*. This book, composed of nine chapters, delves into advanced war tactics, urban siege strategies, and the essentials of fortification. It also explores the intricate « art of encryption » focusing on decoding military communications and ensuring secure troop dialogues. His literary contributions extend to books he authored on the subject of warfare, such as « The Official Guides in Military Strategies » and « The Sultan's Measures in Military Policy », each addressing various dimensions of military strategy and tactics (Ibn Mankli, *Al-Hiyal* :12).

The significance of The Book of *Al-Hiyal fi al-Hurub wa Fath al-Mada'in wa Hifz al-Durub* lies in its comprehensive approach to the complexities of warfare. This work not only provides in-depth analysis of advanced combat tactics and urban siege methods but also offers unique insights into the strategic use of encryption for secure military communications. By addressing both the tactical and technical aspects of warfare, the book stands out as a crucial resource for understanding the multifaceted nature of military strategy. Its detailed exploration of fortification and siegecraft reflects the evolving nature of warfare, making it an invaluable reference for scholars and practitioners seeking to grasp the nuances of military science.

1.5. *Mukhtasar Siyasat al-Huroob* by Al-Harthami:

Al-Harthami's *Mukhtasar Siyasat al-Huroob* is a condensed version of a more extensive work lost during the Mongol invasion of Baghdad, titled « The Tricks in Wars » originally written during the reign of the Abbasid Caliph Al-Ma'mun (Al-Harthami, *Mukhtasar*: 5). Al-Nadim, in his book *Al-Fihrist* describes this larger work as a profound book on chivalry, weaponry, and war machinery, noting its division into a first section comprising three parts and a second containing thirty-six chapters (Al-Nadim, *Al-Fihrist* : 382). The extant abridged edition consists of forty chapters, each a treasure trove of knowledge on battlefield tactics, fortifications, and broader military strategies.

The significance of *Mukhtasar Siyasat al-Huroob* by Al-Harthami lies in its comprehensive exploration of battlefield tactics, fortifications, and broader military strategies. Despite being a condensed version of a more extensive original work, this abridged edition remains an invaluable resource. It provides detailed insights into chivalry, weaponry, and war machinery. As such, it is a critical reference for understanding historical military practices and strategies .

1.6. *Al-Tadhkirah al-Herawiyyah* by Al-Herawi:

Al-Tadhkirah al-Herawiyyah by Ali ibn Abi Bakr al-Herawi, who died in 611 AH/1215 AD, is a crucial book for scholars of military history from the Middle Ages. This work, with its twenty-four chapters, thoroughly covers various military arts and stratagems (Boukaeda, 2017: 65). Of special note is the twenty-third chapter, which details methodologies for disseminating epidemics through water and air during warfare, thereby shedding light on this type of warfare that was prevalent in the Middle Ages (Al-Herawi, *Al-Tadhkirah*: 26). Furthermore, *Al-Tadhkirah al-Herawiyyah* stands out not only for its detailed account of military strategies but also for its contribution to our understanding of the interplay between science and warfare in the Middle Ages. The book reflects a sophisticated grasp of both environmental science and military tactics, illustrating how Middle Ages scholars and commanders integrated these domains to enhance their strategic capabilities. By exploring these methodologies, researchers can gain a richer perspective on how knowledge of natural phenomena was harnessed to achieve tactical superiority, offering a window into the intellectual rigor and resourcefulness of Middle Ages military practices.

1.7. *Athar al-Owwal fi Tadbeer al-Duwal* by Al-Hassan Al-Abbasi:

Al-Hassan ibn Abdullah Al-Abbasi, a scion of Caliph Harun Al-Rashid and deceased in 710 AH/1310 AD, remains an enigmatic figure in historical texts, with scant details about his life or academic pursuits recorded outside his own writings about himself (Al-Abbasi, *Athar*: 22). His comprehensive work delves into the historical narratives of monarchs' governance strategies and the arts of warfare, divided into four distinct parts. Of particular interest is the fourth part, « On Wars » which contains ten chapters and seventeen detailed sections exploring the intricacies of military strategy and the subtle art of warfare (Al-Abbasi, *Athar* : 287-370).

The significance of Al-Abbasi's work lies in its detailed examination of the strategic and tactical aspects of warfare from a historical perspective. By meticulously documenting various military strategies and governance techniques, this book provides invaluable insights into the evolution of military thought and practice. Its thorough analysis of historical warfare offers a rich source of information for understanding the development of military doctrines and the implementation of strategies over time. As such, this work is essential for scholars seeking to grasp the complexities of medieval military strategies and their impact on the broader historical and political context.

This chapter ends with referencing other Middle Ages military books of similar significance, such as Abu Bakr Al-Sirafi's *Al-Anwar al-Jaliyyah* and Abu Bakr Al-Turtushi's *Siraj al-Muluk* which are particularly relevant to the themes explored in this study due to their unique insights into the strategic dimensions of historical military practices.

2. Using 'water' and 'air' in military strategy and tactics through military books:

Ibn Khaldun's innovative military theories, as articulated in *Al-Muqaddimah* and further analyzed in *Al-Ibar*, challenge the simplistic and generalized interpretations often ascribed to the outcomes of military engagements. He argues that the success of armies cannot be solely determined by quantitative metrics such as the number of troops or the arsenal at their disposal. In *Al-Muqaddimah*, Ibn Khaldun asserts, « Success in wars depends on intangible factors, and while the number of soldiers and the weaponry are important criteria for winning battles, they are insufficient by themselves » (Ibn Khaldun, *Al-Muqaddimah*: 105).

Scholars of the Islamic military tradition meticulously explored the nuanced aspects of warfare, emphasizing the use of various strategies and ruses. They advocated for harnessing different

elements, particularly water and air, which play fundamental roles in the dynamics between opposing armies during military engagements (Zubair, 2016: 9). These elements are not only pivotal due to their strategic material nature but also as critical resources upon which armies rely to manage warfare effectively. Their significance is highlighted by various military elites :

Al-Muradi highlighted the dual importance of water and wind and their effectiveness in military operations. He posited that wind plays a crucial role in the outcome of battles; adverse winds can impair an army's effectiveness by reducing visibility through dust and sand. Consequently, he advised positioning the enemy's army such that it faces the direction of the wind. Regarding water, Al-Muradi described it as the « substance of life » and considered it essential for determining battle outcomes. He viewed locations with water and pasture as strategic sites that contribute to reversing the results of battles. This strategy is reminiscent of the significant historical campaign led by Jawhar al-Siqilli in Egypt. Despite multiple attempts by the Fatimid state to conquer Egypt beginning in 301 AH/319 AD, success was only achieved under Al-Muizz Li-Din Allah in 358 AH/981 AD, when he instructed his commander to ensure the availability of water by digging wells along the route from Tunisia to Egypt (al-Maqrizi, *Itti'az* : 96) (Ibn Khaldun, *El-Ibar* : 61) .

Al-Muradi's observations underscore a sophisticated understanding of how natural elements can be harnessed to influence military outcomes. His strategic emphasis on manipulating environmental conditions, such as directing the enemy into adverse winds or leveraging water resources, reflects a broader recognition of the interplay between environmental factors and warfare. This approach not only highlights the tactical advantages of controlling natural resources but also parallels other historical examples where environmental considerations were pivotal. For instance, the meticulous planning of water supply during the Fatimid campaign into Egypt illustrates how logistical foresight in managing natural resources can significantly impact military success. Such strategies underscore the broader principles of environmental manipulation that were critical in shaping the outcomes of historical conflicts.

Abu Hamu Musa al-Zayani, a seasoned knight in military affairs, underscored the paramount importance of water in his book *Wasitat al-Suluk*. In his guidance to his son Abu Tashfin II, he included the strategic use of water as a core principle of successful governance and military preparedness, noting that every eminent king ensures the accessibility of fortified strongholds equipped with ample water, storage, and strategic positioning to avoid defeat during a siege (Abu Hamu, *Wasitah* :154).

In addition to highlighting water's importance, Abu Hamu's guidance emphasizes the need for overall logistical planning in the defense of a kingdom. He understood that securing resources went beyond mere survival; it was about maintaining the morale of the defending forces and prolonging their endurance during prolonged military campaigns. By safeguarding essential supplies and controlling strategic locations, leaders could ensure resilience in warfare, thus demonstrating that military prowess was as much about long-term strategy and preparedness as it was about battlefield tactics. This comprehensive approach to military leadership reflects the broader Islamic military tradition of integrating wisdom, governance, and warfare.

Ibn Ridwan advised on optimal timing and positioning for battles, suggesting that the most favorable conditions for engaging in warfare are later in the day, with the wind and sun positioned advantageously against the enemy, focusing on the right flank and the center for maneuvers (Ibn Ridwan, *Ash-Shohob:400*). Ibn Ridwan's recommendations reflect a nuanced understanding of battlefield dynamics and environmental factors. By emphasizing the importance of timing and positioning, he acknowledged that these elements could significantly influence the outcome of engagements. His advice to consider the angle of the sun and the direction of the wind underscores

the strategic integration of natural elements into military planning. This approach not only maximizes the effectiveness of maneuvers but also minimizes the adversary's advantages, demonstrating an advanced grasp of the interplay between environmental conditions and tactical success.

Both Al-Muradi and Ibn Ridwan concur on the necessity of securing water sources during battles and wars. They advocate for protecting springs during the day, intensifying guard at night, and tactically positioning the army so that the sun and wind are leveraged against the enemy, thereby creating favorable conditions for engagement and sustaining the army with essential resources like water and pasture (Almuradi, *Al-Ishara* :63) (Ibn Ridwan, *Ash-Shohob*:390).

Al-Muradi and Ibn Ridwan's shared emphasis on securing water sources underscores the critical role that resource management plays in warfare. Their recommendations reveal a strategic approach that goes beyond mere battlefield tactics, incorporating logistical considerations to ensure sustained operational capability. By advocating for the protection of springs and intensifying vigilance, they highlight the importance of maintaining control over vital resources to prevent adversaries from gaining an advantage. Furthermore, their advice to leverage environmental factors such as the sun and wind not only enhances tactical positioning but also demonstrates an advanced understanding of how to harmonize natural elements with military strategy. This integrated approach reflects a sophisticated grasp of both immediate and long-term considerations in ensuring success on the battlefield

Al-Harthami underscores the significance of employing shrewd tactics on the battlefield and advises against confronting adverse wind conditions. Should such circumstances arise, he recommends positioning the wind to the right or left of the army, thereby drawing the adversary into combat according to a strategic template. Al-Harthami further extols the virtues of mastering control over water sources and knowledge of their locations as the army maneuvers. In scenarios where controlling water sources directly is not feasible, he advocates for diverting water away from the enemy to debilitate their strength, underscoring the strategic withdrawal from battle when these critical elements are either absent or uncontrollable (Al-Harthami, *Mukhtasar* :5).

From the discourse, it is abundantly clear that these military thinkers recognized the paramount importance of water and air as decisive elements in warfare. This understanding prompted them to formulate military theories that either control or adapt these elements to an army's advantage, thereby shifting the balance in battles and wars. Prominent perspectives from these theorists include:

Al-Hassan Al-Abbasi who focused on overcoming the enemy through strategies other than direct siege, advocating for the isolation of adversaries by severing their supplies of food and water. This method of isolation effectively replaces the need for a traditional siege, facilitating conquest.

Al-Abbasi elucidates, « If it is possible to cut off their provisions, that suffices instead of a siege, and any place where water and food can be cut off is inevitably conquered » (Al-Abbasi, *Athar*: 22). Al-Hassan Al-Abbasi's approach to warfare underscores a strategic innovation that prioritizes resource denial over direct confrontation. His emphasis on isolating the enemy by cutting off their supplies of food and water represents a sophisticated tactic designed to weaken adversaries through attrition rather than direct engagement. By advocating for this method of isolation, Al-Abbasi highlights an understanding of the logistical vulnerabilities that can be exploited to achieve military objectives. This strategy not only minimizes the risks and costs associated with traditional sieges but also demonstrates a deep comprehension of how to leverage resource control to facilitate victory.

Al-Hassan Al-Abbasi's strategy reflects a deep understanding of the psychological and logistical impact of resource deprivation on enemy forces. By emphasizing the severance of essential supplies, Al-Abbasi recognized that weakening the enemy's morale and capacity to sustain themselves could be as effective as direct military engagement. This method exploits the fundamental dependence of any besieged force on continuous supplies, thereby applying indirect pressure that can lead to surrender or collapse without the need for prolonged, costly sieges. Al-Abbasi's approach not only innovates in terms of tactics but also illustrates a broader strategic philosophy where control of resources and psychological warfare play crucial roles in achieving military success.

Ibn Mankli proposed innovative offensive strategies utilizing water, considering it a potent force capable of breaching fortified cities. He described tactics involving the accumulation of water in a reservoir and then suddenly releasing it to demolish city walls, thus easing the entry of soldiers into enemy strongholds. This strategy was notably employed during the Almohads' siege of Fez in 450 AH/1145 AD by 'Abd al-Mumin ibn Ali, who blocked the city's river with wood and debris to form a lake. Upon releasing the accumulated water, the force generated was sufficient to destroy a segment of the city wall, allowing his troops to breach the defenses effectively (Ibn Mankli, *Al-Hiyal*: 379) (Ibn al-Sammak, *Al-Hulal* :136) (Ibn Abi Zar', *Al-Anis* :189) .

Ibn Mankli's innovative use of water as an offensive strategy reflects a deep understanding of its potential impact on siege warfare. His method of accumulating water and releasing it to breach city walls represents a sophisticated application of hydraulic engineering in military tactics. This approach not only underscores the creative use of available resources but also highlights the strategic importance of adapting natural forces to achieve tactical objectives. The employment of this technique during the Almohads' siege of Fez exemplifies how ingenuity in manipulating environmental factors can turn the tide of a conflict. By harnessing the destructive power of water, Ibn Mankli demonstrated how traditional fortifications could be effectively challenged, showcasing a remarkable example of Middle Ages military innovation.

Al-Harthami views water as a vital resource for troops and a natural barrier in military engagements, particularly when facing numerically superior or better-armed foes. He articulates a strategy that emphasizes the tactical placement of troops in the following statement from his book: « Never approach your enemy until you know him, and approach him if you have water and provisions so that if you wish to advance towards your enemy you can, and if you wish to retreat from him it is possible. Ensure that you position your companions' backs against mountains, hills, rivers, and similar places from where ambushes are unlikely » (Al-Harthami, *Mukhtasar*: 31)

Al-Harthami's strategic insights into the use of water reveal a sophisticated understanding of its role in military operations. By emphasizing water as both a vital resource and a natural barrier, he acknowledges its dual importance in sustaining troops and in strategic positioning. His advice to ensure that troops are well-supplied and positioned with natural barriers at their backs underscores a strategic approach that prioritizes both offensive and defensive capabilities. This guidance reflects a comprehensive strategy where resource management and environmental considerations are integral to operational success. Al-Harthami's approach illustrates an advanced grasp of battlefield dynamics, where careful planning and tactical positioning are essential for maintaining a strategic advantage, particularly when facing adversaries with superior numbers or better equipment.

3. Water and air as Mediums for spreading epidemics during warfare:

As military strategy evolved, scholars in the Islamic military tradition increasingly recognized the strategic significance of environmental factors, particularly water and air. This shift in focus reflected a broader understanding of how these elements could influence the outcome of conflicts

beyond the direct aspects of combat. Islamic military theorists explored innovative ways to leverage these factors for strategic advantage, developing methods to exploit environmental conditions for both offensive and defensive purposes.

The increased focus on the elements of water and air in warfare led scholars of the Islamic military school to theorize their use in what could today be termed 'epidemic warfare,' considering these elements to be as crucial as the army's equipment and numbers in shifting the tides of battle. Their writings contain many chapters dedicated to utilizing these elements to spread epidemics during warfare. They emphasized the importance of following preventive measures and precautions against such epidemics during wartime. According to these military texts, the most important methods of spreading epidemics are:

3.1. Polluting water Sources during warfare:

As stated by Ibn Ridwan: "If you can reach the enemy's water sources, pour poison into them... Do not pursue a defeated enemy, and if you can make all your actions deceptive, do so, making engagement the last resort" (Ibn Ridwan, *Ash-Shohob*:394).

Ibn Mankli devoted a chapter to precautions against sieges, emphasizing the need for highly trusted guards to protect water sources. He wrote: "Precaution against sieges involves digging wells for water if there is a concern about shortages, or collecting it during rainy days in cisterns... (Ibn Mankli, *Al-Hiyal*: 379). It is essential that these wells or water reservoirs are guarded by trustworthy custodians to prevent contamination of the water from pollutants, carrion, or anything else that might taint the water and to prevent poisoning, especially of water stored in reservoirs (Ibn Mankli, *Al-Hiyal*: 380).

Ibn Mankli also wrote a chapter in his book detailing methods to limit the spread of epidemics through the treatment of polluted waters during war, using medicines and remedies in a section he named "On Treating Water if It Becomes Contaminated with Poisons or Otherwise" (Ibn Mankli, *Al-Hiyal*: 324).

This theorization aligns with the perspective found in the book of Al-Hassan Al-Abbasi, where similar methods for spreading epidemics during war through the medium of "water" are discussed. This is evident in what is stated in his book: "The army should inspect the condition of the waters... if the water is spoiled, so are the bodies from the diseases they acquire, and the spirits and morals change as mentioned by masters of medicine and natural philosophy" (Al-Abbasi, *Athar*: 324).

Al-Abbasi warned against the army rushing to the enemy's stores and drinking places immediately after a victory, considering thirst could lead to the soldiers' demise and spread disease, given the enemy's potential deceptions in a tactical retreat, such as poisoning their own food and water supplies. He elaborated: "... then the army enters upon the enemy and rushes to drink from wells, ponds, and pools, which may be poisoned, with signs detectable from a change in color or taste, or a scum forming on the surface... All this must be considered and examined in detail by the war governor" (Al-Abbasi, *Athar*: 332).

Al-Abbasi noted that polluting waters and using substances like "arsenic," or throwing carrion and contaminants into water sources during war, or polluting the waters with toxic vapors could substitute for besieging the enemy and increase the chances of their surrender. He stated: "Every place where it is possible to deprive the enemy of water and provisions is inevitably conquered (Al-Abbasi, *Athar*: 364). If the land is difficult, increase its roughness with rock and stone, spoil the

water around the town if it brings you no benefit, and counter their flaming arrows with vinegar, Ochre², and alum mixed with water (Al-Abbasi, *Athar*: 369).

Al-Harthami implicitly referred to poisoning and corrupting water in wartime, stating: "If the enemy beats you to the water, do not let them fight you as long as you find a way to trick them" (Al-Harthami, *Mukhtasar*: 61) and suggesting that the commander in war "use devices that bring ruin... and not fight as long as a way to trickery and deceit is found" (Al-Harthami, *Mukhtasar*: 65), which includes polluting their water sources.

Al-Herawi discussed in his book the use of the water element to spread disease in enemy territory, and the following is stated in his book: "If the army faces an enemy too powerful to confront... they should cut down trees and bridges and destroy anything the enemy could use, store in their fortress, fill their wells and cisterns with poisonous carrion and deadly water" (Al-Herawi, *Al-Tadhkirah* : 26) .

The use of water contamination as a method of warfare is a complex and multifaceted strategy explored through various historical perspectives, reflecting the ingenuity and tactical sophistication of Middle Ages military thought.

Ibn Ridwan highlights the strategic advantage of contaminating enemy's water-sources to undermine their ability to sustain themselves. He underscores the role of deception, suggesting that poisoning water sources can be a powerful tactic to weaken the enemy without direct confrontation. This approach reveals the critical importance of resource control in warfare and the strategic value of disrupting the enemy's supply lines.

Ibn Mankli expands on this concept by focusing on the defensive measures needed to protect water sources from contamination during sieges. He provides detailed methods for safeguarding and purifying water to prevent the spread of epidemics. His strategies include practical measures such as employing trusted guards and creating systems for collecting and storing water safely. Ibn Mankli's approach reflects a broader understanding of resource management and the necessity of maintaining clean water supplies to ensure the health and readiness of one's own forces.

Al-Hassan Al-Abbasi further develops these ideas by warning against the immediate consumption of potentially poisoned water following a victory. He emphasizes the importance of thoroughly inspecting water sources to avoid health risks and strategic setbacks. Al-Abbasi's examination of how water contamination could replace traditional sieges highlights a sophisticated tactic aimed at weakening the enemy through indirect means. By combining water contamination with air pollution, Al-Abbasi demonstrates a nuanced approach to warfare that leverages environmental factors to achieve military objectives.

Al-Harthami and Al-Herawi offer additional insights into the strategic role of water in warfare. Al-Harthami suggests using trickery to avoid direct conflict, implying that manipulating water sources could be part of a broader strategy of deception. Meanwhile, Al-Herawi recommends the destruction of enemy resources, including water supplies, to weaken the adversary. This approach underscores the use of environmental and logistical factors to gain a strategic advantage.

² Or "Al Moghra" in Arabic, it is a type of earthy pigment containing proportions of iron oxide, chemically known as 'Fe2O3'. Tarlach, G: "What the Ancient Pigment Ochre Tells Us About the Human Mind", Discover, Mar 16, 2018, 1:00 AM, (<https://www.discovermagazine.com/planet-earth/prehistoric-use-of-ochre-can-tell-us-about-the-evolution-of-humans>).

Collectively, these historical perspectives illustrate the multifaceted role of water in warfare. They highlight its strategic importance and the sophisticated methods employed to exploit and control this critical resource. By understanding and manipulating water sources, military leaders could not only disrupt their enemies' survival and morale but also enhance their own strategic positioning and effectiveness in battle.

3.2. Polluting the air:

Al-Hassan Al-Abbasi elucidates the strategy of not only contaminating water but also simultaneously polluting the air to spread epidemics more effectively among enemy ranks. He articulates this dual approach in his texts, stating, "...and following the corruption of the water, the vapors and surrounding airs around the bodies also become corrupted" (Al-Abbasi, *Athar*: 324). He elaborates on the tactic of air pollution as an expedient method for disseminating disease among opposing forces, detailing how some rulers have used sulfur, burned it, and then directed it with the wind towards the country they aimed to control (Al-Abbasi, *Athar*: 264). This method ensures the rapid spread of disease without direct harm to the aggressor's own forces, compelling the afflicted city to capitulate.

Al-Hassan Al-Abbasi's strategy reflects a deep understanding of biological and environmental warfare. By combining water contamination with air pollution, he demonstrates a sophisticated approach to spreading epidemics. This dual strategy leverages the interplay between different environmental factors to maximize the impact on enemy forces. Al-Abbasi's detailed descriptions of using sulfur and other substances reveal the advanced knowledge of chemical and environmental manipulation that was present in Middle Ages military tactics. Such methods not only illustrate the strategic ingenuity of the time but also highlight the lengths to which leaders would go to gain an advantage. By ensuring that the spread of disease was indirect and did not directly harm their own troops, aggressors could effectively weaken their enemies while preserving their own forces' strength and readiness.

Al-Harthami discusses aerial pollution tactics in his chapter titled "Stratagems When the Army Besieges the Enemy and Actions to Take". In scenarios of sieges and asymmetric warfare, he advises on the deployment of arsenic vapors and the strategic use of decomposing carcasses of camels, horses, mules, dogs, and other wastes. These elements are placed upwind of the besieged area to deteriorate air quality and trigger disease outbreaks, thereby weakening the besieged forces both physically and psychologically (Al-Herawi, *Al-Tadhkirah* : 26).

Al-Harthami's approach to aerial pollution reflects a profound understanding of the psychological and physiological impact of environmental tactics on warfare. By deploying arsenic vapors and decomposing carcasses, he not only aims to cause immediate physical harm through the spread of disease but also seeks to demoralize the besieged forces. This method of creating a noxious environment serves to undermine the enemy's morale and combat effectiveness, making them more susceptible to defeat. Al-Harthami's strategies highlight an advanced use of chemical and biological warfare techniques, demonstrating how environmental conditions could be manipulated to gain a strategic advantage. His recommendations underscore the broader principle of exploiting every possible factor in warfare to weaken adversaries and secure victory.

Al-Hassan Al-Abbasi and Al-Harthami both present advanced strategies for using environmental factors to undermine enemy forces. Al-Abbasi details a dual approach of contaminating both water and air to spread epidemics among adversaries. He explains how tainting water leads to the corruption of surrounding air, using methods such as burning sulfur and directing it with the wind to spread disease without directly harming his own troops. This strategy highlights

a sophisticated understanding of biological and environmental warfare, leveraging multiple factors to maximize impact and compel enemy capitulation. Similarly, Al-Harthami discusses aerial pollution tactics, including the use of arsenic vapors and decomposing carcasses placed upwind of besieged areas. These tactics aim to deteriorate air quality and induce disease, weakening both the physical and psychological state of the besieged forces. Al-Harthami's approach reflects a deep grasp of the psychological and physiological effects of environmental tactics, demonstrating how such methods can demoralize and defeat the enemy. Both authors illustrate how manipulating environmental conditions can strategically advantage the aggressor, revealing advanced knowledge of chemical and biological warfare techniques.

Conclusion:

The findings from this research illuminate a critical perspective within the historical military context, revealing that epidemics have profoundly impacted the trajectory of human history, often shaping the destinies of entire civilizations. While the role of environmental conditions and natural phenomena in disease spread is well-documented, it is equally important to examine how human actions have influenced and intensified these outbreaks. Intentional or inadvertent, human interventions have frequently intersected with natural forces in ways that exacerbate the spread of epidemics.

Throughout history, the spread of diseases has not been merely a result of climatic conditions or natural determinism. Instead, strategic human actions, particularly in the context of warfare, have significantly contributed to the proliferation of epidemics. The deliberate manipulation of environmental factors, such as contaminating water sources or using biological agents, exemplifies how human strategies can enhance the spread of diseases.

In warfare, the intentional use of environmental manipulation—such as poisoning water supplies or deploying toxins—has demonstrated that epidemics can be strategically weaponized. These actions highlight a sophisticated understanding of how to exploit natural conditions for tactical advantages, rather than viewing disease spread as an uncontrollable natural phenomenon. By deliberately influencing the environment, military leaders have used epidemics as a tool to weaken enemies, disrupt their resources, and gain strategic dominance.

This approach reveals the intricate relationship between human strategy and natural forces, illustrating that the spread of epidemics can be both a consequence of environmental conditions and a deliberate outcome of human intervention. The strategic use of disease in warfare not only underscores the importance of controlling natural resources but also reflects a deeper understanding of how to leverage environmental factors for military advantage. Thus, the historical role of epidemics in shaping civilizations is not solely a matter of natural determinism but also a testament to the strategic ingenuity of human actions.

Islamic military texts provide profound insights into the tactical use of environmental manipulation, particularly through the contamination of water and air, to achieve military objectives. These texts detail sophisticated methodologies for the intentional spread of epidemics, including the introduction of carrion and toxic substances into water supplies, and the strategic release of harmful vapors into the air. Such practices were not only common but were strategically refined to exploit environmental factors like wind direction, thereby maximizing their impact on the enemy while preserving the health and effectiveness of one's own forces. This demonstrates the advanced understanding and application of environmental strategies in historical military contexts.

Moreover, the use of environmental manipulation in Islamic military strategies reflects a deep understanding of the relationship between nature and warfare. By leveraging forces like wind

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patterns to direct harmful substances toward enemy forces or synchronizing attacks with disease outbreaks, military leaders could shape the battlefield in their favor. This strategic use of natural resources, combined with knowledge of medicine, demonstrates a sophisticated approach that extended beyond traditional combat methods. It highlights how environmental factors were weaponized to secure a decisive advantage, making these tactics both effective and devastating in their execution.

Future research could delve deeply into the comparative effectiveness of environmental manipulation strategies employed in various historical contexts. By analyzing these strategies across different time periods and regions, researchers can gain insights into how different cultures and civilizations adapted their military tactics in response to environmental factors. This exploration might reveal the nuanced ways in which environmental manipulation was used to gain strategic advantages in warfare.

Additionally, it would be beneficial to investigate how ancient practices of environmental manipulation have influenced contemporary biological warfare techniques. Understanding the evolution from historical methods to modern biological strategies could shed light on how warfare tactics have developed over time, particularly in terms of using environmental and biological factors as tools of combat. Such insights might help in identifying patterns and shifts in strategic thinking related to environmental and biological warfare.

Furthermore, exploring the strategic use of natural barriers, weather manipulation, and resource denial in various historical periods could uncover how these environmental factors were systematically weaponized. Analyzing how ancient military leaders used their knowledge of the environment to their advantage could provide a clearer picture of the strategic ingenuity employed in different eras.

By comparing these practices across different cultures and historical epochs, researchers may develop a more comprehensive understanding of the role of environmental factors in shaping the outcomes of conflicts. This comparative analysis could illuminate how military doctrines evolved in response to environmental challenges and opportunities, highlighting the strategic ingenuity of different civilizations. Such studies could also reveal the broader implications of environmental manipulation in warfare, offering valuable lessons for both historical scholarship and contemporary military strategy.

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