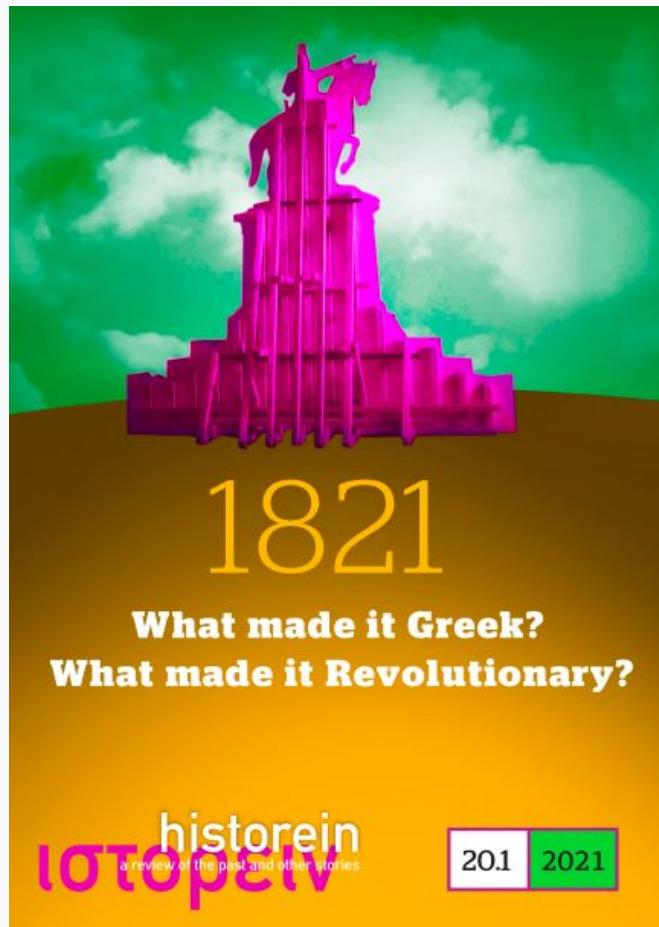


Historein

Vol 20, No 1 (2021)

1821: What Made it Greek? What Made it Revolutionary?



From Warriors to Soldiers: Regularising Military Logistics and the Emergence of Military Medicine. The Case of the Armatoles (c. 1800–1831)

Athanasiос Barlagiannis

doi: [10.12681/historein.25351](https://doi.org/10.12681/historein.25351)

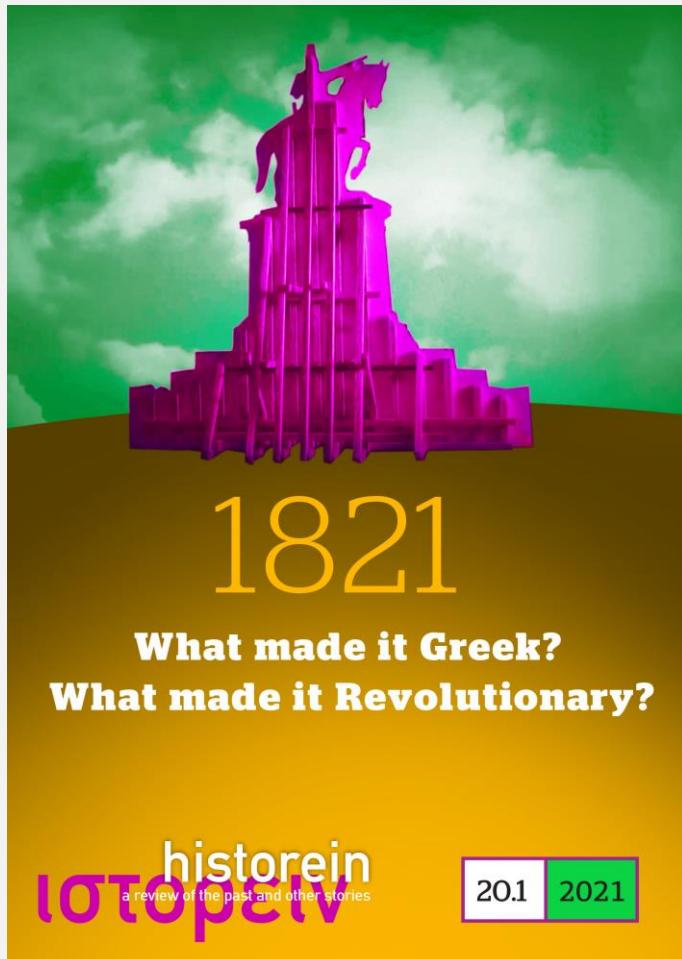
Copyright © 2022, Athanasiос Barlagiannis



This work is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0](https://creativecommons.org/licenses/by-nc-sa/4.0/).

To cite this article:

Barlagiannis, A. (2022). From Warriors to Soldiers: Regularising Military Logistics and the Emergence of Military Medicine. The Case of the Armatoles (c. 1800–1831). *Historein*, 20(1). <https://doi.org/10.12681/historein.25351>



**From Warriors to Soldiers:
Regularising Military Logistics
and the Emergence of Military
Medicine. The Case of the
Armatoles (c. 1800–1831)**

Athanasiос Barlagiannis

doi: 10.12681/historein.25351

To cite this article:

Barlagiannis, Athanasiос. 2021. "From Warriors to Soldiers: Regularising Military Logistics and the Emergence of Military Medicine. The Case of the Armatoles (c. 1800–1831)". *Historein* 20 (1).
<https://doi.org/10.12681/historein.25351>.

From Warriors to Soldiers: Regularising Military Logistics and the Emergence of Military Medicine.

The Case of the Armatoles (c. 1800–1831)

Athanasiос Barlagiannis
National and Kapodistrian University of Athens

Medical treatment was not a common feature in the armies of the Ottoman Empire. With the exception of the Janissary corps, which had an organised medical service even in peacetime,¹ the sultan and other military leaders only sought the services of doctors and surgeons during military campaigns, if at all.² The situation started to change with the reformist Sultan Selim III (1761–1807). The first Ottoman military hospital – the Imperial Artillery Hospital – was established in 1799 to support the standing New Order army (Levent Barracks), which had been founded in 1793.³ The hospital was burnt down in 1807 by the Janissaries, following the fate of the sultan and his reforms. Although yet unstable, the linking of military organisation to medical advice was however being established not only in the Ottoman Empire but throughout the continent, as shown by the example of the first career military surgeon in history, the French baron Dominique Jean Larrey of Napoleon's Grand Army.

Instead of studying (European) military advisors, mercenaries, soldiers- and doctors-of-fortune and their influence on the 1821 Revolution, the article focuses on the changes already occurring regionally in the Ottoman Empire. In other words, the soldiers and doctors who came mostly from western Europe occupied a privileged place in the revolution because there were already people receptive to them and practices that could be easily accommodated to their advice. In general terms, on the eve of the 1821 Revolution many of the armatoles were already in the process of transitioning from living like *warriors* to dying as *soldiers*. The transition has not been studied in much detail because scholars of the revolution usually deal with the contradictions/conflicts between the (foreign) "regular" soldiers and the (local) "irregular" warriors rather than the exchanges between these two "states", or ways of warfare. Our hypothesis is that there was a transformation process that turned the "irregulars" into "regulars". This process was not stable and irrevocable, but it was clear enough in the case of the armatoles from 1821 to 1831. We argue furthermore that in order for this transition to be effective and stable, medicine was used as a powerful technique of discipline. To support the hypothesis, the article relies on data collected during

a research programme on the “Medical History of the 1821 Revolution and of the Greek Republic: The Beginnings of the Construction of a Greek Public Health System (1790–1831)”.⁴ It then explains them using insights from Michel Foucault’s research on medicine as a mechanism of social discipline,⁵ from Max Weber’s studies on military discipline⁶ and from military historian John Keegan.⁷

The studies on military medicine by Roger Cooter, Steve Sturdy and Mark Harrison, even though they refer to a later period, are equally important, mainly because they historicise the place of medicine in the army.⁸ Cooter underlines, for example, that the connection between war and epidemics does not naturally occur but is historically conditioned.⁹ The same applies to the demand for the treatment of the wounded: the armatoles most likely preferred death on the field (as expressed in the wish *καλό βόλι*, “good bullet”) than life-long incapacitation and the humiliation of being dependent on the assistance of others (the notion of *φιλότιμο* or *φιλοτιμία*).¹⁰ Endurance levels were particularly high¹¹ and, in Kostis Palamas’ 1901 novel *Θάνατος παλληκαριοῦ* (Death of a Youth), even peasants believed disease compromised their *φιλότιμο*. In such circumstances, the reasons for the development of any medical structure are not so obvious.

Surgeons and doctors, for their part, could not, historically speaking, always grasp the idea of serving an armed band, especially if they could be subject to ill-behaviour from warriors who knew no limits on their expression of anger. The Prussian doctor Johann Daniel Elster preferred serving in the organised tactical army of the Philhellene Regiment during the revolution rather than the “irregular” army of Theodoros Kolokotronis since someone made him “such a terrible description of his acts and his fury to kill, in case he gets bored of me, which may result from him owing me money”.¹² By studying the integration of medicine in the army, this article offers a more general understanding of specific military, political, cultural as well as economic trends. Military discipline, one’s relationship with one’s own body and the organisation of the medical profession are interconnected aspects of the same process.

Regularising war in the Ottoman Empire

Egypt and the Balkan peninsula were two areas where a privileged relationship was being established between military reform and the development of military medicine. The actions of Muhammad Ali and of Ali Pasha of Ioannina should be seen in line with Selim III’s efforts. In the 1820s, Muhammad Ali took in French, Italian and, in the 1830s, German specialists to organise a standing army, just as the Kingdom of Greece did in the same period under the Bavarian Regency. Among these specialists was the French surgeon Antoine Barthélemy Clot (known as Clot Bey), who arrived in 1825 from Marseille to organise a

military hospital and the health service of this new tactical Egyptian force.¹³

As far as Ali Pasha is concerned, the mutasarrif of Ioannina had an important influence not only on the 1821 Revolution but on the development of the Greek state. An example from the financial realm is the case of Stavros Tsapalamos, Ali's secretary for economic affairs and father of George Stavros, the first president of the National Bank of Greece.¹⁴ Another example is the physician Ioannis Kolettis, personal doctor of Muqtar Pasha (Ali's son): he was war minister during the revolution, responsible for the quarantine system on Spetses when Kapodistrias was in power¹⁵ and the organiser of the quarantines on the Greek state's borders as interior minister in 1845.¹⁶

Ali Pasha was deeply concerned about health issues. He was what would now be considered a hypochondriac and his son Veli probably suffered from venereal disease. However, these personal characteristics do not suffice to explain the presence of so many doctors and surgeons in his court nor the establishment of hospitals and of the first lazarettos in the Balkans west of Thessaloniki. If venereal disease was common among the elite class, being a hypochondriac underlines a certain relation to the body and to its health which is culturally and historically conditioned – the interest in bodily health was not generally intensive in the Ottoman Empire. Ali controlled a region that was famous for its medical practitioners. Epirus (Vikos Mountains) was home to medical empirics known as *κορπογιαννίτης*, whose reputation was expanding by the end of the seventeenth century. Hormovo (Hormovë) was an Albanian village renowned for its practical surgeons. Three people with the surname Hormovas or Hormovitis and five in total from the village offered their services to the armed bands of the revolution. Finally, most of the 55 doctors with a medical faculty degree that practised in the Ottoman Empire in the five decades before 1821 originated from Macedonia, Ioannina, Akarnania and Thessaly.¹⁷

The intensification of medical activity and of the consciousness of the body in Ali's area of control was not presumably irrelevant to the stabilisation and the bureaucratic organisation of the military system of *άρματολίκια* (*armatolikia*, districts under the command of a chieftain) there. The armatole armies had secretaries, persons responsible for logistics (often medically educated), drummers, bannermen, servants and, on occasion, surgeons. They also built fortresses.¹⁸ The post of the chieftain (*καπετάνιος*), even though it continued to be based on merit (such was the difficulty in governing an *armatoliki* and managing a firearm), became hereditary within a family. As a result, large and powerful military houses appeared in the region. Typically, the Stornaris family had 400 members, thousands of sheep and the control of the leather trade. After the death of the head of the family in the Exodus of Messolongi (1826), the only surviving male continued to be respected and to command an autonomous military unit of the Greek Republic (*έκατονταρχία*, *ekatontarchia*) even though he was only 13 years old.¹⁹ The activities of Ali Pasha, or more precisely of the house of Ali Pasha, have destabilised this system. His rise to power was a result of the Eliasian process of the "monopolisation and centralisation of contributions and of the use of force".²⁰ After eliminating his adversaries one by one and by integrating their means of

warfare and their manpower, Ali established a peacetime army of at least 12,000 to 15,000 men.²¹ His military achievements and reforms (on tactics, organisation and logistics) have not been studied and so linking them to his concern for health matters is largely a hypothesis.²² It is plausible, however, that Ali's military and medical achievements almost matched those of Muhammad Ali in Egypt.

The same military and medical process was repeated during the revolution as, after the defeat of Ali Pasha, forces turned south, bringing with them Ali's experience in military and medical matters. This twofold process, which was spreading at the beginning of the nineteenth century in Egypt, (probably) in Ali's area, in Constantinople, in the southern Balkans during the revolution, and even in Latin America, is linked to the "regularisation of the war", of which the French Grand Army should be seen as the most obvious structure that magnified local efforts.²³ A very large part of the war and fighting, and much of the political effort to organise structures of governance, during the revolution cannot be understood outside its context. The process aimed to integrate the warriors thriving on the edges between empires (the "irregulars" of the revolution) into regimental armies (the "regulars"). It was a very long process. Napoleon's Grand Army had a light infantry and a light cavalry (that is, irregulars, who burned Moscow), as the Russians did during the First World War (Cossacks). King Otto of Greece (1833–1862) organised semi-irregular forces around his regimental army of Bavarian soldiers in order to incorporate the armatoles. It was not so much a political effort in the strict sense (winning their loyalty to the crown by providing them with a regular salary), but a moral and military one, as it shall be argued.

The battles of the revolution were largely fought by the "irregulars", who set the "tone" of the war: the "regulars" were trying to find their place in the 1821 Revolution without great success as their formations continuously disintegrated into "irregular" bands and as military camps did not have stability in time and in place. After the defeat by the Egyptian army at the battle at Kremmydi in 1825, however, the demand for "regularisation" (*τακτικοποίηση*) of the "irregulars" became more pressing.²⁴ In fact, it was some armatoles who first became aware of the importance of the military tactics adopted by Charles Fabvier's regular tactical force with which they could collaborate.²⁵ We learn, for example, that the garrison commander of the Acropolis, Ioannis Gouras, was taught "tactics" (*τακτικήν*).²⁶ Beginning in 1827 and at the battle at Haidari, the two formations, that is, Georgios Karaiskakis' "irregular army"²⁷ and Fabvier's "regulars", were becoming more and more intertwined, establishing the largest military camp of the revolution in Attica. Even though they could not finally come to terms, the Attica camp played a crucial role in military organisation, logistics and the inversion of the power balance in favour of the "regulars" when Kapodistrias came to power.²⁸ At first, the "irregulars" were incorporated into the chiliarchies (1828–1829) and, then, the light infantry (only to return to their "irregular" state of warfare after Kapodistrias' assassination). In the meantime, the *amatolikia*, that is, the

“irregulars” power base, were abolished – the armatoles were transformed into “regulars”, receiving pay from a political structure.

Medicine and “war cultures” during the revolution

Our analysis is concerned with three “cultures” of war that existed at the beginning of the revolution: first, that of the armatoles in Rumelia (and the Maniots in Mani, Morea); second, that of the “regulars”; and, third, that of the armed bands that peasants formed occasionally between the fall of Tripolitsa (1821) and 1825. The frequent exchanges between the three types of “war culture” meant that after 1829 their differences became quite irrelevant. Initially, however, the differences were more pronounced. In general terms, the armatoles and the Maniots formed a war aristocracy, characterised by a warrior spirit and honour, the “regulars” expressed the ethos of a soldier and the peasants were limited to the production of goods or to secondary military activities (for example, removing cannons from the battlefield). They were only enlisted at crucial times.²⁹

John Keegan and Michael Mann assert that around “civilisations” (sic), that is, around sedentary empires that developed organised stable armies, which were supplied regularly and were obedient to centrally designed orders, irregular or semi-irregular armies had always acted as looters/pirates/bandits, mercenaries, merchants and local governors. They were formed by steppe/mountain/rainforest/desert peoples, such as the Germanic peoples, the Vikings, the Hussars, the highlanders, the Zouaves, the samurai, or the mountain people of Rumelia, and Mani. The latter were in contact to the west with the British, French and the Habsburg empires, to the north with the Russian Empire and to the east with the Ottoman Empire. They lived off the land they ruled, they practised nomadic life and transhumanism, and they were merchants and tax farmers. The war that they waged between 1821 and 1827 makes sense if we consider them as men-at-arms for whom “endemic war” was a professional occupation. An event that took place during the transport of Lord Byron to Messolongi demonstrates this assertion. One of the ships that followed Byron from Argostoli to Messolongi was captured by an Ottoman armada and transferred to the citadel of Patras. After a few days, the ship with all its cargo, intended for use by the defenders of Messolongi, was liberated by the Ottoman governor because he knew the ship’s captain from the past.³⁰ War was a professional occupation of specialised social groups that were bound together, sometimes as enemies and at other moments as allies. They maintained the basis of their power through endemic violence (hence, the endless play between armatoles and klephths) and it was not profitable to end it – until the philhellenes and, through them, the Western empires, as well as the Egyptian standing army (and thus the Ottoman Empire), came into play with greater intensity.

Other characteristics the armatoles shared with a typical warrior were the intimate relationship with the musket (as others have had with their horse or sword); the ritual beginnings of a fight (screams, curses and swearwords); their enlistment in groups rather

than individually; fighting from afar or behind obstacles so that they could live to fight another day; the “cowardice” – as the philhellenes saw it – to run away from the fight once it was considered lost; the concern to always have a way out of the fight; the avoidance of battles in plains or during daylight; the cruelty with which they treated the powerless (for example, prisoners of war)³¹ and the opposite attitude of cries in front of the powerful; and the most common cause of a fight being revenge, for the honour of the man or his wife (vendetta).

The data collected by our research shows that these warrior bands, for all their bureaucratic organisation and military discipline, did not have access to medical treatment in a consistent way; in other words, they did not necessarily have a nominated surgeon/doctor in their ranks. The archives suggest, however, that most of the demands for medical treatment submitted to the Provisional Administration of the revolution came from these professionals of war: Giannakis Rangos, Yannis Makriyannis, Odysseas Androutsos, Nikolaos Kriezotis, Andreas Iskos, Yannis Gouras, Vasos Mavrovouniotis, the Souliots – they all had or sought access to medical treatment.³² So, even though there was a clear inclination on their part to seek medical aid, their relationship with medicine was occasional: when they felt the need for treatment, they turned at that precise moment to a surgeon/doctor, either by appointing one, or by violently recruiting one, or by buying his services on the medical marketplace. As a result, they did not make any distinction between a medical empiric/practical doctor and a university-educated medical doctor. They took what was at hand at a given moment.

To understand the nature of their relationship to medicine, we must compare the armatoles with the peasant armies and the soldiers. According to Apostolos E. Vacalopoulos, up to 1825 the armed men of the revolution in the Morea were mostly peasants guided by the two “traditional” incentives to war: revenge and looting. They never reached the stage of establishing a coherent and stable armed force or a durable military camp. Once the battle ended, the bands disintegrated and their men returned to their homes and economic activities. In their case, priests and monks treated the sick and the wounded. Things were different for the regular troops. All the regular regiments formed during the revolution had, with no exception, a regular military medical service staffed by doctors, not empirics or practical surgeons. As they were paid regularly, these troops were also treated medically on a very regular basis by nominated personnel whose medical knowledge was as systematised as it could be for the time.³³

Fighting *à la bayonet* (as the radical Rigas Velestinlis had wanted for the armies of his *Νέα πολιτική διοίκησις* (New political government, 1779) and which the armatoles mocked) was more deadly than with the irregulars’ yataghan because it required face-to-face combat. During the revolution, soldiers fought in strict and geometric formations, without taking any protective measures against enemy fire. Characteristically, before the

Battle of Peta (1822), warriors like Gogos Bakolas and Panagiotis Giatrakos advised Pietro Tarella and his “regulars” to establish *ταμπούρια* (defensive positions) in order to fight from behind them. Tarella (who was killed in battle) replied was that his chest was his *ταμπούρι* (defensive position), accusing them of cowardice. In fact, it was a question of two different kinds of heroism, resulting from different levels of psychological and corporeal pressures exercised by the military methods of discipline.

Regimental armies, such as the tactical ones of the revolution, had a different outlook regarding death as they sought to wage the final (and therefore bloodier) battle, which would stop the war (either by winning or losing it). In other words: soldiers were more violent when faced with an equal force and less so in the face of impotence – the exact opposite of a warrior’s attitude. Thus, soldiers must stand in line, regardless of the level of anxiety, stress and impact of the enemy force, just as the regular and intensive training (the drill) prepared them to do. The armatoles’ psychological impulses were more individualised and more “heroic” than that of a soldier, who, as he was put through the drill, developed another sense of “heroism”: that is, self-sacrifice in battle so as to gain respect from his fellow soldiers. Few philhellenes survived the Battle of Peta because, as soldiers, they managed to overcome the self-preservation instinct, particularly developed in warrior culture, and did not flee the battlefield. As infantry regiments as a rule suffer high injuries, regular medical assistance thus becomes necessary.

Logistics, discipline and the soldier’s body

Units of soldiers incurred more casualties in battle than bands of warriors because the drill creates a certain “ethos” in the fighter.³⁴ In order for the drill to succeed, fighters should be restricted to one place, that is, a military camp. The psychological pressures exercised within camps were very much acknowledged at the time, both by those who escaped them and by those who ran them. Kolokotronis, for example, was in favour of camps. He knew the meaning of surveillance, strict rules of conduct, military police and daily firearms drill. He knew that living, eating and exercising together made fighters “know each other, and love each other and have pains with each other”.³⁵ In other words, discipline and patriotism were born together in the revolutionary military camps. But in order for a camp to be sustainable, and to “persuade” fighters and warriors to subject themselves to restrictions and disciplinary mechanisms, they had to be resourced with supplies and, more particularly, payments.

Keegan defines a soldier as the fighter who receives pay. Most certainly Georgios Papazolis would have agreed with him. In his eighteenth-century textbook on Russian military tactics and organisation, he translated in Greek the Russian word *солдат* (soldier) as *σολδάτος* (and not *στρατιώτης*), “from the word *soldon*, that is, the pay they receive”.³⁶ Such a specific definition of the soldier is not a simple one. Papazolis viewed the *soldati* as “subdued” (*ύποτεταγμένους*). That means that payment – especially regular and steady

payment – is what defined a soldier. A soldier obeys the commands of others without questioning them, even at the cost of his own life, as the others, and not he, control the means of warfare. Materials (gunpowder, food, clothing, accommodation, horses and pack animals), knowledge (combat tactics, camp organisation, knowledge of water sources and geomorphology) and fun (sexual relief, rest) are provided to him. That is why the “regulars” of the revolution always sought to follow a political leadership, regardless of who was in political power at a given time. In other words, soldiers depended on centralised and politically organised logistics, which ensured their loyalty and fighting ability, more than warriors who do not easily accept orders because they take, and they know, what they need – and even more than peasants who only fight occasionally.

Many observers of the period have been conscious of the link between regimental organisation and discipline. Alexandros Mavrokordatos and others insisted on the “regularisation” of the warrior bands on moral grounds. Lord Byron wanted to create an artillery because it “teaches discipline” and Friedrich Thiersch believed that military disorders “will stop when the soldier is fed as necessary and paid regularly. With discipline, faith and loyalty will return.” The drill, geometrical formations in combat, volley fire, and – once introduced – medicine, exercised powerful psychological pressures on the warrior’s instincts for self-preservation, individualism and fury (which becomes uncontrollable under extreme circumstances of violence, epidemics and famine). The moral demand for discipline was nevertheless a military one. In 1821, the notables of Hydra acknowledged the importance of “order in the military corps, so that our victories against the tyrants become better and faster”.³⁷ Panagiotis Soutsos wrote that “after the invention of gunpowder, obedience is the only means to victory for regular armies”.³⁸ The text, written in 1827, echoes astonishingly the Weberian analysis: “Gun powder and all the war techniques associated with it became significant only with the existence of discipline.”³⁹

The use of gunpowder meant the infantry became the main force in warfare. Throughout the fifteenth and sixteenth centuries the Janissaries gained in numbers over the “irregular” cavalry of the Turcoman beys as the Ottoman Empire strove to equal the Habsburg regiments. That meant a larger dependence on monetised economy and on bureaucratic institutions responsible for logistics. By 1700, the sultan depended more and more on “administrative and financial skills as the exploitation of existing resources rather than acquisition of new lands became the major sources of state revenues. Hence, the vizier and pasha households furnished most office appointees.”⁴⁰ Commercialisation, the *malikane* (tax farm) system, the rise of communities as administrative and fiscal mechanisms, the Phanariotes and the expanding bureaucratic system constitute different aspects of the financial cost of the Janissary infantry, which arguably represents the first disciplined standing army with firearms in history.

As Weber pointed out, bureaucratic expansion happens at the expense of the

powers of warlords (*όπλαρχηγοι*) powers, as the objective of the bureaucracy is the formation of the “bureaucratic soldier” by administering the means of warfare he needs. Even if the adjective in the phrase “bureaucratic soldier” seems superfluous, the process of creating soldiers can be easily observed in the Ottoman Empire of the 1820s. The Greek-speaking physician Petros Vellaras, who translated, it would appear, Johann Peter Frank’s work *System einer vollständigen medizinischen Polizey*: “The unique life of soldiers harms today ... the public, because their permanent number is now greater than before, and [because] the most beautiful and robust men are chosen for soldiers; but when the time of conscription is reduced to some years, and the public takes care of the education of military children, the harm is somehow compensated”.⁴¹

During his last wars with the Habsburgs, the sultan began to acknowledge that winning the battle did not depend so much on the superiority of weaponry, battle tactics or military fury (because no such differences existed) as on logistics and on the Habsburg’s ability to mobilise resources.⁴² On the other hand, the Janissaries began to show disobedience and lost their military efficiency once they stopped being dependent on the sultan’s resources, opening up their own shops and integrating members without passing through the *devşirme* system. Selim III needed his New Army because he had no confidence in the military capacity of the Janissaries. The militias and private armies (like the armatoles), as alternative mechanisms of military enlistment, were equally dangerous as they depended on local resources.⁴³

The interdependence of stable networks of supply, discipline and political centralisation is obvious in the fate of the armatoles (but not of the Maniots, who, until very late in the nineteenth century, remained in control of their sources of power). The highly competitive relations of the armatoles from the early nineteenth century were basically a demographic problem, which became even more acute with the revolution. The “constant threat of ‘the Turks are coming’” and the mobility of armatoles, bandits and pirates led “to the numerical expansion of the guards”. Warlords, like Ali Pasha and Odysseus Androutsos, were strengthened, but as a consequence of their strength they could not strike a balance “between the population and the number of the armed forces to be fed”. The remaining options were mainly three: to invade the plains, like the Maniots did in Messinia in 1821 and the Rumeliots in the Morea in 1824–1825; to revert to Ottoman rule or to turn to the Provisional Administrations and other logistics providers (such as the philhellenes); or to go bankrupt and disappear from the scene. As long as the revolution endured, more and more peasants became unable to cope financially, joining the ranks of the military as a result, further burdening the situation.⁴⁴ Ultimately, each time the situation proved the warlord’s inability to command his *armatoliki* until he became uprooted (*ἀνέστιοι*), a mercenary, like the Souliots, who sold their might to the highest bidder or who had to be incorporated into Kapodistrias’ light infantry.

In this febrile environment, a political power with enough resources and the support of disciplinary mechanisms could intervene and control these warriors. This occurred twice,

once in 1824–1825 under Georgios Kountouriotis' Executive (Έκτελεστικό) and in 1828 under Kapodistrias. Nikoforos Diamandouros has already underlined the importance of Executive bureaucrats for the promotion of tactical military forces.⁴⁵ Indeed, it was under the Executive of 1824–1825 that military camps were established, that attendants (*φροντιστές*) were appointed to supply their needs, that a certain standard of monopolisation of resources (Morean taxes and loans) and of the use of force (the armatoles and the navy) was achieved, that Nafplio military hospital was erected and that the demands for medical services increased. The effort was not successful because the sources of power of the opponents (the Egyptian and sultanic armies) could not be outmatched. The effort was renewed after 1827, thanks to the organised and centralised resources sent by the philhellene committees of Paris and Switzerland. The creation of the military camp of Attica was not then by chance.

Doctors, either as bureaucrats, thinkers or medical men, were not absent from the process of the regularisation of war. In fact, they were key players in its success and stabilisation. In 1824 in Messolongi, Lord Byron's physician, the Italian Francesco Bruno, published a manual on military hygiene in Italian alongside a Greek translation.⁴⁶ Its historical value is of enormous importance for the development of military medicine and for the meaning of the body during the revolution and after. Bruno was interested in the hygiene of the camps affected by factors that the Hippocratic *On Airs, Waters and Places* describe: excessive heat and cold, humidity, corrupt air, nutrition (in terms of quality and regular intake), excessive movement or, conversely, immobility and lack of cleanliness. It is a typical hygiene manual of the time but applied to the army. Bruno intervenes in matters of organisation, tactics and discipline: he determines the duration of the drill, clothing, bedtime, the location of a camp, and diet. The introduction of medicine to the camp facilitated or intensified the "standardisation of people and materials". By examining the needs of the soldier and his physical strength, the military physician shapes his diet and determines the means to meet his needs. The physician also oversees the physical, moral and mental state of the soldier, offers support and propagandises ideas and practices. After all, the very hygiene practices he promotes constitute an intense version of physical and mental discipline.⁴⁷

The medicine of Adamantios Korais (who edited the above-mentioned Hippocratic work), Anastasios Polyzoidis, Panagiotis Rodios, Georgios Glarakis, Kapodistrias, Kolettis and of other scholars in the Ottoman Empire, as well as of philhellenic doctors, proposes a systematic approach to the links between natural and sociopolitical processes. The scholar-doctors of the time were important for the promotion of collective discipline and, therefore, were also necessary as bureaucrats. In 1828, Dr Wilhelm Körring was appointed inspector of the chiliarchies.⁴⁸ He also worked for the armatoles of the so-called Western Camp, those that were not incorporated into the chiliarchies and for whom "he carried out the

payroll and logistics". Interestingly, he collaborated with the French baron Louis Dentzel, chief of staff of General Richard Church in the Western Camp. Dentzel had experience in commanding warriors (Hussars).⁴⁹ Another doctor, the French Étienne-Marin Bailly, organised military hospitals and was responsible for the logistics and the supplies of Fabvier's regular army. Finally, in 1827 the Swiss doctor Louis-André Gosse was made responsible for supplying Lord Thomas Cochrane's "national" navy.

The emergence of military medicine had three consequences. First, the body gradually began to be treated as a means of warfare. As Bruno wrote:

That the health of the leaders and of the soldiers is the nerve of the army can be easily understood by anyone who observes that any man when he has a healthy body also has his stronger physical powers and is more developed; his ideas are livelier and fairer; his mental powers are more energetic, and whatever is to be attempted, the healthy body executes it with more courage, ease and security.

The last part of the quotation, in particular, illustrates the meaning and highlights the consequences of regularised war, or of soldiering: a healthy body does not retreat; "good health" is "the source of victory".⁵⁰ Such ideas were quite original, even for the Western European military experience,⁵¹ but the warriors of Rumelia were already ready to embrace them. Not by chance do their texts reflect for the first time ideas linking militancy and health: "Everyone volunteered to attack," the defenders of the Acropolis wrote in 1827, "but ... even if the spirit was willing, the flesh was sick."⁵² Moreover, it became clear to them that "the sick are unjustly dying by not having what they need".⁵³ The idea of unjust loss indicates, on the one hand, the development of the idea that health is an important good which should not be threatened unless it is "fair". On the other, it is recognition that it is up to military medicine to limit the casualties of war "to a level that is fair".

The second consequence of the integration of medicine into military structures relates to the medical profession itself. The participation of medical empirics and practical surgeons in the battles of the revolution gave them rights to equal participation in the official medical body established by King Otto after independence.⁵⁴ This official recognition lasted until the end of the nineteenth century and was based on Kapodistrias's decision to equate, in terms of salaries, all army doctors and surgeons with "the highest-ranking officers".⁵⁵ However, internally the medical profession would become hierarchically organised in such a way that its upper tiers were occupied by medical graduates. The way the army was organised during Kapodistrias' rule reflects that internal hierarchy of the medical profession. With only one exception, all medical officers appointed to a regiment or to a military hospital were medical graduates. The empirics were integrated into the chiliarchies or to the light infantry.

The third consequence was highlighted by Bavarian general Carl von Heideck, who recounts warrior culture, discipline, sedentary lifestyle, state construction, military uniform and hygiene:

Let me examine the reasons for the introduction of Western uniforms and clothing in the military and political hierarchy ... I came to Greece not to paint, but to help establish a new state by introducing European culture [μόρφωσιν] and civilisation [πολιτισμόν]. [I consider that] clothing and custom have common roots ... The manifold fustanella did not allow the soldiers to carry with them a second one and therefore the garment could not be changed and washed, and therefore it was full of dirt and parasites, preventing the management of the firearm; it had to be replaced by trousers. In addition, I understood that soldiers could not sit all over the floor so easily with pants [as Demetrios Ypsilantis had already experienced] and could therefore gradually get used [βαθυηδὸν θὰ ἐλάμβανον ἔξιν] to chairs or bench, of wooden tables and to a cleaner life [καθαρειότερον βίον], and that in the future after their service, because they would come to despise their former brutal [κτηνώδους], so to say, life, they would put tables and chairs and beds inside their huts and, by such possessions, they would all stick to a homeplace, because until now no one considered households and homes, but on the contrary everyone sitting cross-legged or lying on the ground, covered in his coat, lived everywhere an easy a life as at home – a life suitable for nomads, but not for peasants and bourgeois, who should be the foundation of any well-ordered state.⁵⁶

Building hospitals, adopting hygienic practices, managing firearms, organising regular military forces and developing military medicine, and even the resulting state construction in the Balkans (and Egypt), should in a large part be seen in the context of the centralisation of resources within the Ottoman Empire, which, in turn, was largely related to the problem of warrior culture and its adjacent dimension of pastoral mobility.

Conclusion

The process of the monopolisation of violence and resources is very clear during the revolution.⁵⁷ However, when viewed from the perspective of the armed forces, it seems that, to put it quite simply, the monopolisation of the resources had a slight priority. Until a sufficient level of the monopolisation of resources was reached, there was no possibility of having a sustainable military camp and barracks, as many chieftains in the Morea had experienced during the revolution. It was not soldiers that demand the elaboration of a steady network of supply, but it was the existence and the functionality of such a network that permitted the construction of military camps, the circumscription of the military personnel and the rise of the soldier – in other words, the centralisation of violence. Medicine was important in that it helped construct the body as a means of warfare, and thus intensified military discipline by multiplying the spaces in which it was exercised. The case of the armatoles, who in general experienced a loss of the control of their sources of power (and of their bodies), and the subsequent rise of a political centre that controlled its own resources and the bodies is characteristic of a process that was played out many times in different parts of the Ottoman Empire. A slow social development was launched towards a

clearer distinction between the military and political spheres and a subsequent effort by the political elites (aided by medicine) to control military personnel.⁵⁸

The 1821 Revolution took place within the process of centralising the means of power in the Ottoman Empire. Even though the process increasingly involved the suppression of warrior practices, the armatoles did not remain aloof from the importance of disciplinary mechanisms in running their *armatoliki*. However, after the intervention of the empires in 1825, military disciplinary mechanisms spread thanks to the stable integration of medicine. As a consequence, stockpiled supplies were not wasted by warlords who knew no boundaries when it came to their actions and ambitions. In that way, political authorities emerged, military doctors/surgeons were appointed in a stable manner and bureaucratic mechanisms, often organised by medically educated personnel, took control of the army after 1828. In other words, medicine, through its military application, played a significant role in the transformation of warriors into soldiers and in the construction of the state. The main difference between Ali Pasha and Muhammad Ali was that the latter's medical and military reforms were more successful in the sense that they led to an independent state, as had happened at the same time in the area under Kapodistrias' control.

¹ Nurun Yıldırım, *A History of Healthcare in Istanbul* (İstanbul: İstanbul Üniversitesi, 2010), 182, 186, 188.

² Dramali's army of 12,000 infantry and 8,000 cavalry did not have a single doctor. Apostolos E. Vacalopoulos, *Iστορία του νέου Ελληνισμού* [Modern Greek history], vol. 6, *H μεγάλη ελληνική επανάσταση (1821–1829): Η εσωτερική κρίση (1822–1825)* [The great Greek revolution (1821–1829): The internal crisis (1822–1825)] (Thessaloniki: s.n., 1982), 216.

³ G.A. Russell, "Physicians at the Ottoman Court," *Medical History* 34 (1990): 254; Yıldırım, *A History of Healthcare in Istanbul*, 181, 186–87.

⁴ The "200 years after the Greek Revolution" project of the Hellenic Open University (2018–2020) was directed by professors Vassilis Kardasis (2018–2019) and Odysseas-Ioannis Zoras (2019–2020). Professor Nikos Kotaridis was the project's academic supervisor and coordinated the research. The research is going to be published by the Hellenic Open University Press.

⁵ Michel Foucault, *Naissance de la Clinique: Une archéologie du regard medical*, 2nd ed. (Paris: Presses universitaires de France, 1972).

⁶ Max Weber, "The Meaning of Discipline," in *From Max Weber: Essays in Sociology*, ed. and trans. H.H. Gerth and C. Wright Mills (New York: Oxford University Press, 1946), 253–64.

⁷ John Keegan, *A History of Warfare* (New York: Vintage Books, 1993).

⁸ Roger Cooter, Mark Harrison and Steve Sturdy, *War, Medicine and Modernity* (Stroud: Sutton, 1998); Roger Cooter, Mark Harrison and Steve Sturdy, eds., *Medicine and Modern Warfare* (Amsterdam: Rodopi, 2004).

⁹ Roger Cooter, "Of War and Epidemics: Unnatural Couplings, Problematic Conceptions," *Social History of Medicine* 16, no. 2 (2003): 289–90.

¹⁰ On this notion, see Richard Blum and Eva Blum (assisted by Anna Amera and Sophie Kallifatidou), *Health and Healing in Rural Greece: A Study of Three Communities* (Stanford: Stanford University Press, 1965), 20–22.

¹¹ For Kolokotronis, it was the life of the klephths that allowed them to “endure starvation, thirst, being hurt, dirt”. Apostolos E. Vacalopoulos, *Τα ελληνικά στρατεύματα του 1821: Οργάνωση, ηγεσία, τακτική, ήθη, ψυχολογία* [The Greek armies of the 1821: Organisation, leadership, tactics, morals, psychology] (Thessaloniki: Vanias, 1991), 35.

¹² Johann Daniel Elster, *To Táγμα των Φιλελλήνων: Η ίδρυση, η εκστρατεία και η καταστροφή του* [The philhellene regiment: its foundation, campaigns and destruction], trans. Christos Oikonomou (Athens: Historical and Ethnological Society of Greece, 2010), 45. Originally published as *Das Bataillon der Philhellenen: dessen Errichtung, Feldzug und Untergang* (Baden: Diebold, 1828).

¹³ Bruno Argémi, *Clot-Bey: Un médecin français à la cour du Pacha d'Égypte* (Marseille: Gausson, 2018). See also John P. Dunn, “Missions or Mercenaries? European Military Advisors in Mehmed Ali's Egypt, 1815–1848,” in *Military Advising and Assistance: From Mercenaries to Privatization, 1815–2007*, ed. Donald Stoker (London: Routledge, 2008), 11–25; and “Les Arabes, les Turcs et la Révolution française,” special issue, *Revue du monde musulman et de la Méditerranée* 52–53 (1989).

¹⁴ A. Andréadès, “Ali pacha de Tébelin économiste et financier,” *Revue des Études Grecques* 25, no. 115 (1912): 448.

¹⁵ Louis-André Gosse, *Relation de la peste qui a régné en Grèce en 1827 et 1828, contenant des vues nouvelles sur la marche et le traitement de cette maladie* (Paris: Cherbuliez, 1838), 172.

¹⁶ Athanasios Barlagiannis, *Η υγειονομική συγκρότηση του ελληνικού κράτους, 1833–1845* [The sanitary construction of the Greek state, 1833–1845] (Athens: Estia, 2018), 114–33. It is important to note that Muqtar Pasha was responsible for the functioning and organisation of the lazarettos. Maria Anemodoura, “Ο θεσμός του επόπτη φύλαξης των δερβενίων (Derbendât nâziri) την περίοδο του Αλή πασά Τεπελενλή και η σχέση του με τον αρματολισμό” [The institution of *derbendât nâziri* in the era of Ali Pasha and his relations with the armatoles] (MA diss., National and Kapodistrian University of Athens, 2012), 113.

¹⁷ According to our estimates based on Marinos Geroulanos, “Η συμβολή των ιατρών εις την Παλιγγενεσίαν του Έθνους” [The contribution of doctors to the rebirth of the nation], *Praktika tis Akadimias Athinon* 15 (1940): 231–32.

¹⁸ Christos Vyzantios, *Ιστορία των κατά την ελλην. επανάστασιν εκστρατειών και μαχών και των μετά ταύτα συμβάντων, ων συμμετέσχεν ο τακτικός στρατός από του 1821 μέχρι του 1833, μεταγραφείσα μετά πλείστων δύοντων ιστορικών γεγονότων* [History of the campaigns and the battles and of their events during the Greek revolution in which the tactical army participated between 1821 and 1833] 3rd ed. (Athens: Favviers, 1901), 318–19; Dimitrios Papastamatiou and Phokion Kotzageorgis, *Ιστορία του Νέου Ελληνισμού κατά τη διάρκεια της οθωμανικής πολιτικής κυριαρχίας* [Modern Greek History under Ottoman political rule] (Athens: Syndesmos Ellinikon Akadimaikon Vivliotikon, 2015), 133.

¹⁹ Stefanos Papageorgiou, “Η στρατιωτική πολιτική του Καποδίστρια: Δομή, οργάνωση και λειτουργία του στρατού ξηράς της καποδιστριακής περιόδου” [Kapodistrias' military policies: Structure, organisation and function of the army during the Kapodistrian period] (PhD diss., Panteion University, 1983), 63.

²⁰ Norbert Elias, *La dynamique de l'Occident* (Paris: Calmann-Lévy, 1975), 181.

²¹ Andréadès, “Ali pacha de Tébelin,” 448.

²² The only study, to our knowledge, that treats medical and military developments during Ali's reign in the same context is Anemodoura, “Ο θεσμός του επόπτη φύλαξης των δερβενίων” [Institution of *derbendât nâziri*], chap. 15 and 16. The last chapter studies Ali's unsuccessful efforts to organise military tactical forces.

²³ Luis De la Peña, “The Outside Revolutions: Wars and Military Change in the Independence Movements in Latin America and the Balkans, 1810–1830,” *Carnival* 18–19 (2018): 59–60.

²⁴ Vyzantios, *Iστορία των κατά την ελλην. επανάστασιν εκστρατειών και μαχών* [History of the campaigns and the battles], 318.

²⁵ Vacalopoulos, *Τα ελληνικά στρατεύματα* [Greek armies], 193 and 198.

²⁶ *Efimeris ton Athinon* 11 (8 Oct. 1824).

²⁷ Dionysis Tzakis, *Η μεταστροφή του Καραϊσκάκη: Από τον κλεφταρματολό στον επαναστάτη* [Karaïskakis' conversion: From klept to revolutionary] (Athens: Hellenic Open University Press, 2021), 201–32.

²⁸ Vyzantios was aware of the power balance between the two military formations: “Fabvier’s enemies wanted to merge the regular with the irregular army,” rather than the opposite, *Iστορία των κατά την ελλην. επανάστασιν εκστρατειών* [History of the campaigns and the battles], 309.

²⁹ There was a fourth military tradition represented by the Morea’s *kapi* (κάποι) but they were not free warriors, like the armatoles. The *kocabası*, the local political elites, managed to control them by 1806 and, as a result, they were used in policing the estates and the cities or as bodyguards. In the case of the *kapi*, the question was to prevent them from having access to political and economic power and establish a military government (dictatorship), as Vacalopoulos has discerned. In this understanding, the opposition between Dimitrios Ypsilantis and the *kocabası* of the Morea in 1821 and between Kolokotronis and the “politicians” in 1825 focused on the “limit” that should distinguish the two powers, the political and the military. The differences with the armatoles are twofold. First, the *kapi* were socially closer to the masses than the aristocracy of the armatoles, which explains the *kapi*’s popularity or their subordination to/collaboration with the *kocabası*. Secondly, the armatoles combined political and military power as their prerogative, they were not dictators. As free warriors, they controlled their own sources of power and did not aspire to occupy an autonomous political structure. In other words, if in Rumelia the effort was to strip the warriors of their political power and turn them into soldiers, in the Morea, it was a matter of preventing the *kapi* from taking over political power, a difficult endeavour under conditions where local societies were becoming increasingly militarised. Even though the *kapi*, like Kolokotronis, Nikitas Stamatelopoulos (Nikitaras) and Andreas Petmezas (a practical surgeon himself), sought medical treatment for their men, they are beyond the scope of this article. Their historical development was, after all, different, as was their initial stance as policemen at the time the revolution erupted. It is not by chance that the *πολιταρχία* (*politarchia*), the forces of order established by Kapodistrias, comprised these Morean armed bands.

³⁰ Lord Byron, *Επιστολές από την Ελλάδα: 1809–1811 κ' 1823–1824* [Letters from Greece, 1809–1811 and 1823–1824], trans. Dimosthenis Kourtovik (Athens: Ideogramma, 1996), 201 and 310.

³¹ “Many of them ... followed the Turks [the garrison of St Spyridon Monastery, in February 1827] by a curiosity, which was the result of such a rare spectacle [setting the prisoners free].” Dimitrios Ainan, “Η βιογραφία του στρατηγού Γεωργίου Καραϊσκάκη” [Biography of General George Karaïskakis], in *Γ. Καραϊσκάκης: Δράση και κατατρευμός* [G. Karaïskakis: action and persecution], ed. Yannis Vlachoyannis (Athens: Mermigas, 2013), 185.

³² The Maniots did not in general address such demands, probably because medical personnel proliferated in Mani.

³³ Empirics and university-educated doctors shared a common naturalistic framework for explaining and curing disease. However, the empirics did not have all the theoretical tools necessary to process knowledge and incorporate the empirical, the fortuitous and the improvisation into consistent rules of thought and experimentation. On the other hand, the so-called “scientific doctors” had studied Latin, logic and natural sciences. They were thus more capable of theoretical thought and organised action. They were, in other words, more professionalised and “scientificised” than the empirics. Jacques Léonard, *La vie quotidienne du médecin de province au XIXe siècle* (Paris: Hachette, 1977), 162.

³⁴ Keegan, *A History of Warfare*, 347.

³⁵ Fotakos, cited in Vacalopoulos, *Τα ελληνικά στρατεύματα* [Greek armies], 37.

³⁶ Georgios Papazolis, *Διδασκαλία ἥγουν Ερμηνεία της πολεμικής τάξεως, και τέχνης* [Teaching or explanation of military tactics and art] (Venice: Dimitrios Theodosiou, 1765), 1–2.

³⁷ Dionysios A. Kokkinos, *Η Ελληνική Επανάστασις* [The Greek Revolution], 3rd ed. (Athens: Melissa, 1957), 2:213.

³⁸ Panagiotis Soutsos, “Ηθική και πολιτική μεταρρύθμισις της Ελλάδος,” pt. 12, *O Filos tou Nomou*, no. 288 (29 April 1827): 3–4.

³⁹ Weber, “The Meaning of Discipline,” 257.

⁴⁰ Donald Quataert, *The Ottoman Empire, 1700–1922*, 2nd ed. (New York: Cambridge University Press, 2005), 43.

⁴¹ Petros Vellaras, *Συστηματικόν εγχειρίδιον περί ιατρικής πολιτείας, προς χρήσιν ιατρών, χειρούργων, μαιευτριών, νομικών, αξιωματικών, οικοδεσποτών, οικονόμων, πνευματικών και πάντων των περί της ιδίας, και των ομοφύλων αυτών υγείας και αναρρώσεως σπουδαζόντων* [A concise manual on the medical state], vol. 1, *Περί δημοσίας διαιτητικής* [On public regimen] (Vienna: Adolf, 1829), 20–21. According to Katerina Gardikas, Vellaras' treatise has the same table of contents as Johann Peter Frank's study, even though the first comprises two volumes and the second thirteen. “Υγειονομικές πειθαρχίες στα χρόνια της Επανάστασης του 1821 και του I. Καποδιστρίου” [Sanitary disciplines during the 1821 Revolution and under Ioannis Kapodistria], (paper presented to the Network of the History of Health, Athens, 5 October 2020).

⁴² Gábor Ágoston, “Firearms and Military Adaptation: The Ottomans and the European Military Revolution, 1450–1800,” *Journal of World History* 25, no. 1 (2014): 123–24.

⁴³ Ottoman historian Şükrü İlıcak describes the process as the “deayanization” of the empire, in “A Radical Rethinking of Empire: Ottoman State and Society during the Greek War of Independence, 1821–1826” (PhD diss., Harvard University, 2011), chap. 1. The process, however, left behind local power gaps to be occupied by other political and military ambitions (as happened during the revolution after Ali's death) unless the sultan could find a military alternative. As the New Army had been destroyed, the sultan had only the Egyptian army to send against the revolution as it combined two merits: first, it was an organised military force and, second, it was not part of the local military network.

⁴⁴ Nikos Kotaridis, *Παραδοσιακή επανάσταση και Εικοσιένα* [Traditional revolution and 1821] (Athens: Plethron), 209–10.

⁴⁵ Nikiforos Diamandouros, *Οι απαρχές της συγκρότησης σύγχρονου κράτους στην Ελλάδα, 1821–1828* [The beginnings of the construction of a Modern State in Greece, 1821–1828], trans. Kostas Kouremenos (Athens: National Bank of Greece Cultural Foundation, 2006).

⁴⁶ Francesco Bruno, *Περί των μέσων των προσφυεστέρων εις την διατήρησιν της υγείας των στρατιωτών κατά τα στρατόπεδα και τας φρουράς* [On the best means to preserve the health of the soldiers in the military camps and the guards] (Messolongi: Dimitrios Mestheneas, 1824).

⁴⁷ Mark Harrison, “Medicine and the Management of Modern Warfare: An Introduction,” in Cooter, Harrison and Sturdy, *Medicine and Modern Warfare*, 3.

⁴⁸ Vacalopoulos, *Τα ελληνικά στρατεύματα* [Greek armies], 240.

⁴⁹ Carl von Heideck, “Τα των Βαυαρών φιλελλήνων εν Ελλάδι κατά τα έτη 1826–1829 [The affairs concerning the Bavarian philhellenes in Greece from 1826 to 1829],” *Armonia* 2, no. 5 (1901): 235.

⁵⁰ Bruno, *Περί των μέσων των προσφυεστέρων εις την διατήρησιν της υγείας των στρατιωτών* [On the best means to preserve the health of the soldiers], 1–2.

⁵¹ The first manuals on military medicine were in Italian and appeared in the sixteenth century. The first English-language manuals appeared in the mid-sixteenth century but proliferated during the second half of the eighteenth century. James Irving, *A Concise View of the Progress of Military Medical Literature in this Country* (Edinburgh: Stark, 1896), 3.

⁵² Letter, 7 February 1827, *Αρχεία της Ελληνικής Παλιγγενεσίας* [Archives of the Greek rebirth], vol. 3, *Αι Εθνικά Συνελεύσεις* [The national assemblies] (Athens: Library of the Parliament of Greece, 1971), 302–3.

⁵³ Letter, 17 February 1827, Georgios K. Pournaropoulos, “Η ιατρική του Αγώνος” [Medicine of the 1821], *Parnassos* 13, no. 3 (1971): 316.

⁵⁴ Athanasios Barlagiannis, “Hygiène publique et construction de l’État grec, 1833–1845: la police sanitaire et l’ordre public de la santé” (PhD diss., EHESS, 2017), 551–80.

⁵⁵ General State Archives, Vlachoyannis Archives, D106, doc. 16 March 1829.

⁵⁶ Carl von Heideck, “Τα των Βαυαρών φιλελλήνων εν Ελλάδι κατά τα έτη 1826–1829,” *Armonia* 2, no. 9 (1901): 445–48.

⁵⁷ Petros Pizanias, “Από ραγιάς Έλληνας πολίτης: Διαφωτισμός και Επανάσταση 1750–1832” [From rayas to Greek citizens: Enlightenment and revolution 1750–1821], in *Η Ελληνική Επανάσταση του 1821: Ένα ευρωπαϊκό γεγονός* [The Greek Revolution of 1821: a European event], ed. Petros Pizanias (Athens: Kedros, 2009), 53–56.

⁵⁸ For example, the sultans stopped leading their armies; they were no longer “warrior kings”. Furthermore, the end of the eighteenth century saw the expansion of the hospital network within the Ottoman Empire and the explosion in the number of medical printed treatises and manuscripts.