

Assess the role of technology in the formation of modern states.

In this essay, I will argue that while technology plays a significant role in the formation of modern states, other factors, such as geographic differences and population density, provide a more useful explanation for variations in state formation. I will first explain why technological differences in Europe led to the formation of modern states. Then, I will explain why other factors better account for differences in state formation by comparing European state formation to that in China and Africa.

After the fall of the Roman Empire, a feudal system emerged in Europe. As a result, economic transactions and security became highly localised. However, in late medieval Europe, improvements in military and agricultural technology, along with a subsequent increase in trade, enabled monarchs to centralise power and remove local rulers. These new states exercised much more intrusive authority through taxation, bureaucracy, policing, and formalised legal codes. Increased trade also allowed monarchs to raise more revenue, which they used to fund standing armies. Clearly, military and agricultural technology played an important role in the formation of modern states (Spruyt 2002). These advancements brought European states more in line with Weber's definition of a modern state: "a human community that (successfully) claims the *monopoly of the legitimate use of physical force* within a given territory" (as cited in Clark et al. 2012, 90). I will first assess the roles of these different improvements in technology (military and agricultural) in the formation of modern states.

In late medieval Europe, military developments began to undermine the dominance of mounted cavalry. The mounted knight was displaced by massed infantry. These unskilled and inexpensive troops were able to defeat exceptionally trained knights (Spruyt 2009). Because of this new style of warfare, kings raised larger armies of cheap manpower which were, as a whole, more expensive. Since mounted knights were no longer crucial to the king's protection, lower lords lost importance, as they were no longer needed for the king's army. The emergence of standing armies required monarchs to raise more funds to support them. The only states capable of sustaining large standing armies were centralised states with high revenue generated through taxation and royal administration. Therefore, Tilly argues that national states emerged as a by-product of war-making (1992). Bureaucracy, taxation, and policing were necessary to support large armies.

The invention of gunpowder was of massive importance in European state formation. It necessitated greater investment in artillery, such as cannons, which in turn required increased investment in fortifications, such as the *trace italienne*. These investments led to higher taxation and an expanded bureaucracy, contributing to centralisation.

Improvements in agricultural technology facilitated increased trade and the emergence of capitalism. Urbanisation and the growth of trade led to the rise of the bourgeoisie, who did not share the privileges of the nobility. Monarchs could capitalise on this by forming alliances with the bourgeoisie. This royal-urban alliance undermined the power of the local nobility and increased centralisation, further contributing to the decline of the feudal order (Spruyt 2009).

The first comparison I will make is with China. Although Europe became more centralised, this trend was even more pronounced in China, which developed into a single unified state. Hui argues that China centralised in a manner similar to Europe: through war-making (2005). She examines the Spring and Autumn and Warring States periods in China. Ultimately, the Qin dynasty succeeded in completely centralising power, establishing a unified empire. What explains the difference between Europe and China? Why did Europe not consolidate into a single empire? China (656–221 BC) was less technologically advanced than Europe (1495–1815); for instance, it had not yet discovered gunpowder. Other factors must therefore explain why China centralised to a much greater extent than Europe. Conventional wisdom suggests that exogenous factors predetermined Chinese centralisation. Lang argues that ‘the answer lies in the realm of geography. Europe is comprised of a number of sub-regions, each of which is relatively protected by substantial geographical barriers such as mountain ranges, major rivers, bodies of water, or dense forests. These regions...were relatively difficult to conquer and hold within a unified empire. . . . The geography of China, unlike that of Europe, . . . facilitated conquest and unification over a vast area’ (as cited in Hui 2005, 90). However, Hui contends that although the Qin dynasty benefited somewhat from geographical factors, geography alone cannot fully explain the difference. While she acknowledges that other factors, such as population density and the low cost of territorial expansion, had a significant impact, she ultimately argues—contrary to Tilly’s idea that wars drive state formation—that the key factor was the presence of strong balancing coalitions against dominant states. In the European concert system, no single state could dominate because others would form coalitions against it. By contrast, during the Warring States period in China, other states failed to build an effective alliance against Qin (Hui 2005, 65–75). This provides strong evidence that significant technological advancements, such as the invention of gunpowder, are not necessary for centralisation and state formation. However, it is worth noting that there are similarities in Chinese state formation, such as the need for large standing armies, which required taxation. Therefore, a certain degree of technological advancement (such as crossbows and weaponry) may be necessary to obtain a large standing army.

Inspired by Tilly, Herbst seeks to explain why Africa did not experience the same level of state formation before colonialism as Europe did and why African states remain weak (2000). He cites John Iliffe, arguing that low population density ‘was the chief obstacle

to state formation' (as cited in 2000, 11). Africa's inhospitable geography was unable to sustain high population densities. As a result, African polities expanded by capturing people rather than land, as people were more valuable than territory. Consequently, African states did not need to develop strong bureaucracies or taxation systems. Additionally, taxing individuals was more difficult because the population was so widely dispersed. Jared Diamond also points out that the availability of domesticable crops and animals facilitated European state formation while disadvantaging African state formation (1997). For instance, Africa lacked large domesticable animals such as horses and cattle, which made travel and agriculture more difficult, hindering state formation. Clearly, factors such as low population density and the availability of domesticable animals, rather than a lack of technology, were the primary obstacles to state formation in Africa.

However, a few regions in Africa, such as the Ethiopian highlands, were able to sustain higher population densities. Carolyn Warner also shows that some states in West Africa, such as the Asante kingdom, developed large standing armies (1998). Ethiopia was even able to resist colonial powers. Notably, both Asante and Ethiopia had access to modern firearms and artillery through trade. However, I argue that the primary explanation for their initial state formation was not their access to new technology but rather their favourable geography. This is evident from the fact that much of their wealth did not come from taxation but from alternative sources, such as goldmines in the case of Asante.

In conclusion, I have argued that technology is not the most important factor in state formation. Rather, a combination of factors, including geography and population density, plays a more significant role. However, all the examples I have discussed share one common feature: the presence of a large standing army. Perhaps a certain level of technology is required to produce the weapons necessary for such an army. However, while technology may contribute to state formation, I maintain that other factors are more crucial in the initial formation of states.

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