

Swarming is not new. During the pre-gunpowder age, swarming armies enjoyed quite a bit of success on the Eurasian steppe and elsewhere; more recently, light infantry insurgents have fared well against conventional armies. The question is, Does a role exist for swarming today or in the future? History strongly suggests the answer is yes—if three capabilities can be achieved: superior situational awareness, standoff fire, and elusiveness. If emerging technology provides these capabilities, the United States could enter a watershed era of modern swarming that involves dispersed but integrated operations. Any doctrine of the future that relies on dispersed operations, such as the Army After Next or Urban Warrior, could benefit from a sustained research effort on swarming.

A radical departure from existing doctrine, a doctrine of swarming would require many issues to be worked out regarding tactics, logistics, command, and organization. Implementing such radical change, even on just a portion of U.S. ground forces, will require a careful yet bold plan that includes further research, gaming and simulation, and unit exercises before a prototypical swarming force is feasible. As well, the details of decentralized command and control will need to be worked out. A technological or doctrinal answer must be found for the logistics problems posed by a vehicle-based swarm force. But, because many of the likely conflict scenarios of the future—power-projection missions, counterinsurgencies, dispersed operations, and peace operations—appear to be conducive to a swarming doctrine, the investment will be worthwhile.

The limitations of swarming have already been noted. If dispersed swarmers are on the defense, invaders must be allowed to penetrate the swarmer's home territory before converging attacks can take place. Consequently, it is difficult for a dispersed swarmer army to defend a fixed line or border from penetration. Deliberate swarming attacks against fixed, defensive positions may not succeed when the defender has had time to fortify and channel swarm attacks with extensive minefields.

Swarming success in the past has also been highly dependent on terrain. Swarmers that were elusive because of their mobility relied on fairly unbroken terrain that could support large herds of horses. Swarmers that were elusive because of their ability to conceal themselves in dense forests or urban environments would never be able to operate in more open terrain. Yet swarmers have enjoyed marked success in the past, and they are likely to do so in the future if they are deployed with these limitations in mind.

The patterns and conclusions presented in this study are preliminary and are based on a carefully chosen yet limited sample. Indeed, further research on additional cases would help validate or complete the analysis begun here. Many other historical swarming examples remain, both from other battles between the belligerents examined in this study, and possible new cases such as the Battle of Britain in 1940, the defensive *Luftwaffe* tactics used over Germany late in World War II, the Chinese infantry tactics used in the Korean War of 1950–1952, the North American Indian Wars of the nineteenth century, and, more recently, the ongoing guerrilla war in southern Lebanon. Also, a closer look at battles between swarmers, such as Ayn Jalut and Homs, would explore how elusive forces fight equally elusive opponents. An analysis of all these additional cases would lead to stronger conclusions about what factors correlate with successful swarming.