

Brainstorm: Military Electronics

Edited by Jason Lomborg, Technical Editor

Will unmanned drones ever replace manned fighter jets?



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This question seems to be too narrow—is it not plausible that, sooner rather than later, all forms of on board control over aircraft will be relinquished to computers or remote control by human operators? The military is already using unmanned drones increasingly for routine operations. It is simply a matter of time before the Air Force is replaced by programmers. Autopilots already largely control commercial flights, with on-board human pilots simply around for emergencies (and to put the public at ease).

Advances in artificial intelligence, coupled with advances in the sensors that will let these autopilots see and gather other necessary information for a safe flight, will lead to superhuman pilot algorithms, which will have precision and capabilities beyond our limited abilities. A few humans would be needed to watch over and respond to emergency situations in traffic control towers around the world, and when necessary, they could simply take over control of a flight through remote piloting software. You have to accept it—the age of manned control over flight is coming to a close. Just over 100 years ago we didn't even have any aircraft, and in 100 more, we won't have to pilot them anymore.



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Without the need for supporting equipment and operational constraints for supporting a pilot, an unmanned air system can be far more maneuverable, and sustain higher G forces, than a manned aircraft. UCAVs also have smaller platform weights and footprints, so they can be faster than a manned platform with similar power plants. Also, because of their capability to loiter over targets for periods far longer than manned platforms, it can also be scrambled for an approved mission within seconds. Lastly, the unmanned system will never suffer from boredom or lack of focus. However, the most compelling capability that will drive the use of unmanned systems over manned systems are costs – airborne platform costs, the costs of training individual pilots and cost of human life.

While it's unlikely the role of manned fighters will be immediately replaced by unmanned drones, over time it may become redundant as advanced systems of systems enter the battlespace. The hostile encounter of the future is similar to one today. For example, an opposing air vehicle, or swarm of vehicles, will be detected and added to the recognized air picture by advanced sensors, some being on unmanned systems. The removal of that aircraft will be by complex, advanced "intelligent" systems, which will be either ground-launched, sea-launched, or air-launched from unmanned drones, or weapons deployed from space. In all cases, highly connected and robust software systems will play a critical role in order to assure that the reliability, safety, and security of these systems is sufficient for us to "trust" them in this role of high responsibility.

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