Of all the existential anxieties addressed by drones, war is just the most obvious

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Marvin Gaye once sang: ‘war isnot the answer’. In the complex socio-ecological-economic systems we live inthere are no answers, no solutions, only interventions that move us one way oranother. That said, it should not surprise us that those aspects of our way ofliving with the most primal implications for our continued existence – asindividuals or as societies – attract the greatest funding. This priority ofexistential anxieties may explain why so much technology is developed throughthe ‘defence’ sector. It may be wrong-headed to see the defence industry as oneof our first lines of existential defence but it isn't difficult to understandwhy this has come to be the status quo.

Robotic aircraft – drones –are much-debated military technology. Will they bring about a change in the‘fight’ part of our ‘fight or flight’ conduct as profound as the introductionof the longbow? Who knows? Surely, though, while this change in military capabilitychallenges our shared senses of threat and protection, robotic aircraft willalso, more quietly, be changing the way we do all kinds of other importantthings.

Much scientific research,especially in Earth science, already makes extensive use of manned aircraft,often military cast-offs, and is **beginning to see the potential for use of aerial robots (http://www.nerc.ac.uk/research/themes/technologies/events/documents/uav-study-report.pdf)** . We will be **using a robotic helicopter to take airsamples above Ascension Island (http://www.birmingham.ac.uk/Documents/college-les/gees/staff/EMS-2013-Poster.pdf)** and so help unpick the global budget ofmethane, a potent greenhouse gas. We are also involved in the use of theultra-long-range Global Hawk robotic aircraft for **makingmeasurements of air flowing into the ozone layer high above the tropical westPacific (http://www.nerc.ac.uk/press/releases/2013/02-airborne.asp)** . Others have used robotic aircraft to study volcanoes, icesheets, or the **pall of brown air that flows out fromsouth and east Asia at times (http://www-ramanathan.ucsd.edu/uavs/index.php)** . There is a growing sense that roboticaircraft will effect a step-change in our ability to sense the environment. Inproviding strategies to answer some of the most pressing issues in climatechange and natural hazards this research addresses some of the most profound,if not the most obvious, existential issues of our time. All that standsbetween us and these new robot deployments is uncertainty about the ‘rules ofengagement’: how to operate the robots in spaces shared with people.

Many civil and commercialuses for robotic aircraft have been identified: there are clear benefits fortaking the air crew out of operations that are ‘dull, dangerous, and dirty’.Dull, repetitive operations (scanning fuel pipelines for leaks, say) tax humanendurance to the point where safety can be compromised. Dangerous operations,such as tackling forest fires, expose air crews to severe risks. Dirtyoperations – fires again, but also smogs and other less immediately threateningpollution plumes – also put crews in danger. Robotic aircraft can use theweight saved by not carrying people and their life-support systems to greatlyextend range and time on duty.

The major challenge to civiluse of robotic aircraft will not be overcoming our distaste for handling theweapons of war – see how readily we've taken to GPS – but rather overcoming ourfears of allowing robots into our societies. We are, quite rightly, nervous ofceding control of any large object to artificial intelligence. It is comfortingto know that there is a pilot at the helm of a passenger aircraft. However,putting a pilot at the helm of a long, monotonous mission in a remote locationmay not always be the lowest risk option. Testing public acceptance of roboticaircraft in civil and commercial operations such as this should not beforgotten among the arguments on war.

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