Should we ban autonomous weapons?

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ICRAC

MO-1 PREDATOR WITH HELLFIRES (USAF)
"It is well that war is so terrible, or we should grow too fond of it."

Robert E. Lee, at Fredericksburg
2. Proliferation

-driven by commercial interest

countries developing and/or purchasing military robots

Thailand,

Taiwan,

Tunisia,

Turkey,

United Arab Emirates,

United Kingdom,

USA,

Vietnam
proliferation of military UAVs
CAPTURED
Yilong (Pterodactyl)
This medium-sized, propeller-driven drone is China’s answer to the U.S. Predator and MQ-9 Reaper drones — with a similar V-tail configuration. Its manufacturer, Aviation Industry Corp., says the Yilong has undergone test flights and is now the only drone being freely sold on the international market that can be used for both reconnaissance and strikes.

Length: 29.5 feet
Range: 2,485.5 miles
Maximum speed: 174 mph
Maximum altitude: 16,404 feet

Xianglong (Soaring Dragon)
Produced by Aviation Industry Corp., this is the Chinese version of the U.S. RQ-4 Global Hawk — an advanced, high-altitude, long-duration drone designed for reconnaissance. The main difference is that the Xianglong has only a fraction of the Global Hawk’s range; its manufacturer says it is intended for operations limited to the Asia/Pacific region.

Length: 45.9 feet
Range: 4,660 miles
Max. speed: 466 mph
Max. altitude: 57,000 feet

Anjian (Dark Sword)
This conceptual model generated huge buzz when unveiled by Shenyang Aircraft Co. in 2006 because it represents the aspirations of the Chinese to design something even Western powers don’t have yet — a supersonic drone capable of air-to-air combat as well as ground strikes. No one knows whether it can really be achieved and how far along in development the model is.
“The United States doesn’t export many attack drones, so we’re taking advantage of that hole in the market”
Zhang Qiaoliang, Chengdu Aircraft Design and Research Institute,
Current Export Restrictions

Missile Technology Control Regime (MTRC)
34 countries (informal and voluntary)
restricts export of UAVs capable of carrying a payload of 500 kilos at least 300 kilometers

US: International Traffic in Arms Regulations (ITAR)
September 6 2012 easing of restriction to allow US sales of drones to 66 unspecified countries
USAF roadmap 2009–2047

Man-in-the-loop

progresses to

Man-on-the-loop
why autonomy?

signal jamming

deep mission capability

less expensive

pace of battle

air to air combat
robots programmed to select and engage targets without human intervention
Autonomous warfighting robots are high on the agenda of all US forces.

The lawyers tell me there are no prohibitions against robots making life-or-death decisions.

Gordon Johnson
Joint Forces Command at the Pentagon
New York Times 2005

Think of TACs as moveable ordinance, mobile mines – they can draw fire and perform kamikaze missions.
ANTI-SUBMARINE WARFARE CONTINUOUS TRAIL UNMANNED VESSEL

CAN YOU COME UP WITH A WAY TO KEEP TRACK OF ELUSIVE SUBMARINES THAT HAS NEVER BEEN THOUGHT OF BEFORE?

CAN YOU OUTSMART AN ENEMY SUBMARINE COMMANDER AND KEEP HIM FROM ESCAPING INTO THE DEEP?

DOWNLOAD AND PLAY THE ACTUV TACTICS SIMULATOR AND SUBMIT YOUR RESULTS TO DARPA TO HELP DEVELOP THE FUTURE OF ANTI-SUBMARINE WARFARE.

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the crusher

weight: 7 tons
speed: 25mph
sight: 2.5 miles

fully autonomous capability
International Humanitarian Law (IHL)

humanitarians

necessitarians
The laws of war *jus in bello*

1. Principle of Distinction
2. Principle of Proportionality
3. Accountability
Autonomous Harpy radar killer

Made by IAI for Turkish, Korean, Chinese and Indian Armies

robots cannot reason
robots cannot be proportionate

easy proportionality problem

hard proportionality problem

situational awareness
The accelerating pace of battle

HTV-2 tested at Mach 22
13,000mph (20,921.5kph)

Who knows how all of the complex algorithms will interact?
all states:

prohibit the development, production and use of fully autonomous weapons through an international legally binding instrument;

adopt national laws and policies to prohibit the development, production, and use of fully autonomous weapons.
US DoD directive 21 Nov 2012

green light to research and development of autonomous weapons systems

repeatedly empathizes verification and testing
Possible autonomy failures (DoD 2012)

human error,

human-machine interaction failures,

malfunctions,

communications degradation,

software coding errors,

enemy cyber attacks

infiltration into the industrial supply chain,

jamming, spoofing, decoys,

other enemy countermeasures or actions, unanticipated situations on the battlefield"
call for moratorium on lethal autonomous robots
will autonomous lethal targeting be used ready or not?

incremental functionality

it will depend on who else uses it -
military necessity

‘robust’ self defence
Levels of targeting supervision

1. The computer offers no assistance; the human selects the target and initiates the attack.

2. The computer suggests alternative targets and the human chooses which to attack.

3. The computer selects one of the targets and either
   
   (i) initiates an attack against that selection if the human approves, or
   
   (ii) allows the human a restricted time to veto before automatic attack or
   
   (iii) initiates the attack automatically, then necessarily informs the human or
   
   (iv) initiates the attack automatically, informs the human only if requested

4. The computer selects the target, and initiates an attack without human involvement.
Article 36

The study, development, acquisition or adoption of a new weapon, means or method of warfare, a High Contracting Party is under an obligation to determine whether its employment would, in some or all circumstances, be prohibited by this Protocol or by any other rule of international law applicable to the High Contracting Party.
Prohibition or control?

CCW
Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effect (eg blinding laser weapons)
thank you for listening

Please sign the Scientist Statement again autonomous lethal weapons

icrac.net/call

You help is greatly appreciated

StopTheRobotWar