

A decorative graphic on the left side of the slide consists of a network of light blue lines and small circles, resembling a circuit board or a neural network, extending from the top to the bottom of the frame.

HOW ARE DRONES CHANGING WARFARE?

DR SOPHY ANTROBUS



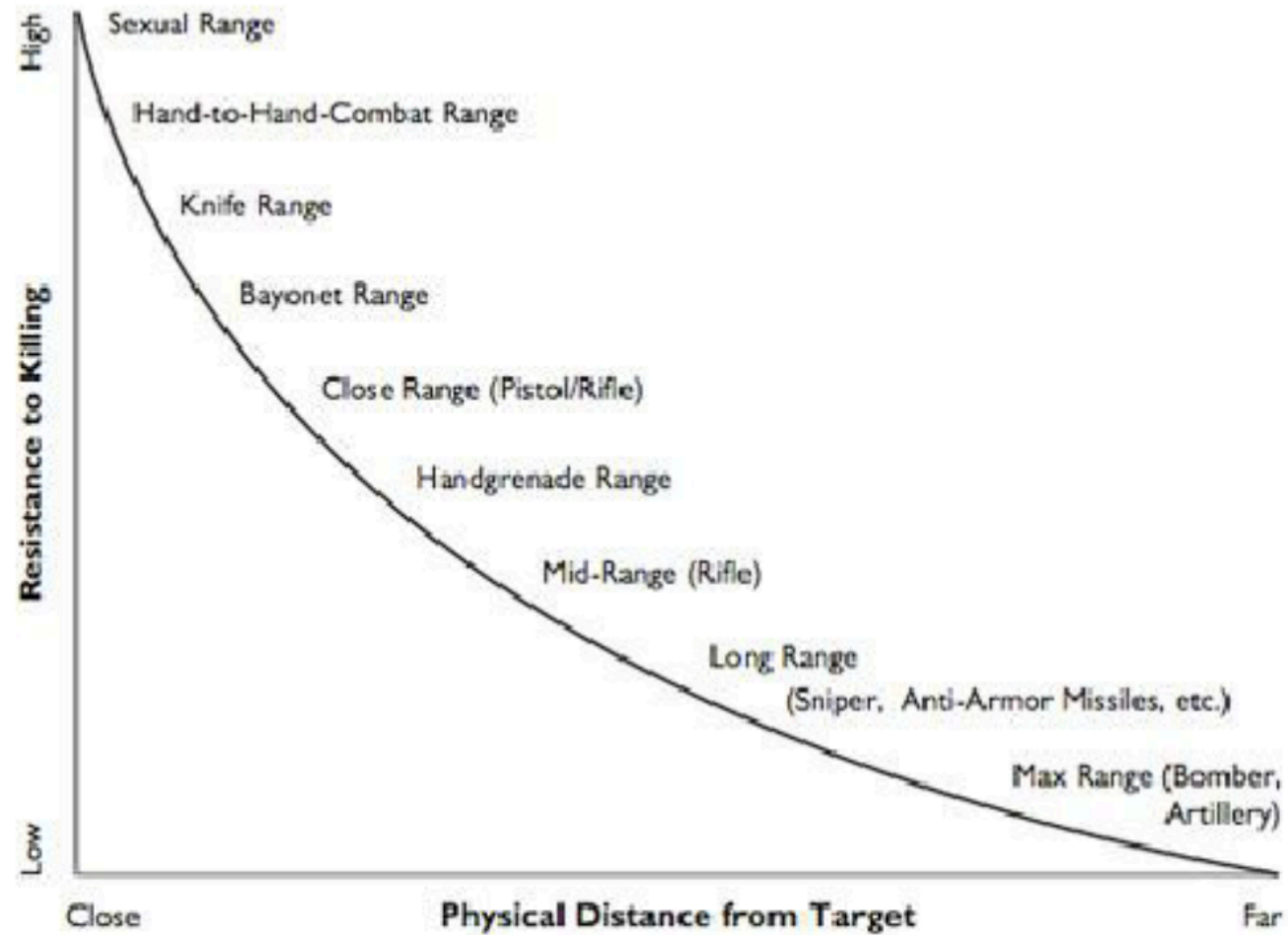




HOW DRONES ARE CHANGING WARFARE

- Bird's Eye View – the British State
- Intermediate – the institution of the Royal Air Force (RAF)
- Point Blank Range – Reaper crews





- Dave Grossman, *On Killing: The Psychological Cost of Learning to Kill in War and Society* (2014).





REAPER – THE FACTS

- Reaper Crew: Pilot, Sensor Operator, Mission Intelligence Coordinator
- Weapon Load: 4 x 100lb Hellfire missiles, 2 x 500lb Laser Guided Bombs
- Endurance: 16 hours
- Standard Operating Altitude: 20,000 feet
- Cruise Speed: approximately 230 mph (200 knots)
- Launch Recovery Element: where the aircraft is flown for take-off and landing, in or close to the theatre of operations
- Mission Control Element: where the aircraft is flown remotely for the operational mission

The background is a blue gradient. In the corners, there are white line-art illustrations of circuit boards or neural networks, with lines and small circles representing nodes.

THE NATIONAL LEVEL – THE BIRD’S EYE VIEW





“ IF THE WARSHIP IN THE AGE OF EMPIRE ALLOWED THE EUROPEAN POWERS TO CHEAPLY EXERT THEIR WILL AROUND THE GLOBE AGAINST THE PRE-INDUSTRIAL WORLD BY SENDING A NEAR INVULNERABLE GUNBOAT, THEN THE REVOLUTION OF THE UAV IS TO RESTORE THE CAPACITY TO INTERVENE OVERSEAS WITH IMPUNITY TO TODAY’S POWERS, ” AT LEAST WITH REGARD TO THE GLOBAL SOUTH, THROUGH THE SENDING OF A DRONE.

Ann Rogers and John Hill, *Unmanned: Drone Warfare and Global Security* (Toronto, Ontario: Between the Lines, 2014), p. 148.



“ THE SENSITIVITY OF PUBLIC OPINION TO MILITARY CASUALTIES INCURRED IN WARS PERCEIVED TO HAVE NO CLEAR PURPOSE OR DEFINITION OF VICTORY, TOGETHER WITH CONSTRAINTS ON PUBLIC SPENDING, MEAN THE THRESHOLD FOR FUTURE INTERVENTIONS WILL BE HIGH. ”

<https://www.parliament.uk/business/publications/research/olympic-britain/crime-and-defence/the-fallen/>



“ THE PARTISANS OF THE DRONE AS A PRIVILEGED WEAPON OF “ANTITERRORISM” PROMISE A WAR WITHOUT LOSSES OR DEFEATS. WHAT THEY FAIL TO MENTION IS THAT IT WILL ALSO BE A WAR WITHOUT VICTORY. ”



Grégoire Chamayou and Janet Lloyd, *A Theory of the Drone* (New York: The New Press, 2015), pp. 71-2.



“ THE TRIBESMEN WHO LIVE IN CAVES IN THE HILLS AND MOUNTAINS CANNOT BE REACHED EASILY BY BOMBS, ESPECIALLY IF THEY SCATTER ON BEING ATTACKED.

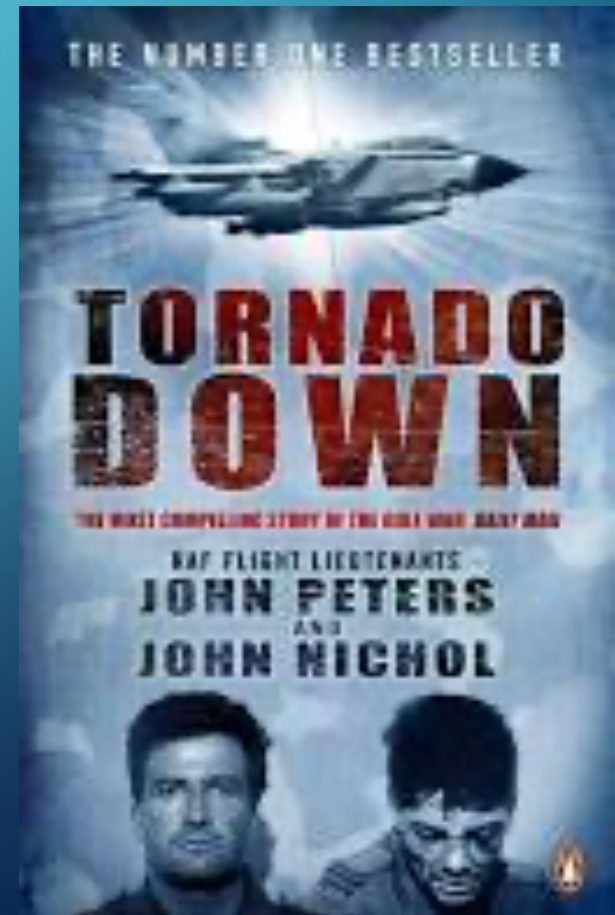
THE GROUND BEING VERY ROCKY, THE MACHINE GUNS OF THE PLANES ARE ALMOST USELESS AGAINST”
PERSONNEL, AS THE AFGHANS ARE ABLE TO HIDE UNDER THE SHELTER OF THE ROCKS, AND THUS CANNOT BE REACHED.

National Archives College Park, RG 165, MIDC 1917-41, 183-M-12, letter from Major Ashbridge to Brigadier General Nolan, 21 October 1920.













THE INSTITUTIONAL LEVEL – THE RAF



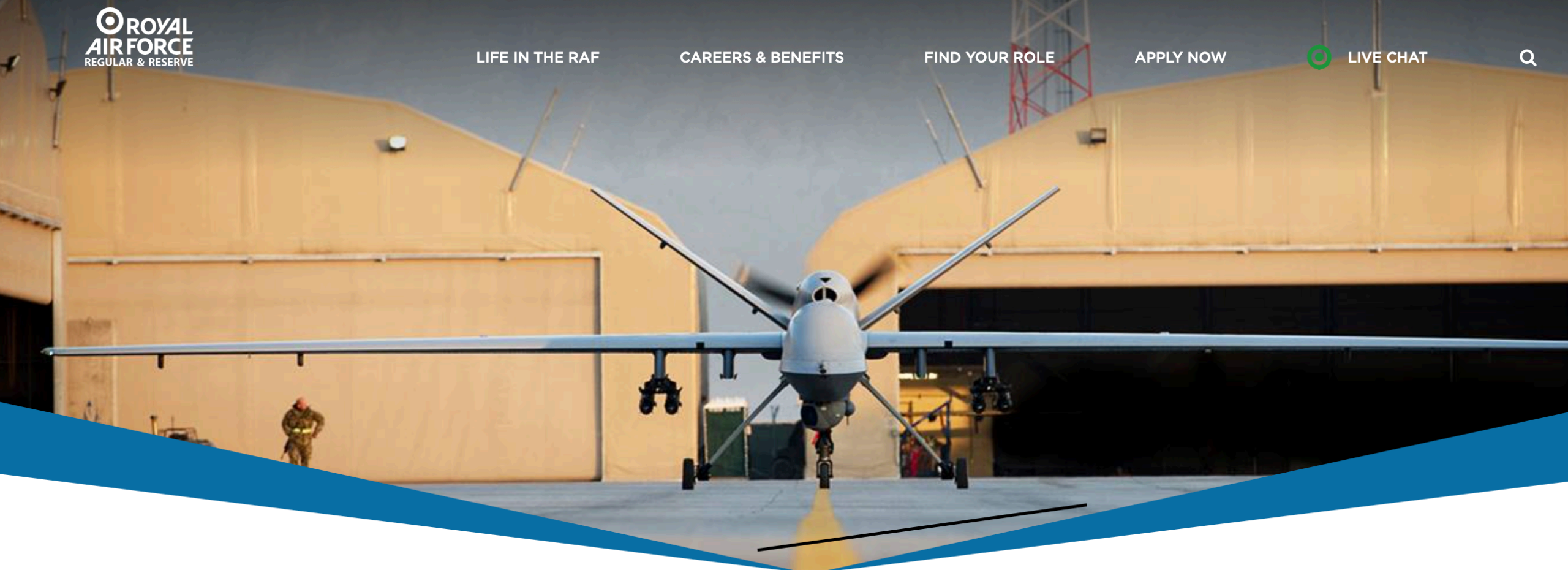


“ THE ROMANTIC, ADVENTUROUS AND DANGEROUS
WORLD OF FLYING RESULTED IN THE EMERGENCE OF
AN AVIATOR IDENTITY THAT DEEPLY AFFECTED THE
WAY THE AVIATORS OF THE BRITISH FIGHTING
SERVICES INTERPRETED AND ACTED IN THEIR WORLD ”



Fin Monahan, 'The Origins of the Organisational Culture of the Royal Air Force' (unpublished Ph.D.,
University of Birmingham, 2018), p. 15.





AIRCREW
**REMOTELY PILOTED
AIRCRAFT SYSTEM (RPAS)
PILOT**

The Reaper is controlled by crews of professional pilots, sensor operators and Mission Intelligence Co-ordinators centrally from Ground Control Stations. Your job includes controlling the aircraft and going through the same preparation



THE INDIVIDUAL LEVEL – POINT BLANK RANGE






“OPERATING THE INFRARED CAMERA, AFTER THE SMOKE
CLEARS AND THE DUST SETTLES FROM THE HELLFIRE JUST
LAUNCHED, HE NOTICES A MAN ‘MISSING HIS RIGHT LEG
ABOVE HIS KNEE. HE’S HOLDING IT, AND HE’S ROLLING
AROUND, AND THE BLOOD IS SQUIRTING OUT OF HIS LEG,
AND IT’S HITTING THE GROUND, AND IT’S HOT. HIS BLOOD IS
HOT. BUT WHEN IT HITS THE GROUND, IT STARTS TO COOL
OFF; THE POOL COOLS FAST. IT TOOK HIM A LONG TIME TO
DIE. I JUST WATCHED HIM. I WATCHED HIM BECOME THE SAME
COLOR AS THE GROUND HE WAS LYING ON’.”

Matthew Power, ‘Confessions of a Drone Warrior’, GQ, 23 October 2013.









“ ALTERNATIVE BUREAUCRATIC DISTINCTIONS MAY EMERGE – PERHAPS ORGANIZED ALONG COMBAT FUNCTIONS (INTELLIGENCE, LOGISTICS, AND SO FORTH) OR PERHAPS ALONG TECHNICAL LINES (ENGINEER, COMPUTER SCIENTIST, COMMUNICATIONS SPECIALIST, ETC.). ”

Kenneth Payne, *Strategy, Evolution, and War: From Apes to Artificial Intelligence* (Washington, DC: Georgetown University Press, 2018), p. 191.





- With thanks to those colleagues, friends and family who advised and contributed to the development of this lecture.

