



SUMMER SCHOOL IN GLOBAL POLITICS, DEVELOPMENT AND SECURITY 2021

Emerging Technologies and the Future of Conflict

Instructor: Arthur Holland (United Nations Institute for Disarmament Research)

Date: June 30 – July 2

Time: 9.00 am – 11.00 am (CEST, Barcelona time)

Format: face to face and online

Room: TBC

The term “game-changing technology” is a popular refrain in the realm of international security. We are often quick to declare that a particular emerging technology will fundamentally transform the character of conflict and the global balance of power. In defense circles, much money and effort go into attempting to lead, or stave off, such revolutions. But there's always a danger of overestimating or mischaracterizing the impact of emerging technologies—of investing in, or against, a revolution that never materializes; or of failing to recognize a new technology’s disruptive potential before it’s too late to respond.

How do you forecast an emerging technology’s actual, rather than imagined, implications for international security? And how do we effectively communicate these conclusions to technologically-unversed decisionmakers so that they can craft a suitable response? Built around real-life case studies of "transformative" emerging technologies, this course will challenge students to develop an analytical framework for evaluating the true impact of any emerging technology on conflict, as well as communicate this work effectively with a policy

audience. The class does not assume any prior direct experience in conflict technology research or technical expertise.

Session 1. Drone Revolutions

This class will introduce the theories and lexicon of (real or imagined) technological revolutions, and will consider the case of military drones and their impact on modern warfare.

Required Reading

Brose, "The New Revolution in Military Affairs," *Foreign Affairs*, April 2019.

Horowitz et al, "The Consequences of Drone Proliferation: Separating Fact from Fiction," *International Security*, 2016.

Selections from Tabrizi & Bronk, "Armed Drones in the Middle East Proliferation and Norms in the Region," *RUSI*, 2019.

Dixon, "Azerbaijan's drones owned the battlefield in Nagorno-Karabakh — and showed future of warfare," *Washington Post*, November 2020.

Recommended reading

Gettinger, *The Drone Databook*, Center for the Study of the Drone, September 2019

Singer, "The Big Cebrowski and the Real RMA: Thinking About Revolutionary Technologies" from *Wired for War* (Penguin: 2009)

Farooq, "The Second Drone Age: How Turkey Defied the U.S. and Became a Killer Drone Power" *The Intercept*, May 2019.

Session 2. Hypersonics, High-powered Lasers, and the Invisible War

This class will take an in-depth look at three "emerging" weapons technologies to assess their tangible and not-so-tangible impacts on the security landscape.

Required Reading

Obering, "Directed Energy Weapons Are Real . . . And Disruptive," *Prism*, 2020.

Sayler, "Hypersonic Weapons," Congressional Research Service, 2019.

Malte von Spreckelsen, "Electronic Warfare – The Forgotten Discipline," JAPCC Journal, Winter 2018.

Recommended reading

Borrie et al. "Hypersonic Weapons: A Challenge and Opportunity for Strategic Arms Control," UNIDIR, February 2019.

Selections from Richard H. Speier et al, "Hypersonic Missile Nonproliferation," RAND Corporation, 2017, pp 21-44.

Holland Michel, "Counter-Drone Systems, 2nd Edition," Center for the Study of the Drone, 2020.

Session 3. Autonomous Weapons

This class will consider the case of autonomous weapons—their promise, their perils, the range of difficult questions that remain unanswered, and the importance of scientific literacy in policy debates about emerging technology.

Required reading

National Security Commission on Artificial Intelligence, "Final Report: Executive Summary," 2021.

Suchmann, "Six Unexamined Premises Regarding Artificial Intelligence and National Security," AI Now Institute, 2021.

Cummings, "The AI that Wasn't There: Global Order and the (Mis)Perception of Powerful AI," Texas National Security Review, 2020.

Holland Michel, "The Black Box, Unlocked," UNIDIR, September 2020.

Recommended reading

Mitchell, "Why AI is Harder Than We Think," 2021.

ICRC, "Autonomous Weapon Systems: Implications of Increasing Autonomy in the Critical Functions of Weapons," 2020.

GGE on LAWS, "Chairperson's Summary," 2021.

Jobin et al. "The global landscape of AI ethics guidelines," Nature Machine Intelligence, 2019.