Executive Summary

In the last two years, the Ethics + Emerging Sciences Group—based at California Polytechnic State University, San Luis Obispo—continues to study new ethical, legal, and policy issues arising from emerging technologies, notably in security, defense, and intelligence. This includes artificial intelligence (including generative AI), robotics, cybersecurity, bioengineering, Internet of Things, nonlethal weapons, pandemic surveillance, and more. More than academics, we advise and engage with industry, governmental agencies, and NGOs in technology ethics, including the United Nations.

Of particular interest, we are studying the role of emerging technologies in frontiers, particularly the conflicts they may contribute to or create, given the lack of governance inherent to frontiers. Outer space cybersecurity is especially concerning given the strategic importance of the domain; we have a funded project in this area. We also have a funded project to develop a risk assessment framework for AI in defense applications.

Overview

The Ethics + Emerging Sciences Group focuses on ethical, legal, and policy concerns arising from novel sciences and technologies—particularly on military and related systems, including AI, robotics, cyberweapons, human enhancements, nonlethal weapons, space systems, and more. At the United Nations, we have participated in CCW and UNIDIR meetings in previous years; and we continue to provide ethics counsel to defense organizations and NGOs globally.

As a research and education group, we are non-partisan in our views, often negotiating a sensible path between the hype and the gloom-and-doom that surround emerging technologies. Please visit our site for publications, expert meetings organized, and media interviews: https://ethics.calpoly.edu/
The following are representative examples of our research, including university courses and other educational work.

**Funded Projects in This Period**


**Recent Work with Defense and Related Organizations**

1. Continuing to serve as principal member on the US National Space Council (NSpC) Users’ Advisory Group (UAG), including its subcommittee on national security (2022-present).


3. Engaged with domestic and international organizations for dialogue and information-sharing on *space security*, including: UN Office of Outer Space Affairs, UN Committee on the Peaceful Uses of Outer Space, European Space Policy Initiative, NASA, others.

4. **Consulting** and *other relationships* internationally, including with a UK defense firm as well as the Center for Homeland Defense and Security at US Naval Postgraduate School.

5. Delivered several invited *talks*, including to:
   
   
   
   C. “Property Rights in Outer Space: A Philosophical Analysis”, For All Moonkind Institute on Space Law and Ethics (April 2024).

E. “What AI & Cybersecurity Have to Do with Outer Space Ethics”, University of Southern California, Information Sciences Institute (January 2024).


**Workshops Organized**

1. **Outer Space Cybersecurity**, funded by US National Science Foundation, Cal Poly (March 2024).


3. **AI Policing and Ethics**, funded by US National Science Foundation, Northwestern University (July 2022).

**Reports**

1. “Outer Space Cyberattacks: Generating Novel Scenarios to Avoid Surprise”, report funded by the US National Science Foundation, award #2208458 (June 2024).

   [https://spacecybersecurity.org/](https://spacecybersecurity.org/)


University Courses and Other Education

1. PHIL 323: **Ethics, Science & Technology**. The class discusses ethical, legal, and policy issues—including tensions with the laws of armed conflict—related to military robotics, AI, cyberoperations, soldier enhancements, space affairs, nanotechnology, and more.

2. PHIL 327: **Robot Ethics**. This class discusses military ethics, risk, and robots, including issues of how robots could (not) be involved in just wars, how robot (dis)armament could proceed, how it could aid (or hamper) human disarmament, up to and including even the eventual militarization of space; and how robots could become a permanent military presence in space, or contrariwise, how robots would play a crucial role in verifying space disarmament.

3. PHIL 328: **Technologies & Ethics of War**. This class discusses the just war tradition and how the tradition has been complicated and challenged by emerging technologies for the last several hundred years, including: discussions of pacifism, nuclear weapons, nuclear deterrence, and disarmament, and monitoring IHL compliance from space (such as human rights abuses, troop movements and concentrations, and disarmament).

4. PHIL 439: Special Topics: **Cyberwarfare Ethics**. This class provides students with the primary “tools” needed to be able to evaluate the ethics of cyberwarfare, including: just war theory, normative ethics, and the laws of armed conflict. Specific topics include: means and methods questions (how cyberweapons should be designed and used), targeting and responsibility for attacks, and the role of both state and non-state actors. The course closes with a speculative discussion of the possible ways that the cyber environment might change in the medium- to long-term future.
5. PHIL 439: Special Topics: Philosophy of Fascism. This course is an exploration of the theoretical components of the fascist political philosophy, an analysis of some primary and secondary arguments in its favor, and criticism of those arguments. It includes a discussion of fascism's tendency towards militarism, expansionism, imperialism and war, whether those aspects of fascism are essential, and how they might be critiqued.

6. Other relevant courses under development, e.g., ethics of outer space development, as well as a bioethics course that includes a key focus on security and defense applications.


Contact Information

Prof. Patrick Lin
Director, Ethics + Emerging Sciences Group
Professor, Philosophy Department
California Polytechnic State University
San Luis Obispo, CA 93407 USA

Site: https://ethics.calpoly.edu/
Email: palin@calpoly.edu

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