



# Patrick Lin: APPLYING PHILOSOPHY to PRACTICAL POLICY



## *CLA Professor Examines the Ethics of Emerging Technologies*

BY JO ANN LLOYD

**W**hat do robots, human enhancement and cyberwar have in common? Patrick Lin.

The associate professor of philosophy and director of the Ethics + Emerging Sciences Group at Cal Poly is at the forefront of the rapidly expanding field that looks at the ethics of new technology.

Lin examines the ethics, law and policy of such futuristic technologies as autonomous cars, potentially steerable by advertisers without your prior knowledge, and soldier-controlled avatar-robots that do the fighting on the ground.

People are concerned about the effects technology such as artificial intelligence (A.I.) might have on the labor market. "Experts predict A.I. will take over many jobs, even those of professors and scientists," Lin said. "Looking at huge data sets, A.I. can detect patterns better than humans can. It has already discovered things scientists haven't."

Lin and his group ask: Will this be a good thing? What happens to the people? "We're something like the conscience of science and engineering, concerned

with where research is going, making sure we don't spiral down the wrong path. We are realists," Lin said. "We look at what science and technology can do — and what they can't do."

Lin recently returned from a week in Geneva, Switzerland, where he and other experts from a range of disciplines were convened by the United Nations Institute for Disarmament Research to look at various autonomous military systems. "We're examining not just drones of today, but future weapons systems that can 'think' on their own," Lin said. "In the future, some advanced weapons might be able to select their own targets, potentially a fundamental change in command and control."

Lin is also working with the International Committee of the Red Cross on how cyberwarfare might be a problem for international humanitarian law, which is concerned with protecting noncombatants and limiting destruction and suffering in war. That project is related to a recent \$500,000 grant he and colleagues received from the National Science Foundation.

Lin's professional involvement in the field began in 2002, but his interest in the subject started much earlier. "I was a curious kid who liked science and engineering but also cared about their impact on society, including the environment. Our research now tends to focus on life and liberty as the most urgent areas."

Those same values that some believe were compromised when it was revealed the National Security

Agency (NSA), engaged in spying of not just foreign targets but also domestic citizens by accessing data from technology providers such as Yahoo! and Google.

By looking at Amazon purchases, Facebook posts and Google searches, the NSA — or any agency — can gather a great deal of information about a person. "Big data" and the more limited "metadata," are potentially of great interest to agencies and advertisers who try to predict or piece together pictures of peoples' lives.

"That gets into privacy and surveillance issues," Lin said. "The NSA can watch your telephone activity. It says it isn't listening, but it can see who you are talking to and when. You can learn a lot about a person from his or her metadata. It's like looking at an envelope to see who sent it, where it's going, when it was sent. They don't need to see what's inside to make inferences."

New technologies are emerging, and their ramifications are fascinating, Lin said, if not frightening.

"Human enhancement technologies are here. Some U.S. Air Force pilots flying long missions are required to take amphetamines," Lin said. "It's illegal for everyone else. We should be asking: What are the health risks of amphetamines; of addiction? Are the pilots able to think clearly? Do enhancements take away their humanity?"

The unique intersection of the humanities and technology provides a natural springboard for Cal Poly's multidisciplinary approach to education. "Dr. Lin and his Ethics + Emerging Sciences Group were among the first

on campus to systematically explore this intersection," said Doug Epperson, dean of the College of Liberal Arts. "His interdisciplinary work was one of several outstanding models of what was possible within the College of Liberal Arts, stimulating the college to more actively develop curricular and scholarly collaborations at the broad intersection of science, technology and society."

Lin is also a visiting associate professor at Stanford University's School of Engineering and an affiliate scholar at Stanford Law School's Center for Internet and Society. On his sabbatical there for the 2013-14 ac-

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ademic year, he's provided ethics counsel to organizations such as the U.S. Department of Defense, National Institutes of Health, Google, Tesla, Nissan, Daimler and Benz Foundation, State Farm Insurance, and others.

As Lin integrates his research and experiences into the courses he teaches and projects that involve students, he is among Cal Poly's expert faculty that is helping the university live up to — and stand out with — its Learn by Doing philosophy.