What the coming together of law and technology heralds for students and society.
There had long been a gulf between the humanities and science when British scientist and novelist C.P. Snow proposed, in the 1950s, an early and then-controversial cross-disciplinary merger of these branches of knowledge. Today, Penn Law has taken a less controversial but nonetheless consequential approach to Law and Technology (and many other offshoots of the law) that brings these areas together. And not a moment too soon with all the concerns and questions swirling around how technology encroaches on privacy, impacts national security, and compromises existing legal regimes overwhelmed by breakneck innovation.
Penn Law Dean Ted Ruger (left) and Penn Engineering Dean Vijay Kumar are on the cusp of the new frontier in law and technology as they work to bridge the two fields and bring together the students and faculties of both schools.

Throughout history, law and technology have been inextricably linked. The printing press, after all, shaped early copyright law; the telephone redefined the contours of the Fourth Amendment.

But today, as the pace of technological change has quickened, transforming lives on an almost daily basis, new and novel legal issues are cropping up like never before.

Driverless cars and unmanned aircraft are on the cusp of radically altering the nation’s transportation system, raising fresh questions about security, safety and privacy. Smart medical devices are revolutionizing how disease is diagnosed and monitored. But do they adequately protect patients’ confidential information?

Indeed, the ability to solve many of today’s most pressing problems—from preserving the integrity of elections to reforming the health care system to ensuring the nation’s security—depend on a grounding in both law and technology.

In other words, technology is infusing legal education, and Penn Law is at the forefront.

By Rick Schmitt
The interdisciplinary education, Penn Law has been forging new ties with Penn's School of Engineering and Applied Science (SEAS), and the result is a rich and growing array of collaborative opportunities for students inside the classroom and out. Joint degree programs are giving law students, even those without a background in science, specialized training in engineering and computer science, while engineering students are getting targeted training in the law. Law students are advising engineering students in an entrepreneurship class simulating the relationship lawyers have with technology start-ups. They're getting real-world experience assisting the university's technology transfer office.

Outside the classroom, students are researching new and innovative ways to connect underserved populations to the Internet, work that is being used to inform the technology policy debate in the U.S. and around the world. A growing community of tech and law students is emerging through student groups, symposia, workshops and publications.

The goal: create a new generation of lawyers who are conversant with both the substance of technology as well as the manner in which their technology clients approach and solve problems.

With world-class programs in law and engineering and a willingness on both sides to experiment with a new way of teaching students, Penn's program has rapidly become a model.

"We believe we have unique strengths at Penn," says Professor of Law Christopher Voo, the John H. Chestnut Professor of Law, Communication, and Computer & Information Science, and director of the Center for Technology, Innovation and Competition (CTIC), which is at the hub of many of the new initiatives. "We became convinced we could create a new program that no other school could — one that would give us a critical competitive advantage and create a different type of professional that is increasingly coming into demand." The Law School recently received a significant gift from Dr. Judith Rodin, former president of the University of Pennsylvania, and her son Alex Niegelow ’97, to create the Niegelow-Rodin Initiative to explore cutting-edge legal and policy issues at the intersection of law, business and technology.

The law and technology programs extend a long-held philosophy at Penn Law that top-flight legal education connects with other disciplines. The best known examples are the flagship Francis J. Carey and Wm. Polk Carey JD/MBA and Certificate in Management programs at the Wharton School. But cross-disciplinary learning is now permeating the law curriculum at every level.

"For many years, we have had a JD program that encourages students to build their legal education by drawing in part on the top-flight knowledge that exists right here in the neighborhood at other parts of Penn," says Ted Ruger, Penn Law Dean and Bernard G. Segal Professor of Law. "We are a forward-looking law school. We look at the fields we think are going to be critical for the legal community and the broader society in the future. And certainly, the technology, engineering and health care segments are critical."

"This is a rich and fertile area," says Vijay Kumar, Nemirovsky Family Dean of Penn Engineering, and an expert in robotics such as micro aerial vehicles. The devices are among a growing array of Cyber Physical Systems that include medical devices and driverless cars whose rise shows the need for increasing law and technology collaboration.

"At Penn, we have the best minds doing work on privacy, leading researchers doing autonomous robotics, and brilliant scholars doing cybersecurity," Kumar observes. "The questions we are now addressing are so close...that this partnership is just natural."

**The Questions We Are Now Addressing Are So Close... That This Partnership Is Just Natural.**

The new joint degree program also has an option for students who studied science as undergraduates. Anna Marion sees the program as a way of using her already considerable hard science chops to address intractable social problems. Along with her law degree, she is getting a Master of Science in Engineering with an emphasis on scientific computing. She’s learning how to build sophisticated computer models that can be used to tackle issues like recidivism, racial bias and addiction. Last summer she worked for the City of Philadelphia, an opportunity that came up in part because of her law training, but which also gave her a window into the importance of expertise in technology.

"It quickly became apparent that the stuff I was studying in scientific computing... involves the same set of skills that is becoming relevant in policy making," Marion says. The interdisciplinary training is not a one-way street. Anew Master in Law program has a curriculum tailored to the needs of future technologists, with input from SEAS faculty. The emphasis is on practical learning...
"The breadth and depth of our faculty — it is one of the main reasons they choose Penn. Some students..."
The lawyer–entrepreneur relationship is of critical importance to the success of high-tech ventures.

Tom Cassel
Director of the Engineering Entrepreneurship Program at SEAS

Besides book learning, Penn Law students are getting practical experience, including a taste of what it is like to counsel an entrepreneur, simulating the lawyer–client relationship with students at the engineering school in an entrepreneurship class. Students work in teams of five to develop a business plan for a high-tech company. A law student is assigned to each of the teams and helps develop an intellectual property strategy for the business plan. At semester’s end, the students pitch their ideas to a panel of start-up pros. The simulation gives engineering students some insight into how legal counsel can help them, while giving the law students a glimpse of cutting-edge technologies and the scientists and engineers who create them.

“The lawyer–entrepreneur relationship is of critical importance to the success of high-tech ventures,” says Tom Cassel, director of the Engineering Entrepreneurship Program at SEAS, who teaches the class. “This student collaboration between Penn Law and Penn Engineering bridges a gap that really needs to be bridged.

Stephen DeSalvo, a co-director of Partnership for Entrepreneurial Engineers and Penn Law (πππ), which helps organize the law students in the class, has participated in several simulations himself. In one case, where a group had identified an existing patent that presented problems for its business, he suggested ways to design around the patent or obtain a license. In another, he had to break the news that a catchy name a group had chosen was not likely to get much legal protection. They learned a lesson in how the value of a trademark turns on the strength of its association with the source of a product or service.

“They had a great name,” DeSalvo says. “But they did not realize the implications of the name from a trademark perspective.” On his advice, they changed it.

The five-year-old Detkin Intellectual Property and Technology Legal Clinic continues to flourish with law students helping the Penn Center for Innovation commercialize new science and technologies being developed in university labs and classrooms.

“We interface with inventors who decide they want to start a company with Penn technology,” says Cindy Dahl, practice associate professor of law and the clinic’s director. “We evaluate the technology and help Penn figure out the best way to protect, position, or license it.”

For one matter, students looked at markets for a newly discovered nanoparticle that could be used as a sunscreen—or a treatment to protect vital organs during cancer radiation therapy. The students gave feedback on which patent portfolios for the invention had the best chance to be licensed.

For another, the students investigated the best ways to protect a breakthrough kind of MRI technology that allowed technicians to detect subtle changes in patients with degenerative diseases. Such work, Dahl notes, prepares the students to enter practice. “Students may not get a chance for several years to have the level of client interaction that they get in the clinic,” she says. “They are doing real work here that truly benefits the entrepreneurial and scientific communities at Penn.”

One law and technology student, Amy Mahan ’17, helped untangle a decade-old collaboration into which research between Penn and a group of other prominent institutions.

The collaboration had produced important discoveries but credit for the innovations and how they should be protected under the law was muddled. The lack of clarity was a disincentive to potential licensees but untangling the mess was also costly. The Penn Center for Innovation was concerned whether it would get its investment back.

Enter Mahan, a student at Penn Law with a PhD in neuroscience. Mahan combed patent files, tracked down researchers, and produced a sophisticated grid that sorted out the 10 rights. Her work formed the backbone of a new inter-institutional agreement between Penn and the other institutions to commercialize the technology.

Jennifer Langenberger, director of intellectual property and administration for the Penn Center for Innovation, calls Mahan’s contribution “extremely valuable,” and her understanding of science and law “the Holy Grail” for such a project.

This spring, Lucas Tejwani ’17, GEN ’17, the first student to be admitted to the joint degree program, will graduate with his law degree and a Master in Computer and Information Technology. He has found innumerable benefits almost from the moment he entered Penn Law. Just having been admitted to the joint program multiplied interest among employers, helping him after his first year land a prized summer job in the legal department at salesforce.com.

The summer of his second year, he found himself working for a law firm that was doing venture financing for a software company whose main product he had used in a computer science class. “Having a deep familiarity with the client’s product allowed me to add value to the deal team as a summer associate in ways I could not have previously imagined,” he recalls. “It was one of those moments where I knew what I was doing was paying off.”

He is finishing a paper looking at the FBI’s attempt to force Apple to write a new program to unlock an encrypted iPhone used in the 2015 mass shooting in San Bernardino, Calif. His focus: Apple’s defense that the order constituted compelled speech in violation of the First Amendment. After graduating in May, he starts work in the corporate group at Davis Polk & Wardwell in Menlo Park, Calif.

All of which is a far cry from his days in college, where he studied classical Latin and political science. Tejwani recalls hearing Yoo speak of the joint degree program at an information session during his first semester.

Tejwani says the forward-looking vision instantly won him over. It reminded him of a quote by hockey great Wayne Gretzky on the importance of success and looking ahead: Go “where the puck is going to be, not where it has been.”

Rick Schmitt has covered legal affairs for The Wall Street Journal and the Los Angeles Times. He is currently a freelance writer living in Maryland.

Stephanie Hayes
Law School Communications

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