

CIRCUIT BREAKERS

Can humanity survive science and technology?

BY BRIAN KOONZ
PHOTO AUTUMN DRISCOLL

IMAGINE A TIME when the human brain is connected to a computer network, downloading data quite literally in the blink of an eye. The potential gain for knowledge is the stuff of science fiction.

The potential loss for humanity is just as profound, writes Joseph Carvalko, JD '80, in a new book, "Conserving Humanity at the Dawn of Posthuman Technology," published earlier this year by Palgrave Macmillan.



Joseph Carvalko, JD '80, recently completed his ninth book, "Conserving Humanity at the Dawn of Posthuman Technology." When he's not writing, Carvalko teaches a class at the School of Law.

Digital brain implants, biometric chips, artificial intelligence, electronic tattoos with circuits and sensors—at what point is humanity sacrificed for technology's gain?

Carvalko, an adjunct professor in the School of Law with 16 patents and nine books to his credit, addresses the finer points and the broader implications of this complex intersection in his "Law, Science and Technology" class. He teaches students to think beyond these silos of individual disciplines.

"I want to pass on the idea that when confronted by technology and science—for example, when dealing with crimes, personal injury or intellectual property—that these are not simply elements existing in a vacuum," Carvalko said, "but within a framework of justice and equity."

The technology throttle is already locked into high gear, he insists. The pace will only grow more frenetic in the future, so it's important now to consider the ethical implications of these advancements.

"We have to be careful not to let technology go uncontrolled and unchallenged," said Carvalko, who frames his interdisci-

plinary arguments as a bioethicist, professor, patent attorney, electrical engineer, jazz musician and author, all rolled into one.

"Who knows what the next modification will affect?" he said. "Once we start changing genes that alter intelligence, it will create two disparate classes."

In other words, those with access to this technology and those without.

Carvalko classifies this next evolution as *Homo futuro*, a human being in transition from a living, breathing organism to someone born from a digital petri dish.

"Our shared anatomical identity with *Homo sapiens* will begin to move into other directions, driving structural changes," Carvalko writes. "The computer and its life blood—software—will create hybrid beings with superior sensory access and intellect."

As a member of Yale's Interdisciplinary Center for Bioethics and chair of its Technology and Ethics study group, Carvalko rejects a monochromatic take on the technology versus humanity debate. He understands the laws of tomorrow won't fit neatly into black-and-white arguments. There will be gray areas influenced by science, property rights, ethics and morality.

"Who actually owns your body?" Carvalko asked, leaning forward for emphasis. "For example, the placenta and the umbilical cord have stem cells. Do those stem cells belong to the mother, the child or whom? What if the newborn's older sibling has a genetic disease? Can the mother or anyone else say the stem cells legally belong to the sibling for therapy?"

These are the questions that require humanity's attention.

On this particular day, Carvalko is working at his home in coastal Connecticut surrounded by shelves of books, a baby grand piano and a sweeping desk facing Long Island Sound.

The ideas, the analysis, the predictions, everything fills the pages of his mind and his latest book, a provocative case study in this conflict between man and machine—and their inevitable melding. And their inevitable misgivings.

But will these new hybrid beings laugh, cry and love, qualities that have defined humanity for thousands of years?

John Powers, an adjunct professor in the School of Communications, teaches "Bioethical Issues in the 21st Century." He suggests the answer is not so clear. "When we talk about genetics and designer babies and manipulating genes with technology, it's not always coming from a dark place," Powers said. "What if we manipulate genes to prevent a hereditary disease? Think of all the good you could do."

At the same time, Powers understands gene manipulation comes with moral and ethical dilemmas, from the augmented cognition that Carvalko addresses to Garrison Keillor's fictional Lake Wobegon, "where all the women are strong, all the men are good-looking, and all the children are above average."

The diversity of thought and the diversity of humanity are at stake when science and technology go unchecked. "Someone could come along and say they want their child to be athletic and smart to gain certain social advantages," he said. "Think about that for a minute. We already talk about class structure and access to health care and medicine. Just imagine what it would be like if some people could afford this technology and others couldn't. You'd develop a class of super humans."

Ultimately, Carvalko and Powers agree, society becomes the arbiter of how technology is used. "It's human nature to explore and advance—we've done it since the beginning of time—but you have to be really thoughtful about the benefits and the consequences," Powers said. "The decisions we make today matter. They'll impact what happens to us in the future."