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"Pennsylvania has an equal rights amendment, for instance," Gormley noted. "We have an environmental provision. We have language that guarantees civil rights. There are many provisions that have no precise counterparts in the U.S. Constitution."

Even where there are parallels, judges have latitude to interpret many provisions differently based on broader state constitutional protections, Gormley continued. "Many cases, such as *Edmunds*, touch on issues involving privacy rights or freedom of speech, where the Pennsylvania constitution offers greater individual protection."

Book

With more than 230 years of history to consider, organization was a paramount concern. Gormley arranged the book based on the four-pronged approach suggested in the *Edmunds* ruling—considering the text of each provision, Pennsylvania case law, related case law from other states and relevant policy considerations.



Ken Gormley

"This book is designed to give lawyers and judges in Pennsylvania all of the rich history and old cases that are very difficult to find using normal research methods," Gormley said. "You can just flip to any provision of the Declaration of Rights and find the history and legal background in one place."

Gormley worked on the book for three years with three co-editors, including Joel Fishman (a librarian with the Duquesne University and Allegheny County law libraries) and two law clerks for Pennsylvania Supreme Court Chief Justice Ralph Cappy. More than 25 lawyers, judges and law professors (including Gormley and Duquesne faculty colleague Bruce Ledewitz) contributed to the book's 35 chapters.

"It was really a collaborative effort on a grand scale and has attracted a lot of attention among the legal community in Pennsylvania," Gormley said.

The book's official introduction took place in June during a statewide conference of appellate judges at the Nemacolin Woodlands Resort in Fayette County.

"Since then, I have received many letters saying how useful the book is," Gormley reported. "You may write law review articles and get cited by a court or two, but this book has the potential to be used every day by judges and lawyers, and I think it's going to have a significant impact long-term."

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A 'Super Day' for Science at Duquesne

BY LISA V. MIKOLAJEK

Supercomputing experts from industry and academia converged on campus for a "Discovery Summit on High Performance Computing" on July 15. The event, co-sponsored by Duquesne University and Silicon Graphics Inc. (SGI), celebrated the dedication of the University's two new supercomputers with a day of presentations by local and national guests.

"Supercomputers are giving us unprecedented power for computation," University President Charles Dougherty said in his opening remarks. "We can use this power for achieving the true goals of science—to understand and improve the world. Today is a great day for science—one might say a 'super day'—and a great day for Duquesne."

Duquesne's Center for Computational Sciences received a $100,000 award from the Department of Education in spring 2004 and a $325,000 award from the National Science Foundation in 2003. The funding contributed to the purchase of two SGI Altix supercomputers, as well as an SGI InfiniteStorage system. The new 32- and 16-processor supercomputers have 64 and 16 gigabytes of shared memory, respectively.

According to Dr. Jeffrey D. Evanseck, director of the Center for Computational Sciences and associate professor of chemistry and biochemistry in the Bayer School of Natural and Environmental Sciences, problems that once required months to complete at remote locations can now be done at Duquesne in just days.



Dr. Jeffry Madura and Dr. Jeffrey Evanseck

"These machines are built to perform quantum mechanical computations that we were not able to do easily before, neither with our own resources nor any other resources available in the U.S.," he stated.

Evanseck and his colleagues study molecules so small that no instrument can observe them, yet so large that no single computer can model them. Unlike other types of computations in which the electrons of atoms are not considered, quantum mechanical computations account for every electron. He explained the inherent challenge: "If you don't include electrons in the equation, the problem grows to N^2, where N is the number of atoms that you have. When you take electrons into account, it grows N^5, so the problem is getting exponentially larger much more quickly."

Dr. Jeffry Madura, associate professor and chair of chemistry and biochemistry, and Dr. Donald Simon, associate professor of computer science in the McAnulty College of Liberal Arts, collaborated with Evanseck to secure funding for the project. "We are one of the few institutions at the forefront of using this new technology," said Madura. "Altix combines the Intel Itanium 2 processor with a modified version of Linux and a high-speed communications link called NUMAlink. Those three integral parts are tied together to create this shared memory machine."

SGI offered large incentives that allowed Duquesne to acquire equipment valued at more than $1 million. During the July summit, the company honored Duquesne as a new member of its Innovator Program, placing the University in an elite group of academic institutions that collaborate with SGI in research and development.

"We recognize the critical importance of the research community to the health of our business," remarked Brian Bonenfant, director of university relations and business development at SGI. "Research is core to our mission and our vision, which is to develop and market technology that will enable the breakthroughs of the 21st century—breakthroughs that we believe depend largely on the ability to do modeling on computers with large storage capacity."

"We are one of the few institutions at the forefront of using this new techology."

He added, "We believe the real winners will be the students who enter into this program at Duquesne," referring to the addition of 22 laptops with a wireless connection to the supercomputers designated for student use.

The privilege is extended to undergraduate as well as graduate students in computational research groups.

Madura believes that Duquesne now offers students the best possible resources in computational sciences. "When we relied solely on outside supercomputer centers to run a problem, the allocation of resources in those facilities could leave us waiting as long as a year for final results," Madura said. "A student can lose continuity to his or her thinking during that time. Having these capabilities at Duquesne will allow our students to take their work to a higher level."



