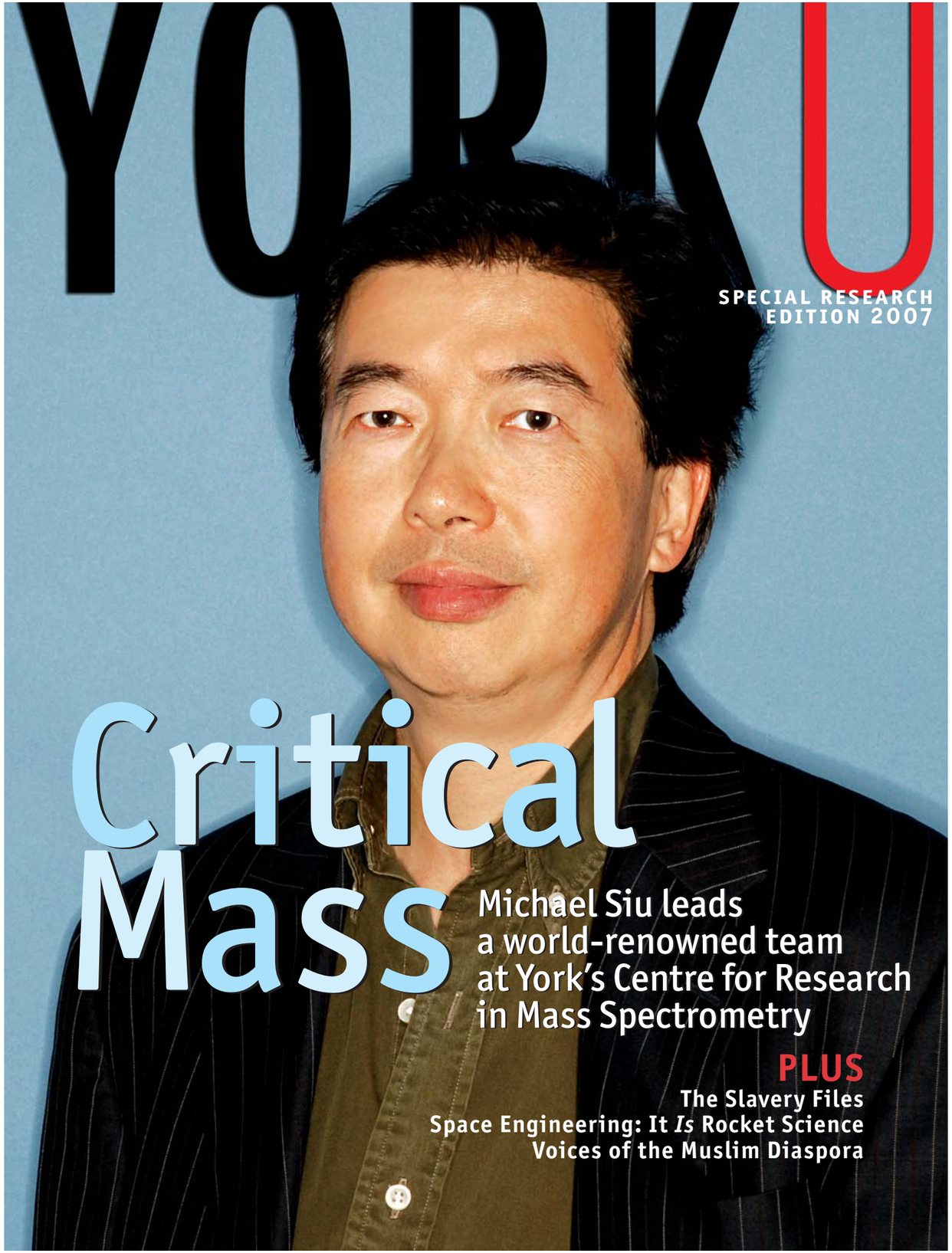
YORK U

SPECIAL RESEARCH
EDITION 2007



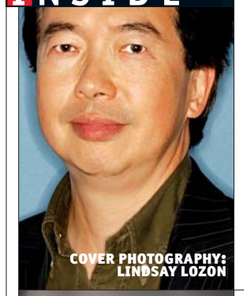
Critical Mass

Michael Siu leads a world-renowned team at York's Centre for Research in Mass Spectrometry

PLUS

The Slavery Files
Space Engineering: It *Is* Rocket Science
Voices of the Muslim Diaspora

INSIDE



COVER PHOTOGRAPHY: LINDSAY LOZON

YORKU

THE MAGAZINE OF YORK UNIVERSITY

RESEARCH 2007

STAN SHAPSON

An Environment for Innovation

YorkU's special research edition provides a snapshot of the range of research excellence at York. We continue to expand, diversify and intensify our research activity, balancing our focus among strategic areas with immediate scientific, social and economic impact and the critical basic research that is the foundation of new knowledge and innovation. Ensuring this balance will help us to strengthen Canada's competitiveness and York's position as a research university.

Innovation frequently occurs when established approaches intersect in new ways. York's support of interdisciplinary research, which unites experts from diverse fields such as computer science, biology and health policy, creates an environment where innovative ideas thrive. York is also firmly committed to outreach and partnerships with governments, community and industrial partners. With the increasing complexity of the issues facing society, these local and international partnerships are crucial to bringing our research beyond the campus and into the community, strengthening our region and leveraging world-class successes.

The spectrum of research activity at York is one of the keys to becoming a world-leading, research-intensive university, enabling us to have an impact upon our region's prosperity and the quality of life of all Canadians. We have an important role to play. And we are taking up the challenge.

Stan Shapson is York's vice-president research & innovation.

SAMUEL SCHWARTZ

Sharing York's Expertise

No matter which part of York University you visit, its interdisciplinary approach to research is readily apparent. Through its academic plan, York is reinforcing and extending its commitment to becoming a more research-intensive university.

New collaborative opportunities are constantly unfolding. In June 2007, the "Innovation: Transforming Regional Economies" symposium trumpeted York's role in leading innovation in York Region through our partnerships with both the public and private sectors. These ongoing relationships give us a greater awareness of our community's research needs, allow us to share our expertise and provide opportunities for future development. Driven by trust and collaboration, our partnerships are contributing substantially to the region's economy, which is among the fastest-growing in Canada.

Former president Lorna R. Marsden made a tremendous impact during her 10 years at York. In the months ahead, President & Vice-Chancellor Mamdouh Shoukri will build on her work with an enhanced focus on the sciences, engineering and health without losing sight of the importance of the social sciences and humanities.

The months ahead promise tremendous development, growth and innovation. It is my hope that when we look back in a few years, we will feel even more strongly that we have made a difference, both in making this a leading research university and in strengthening the economic health of our region.

Samuel Schwartz (MA '69, LLB '72) is a partner at Davis LLP. He is member of York's Board of Governors and Chair of its Academic Resources Committee.

YORKU

THE MAGAZINE OF YORK UNIVERSITY

SPECIAL RESEARCH EDITION 2007

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This **Special Research Edition of YorkU** showcases key stories about research at York University published from October, 2005, to Summer, 2007. Each feature story shows the issue it is reprinted from (unless new), and each Universe item shows the year; stories are printed in their original form although designs may have been altered. *YorkU* is published bi-monthly, five times during the academic year, by the Marketing & Communications Division of York University.

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YORK UNIVERSITÉ UNIVERSITY
redefine THE POSSIBLE.

PHOTOGRAPHY BY BRIAN REISER

PHOTOGRAPHY BY JEFF KIRK

Pursuing York's research dream. **BY MAMDOUH SHOUKRI**

What If...?

There are more things in heaven and earth, Horatio, than are dreamt of in your philosophy.

Shakespeare, *Hamlet*
Act 1, Scene V

I am sure you can readily imagine my pleasure at being asked to write this column as one of my first tasks as the new president of York University. Those familiar with my background as an engineer and researcher will know how passionate I am about the transformative role of university research and how close it is to my heart.

Researchers in general – and engineers in particular – are not often thought of as dreamers. The modern image of researchers would probably be something closer to earth: repetitive, methodical, drab, isolated. Such is the stock media portrayal of researchers at universities.

This image could hardly be more misleading.

To research is to dream, because every piece of research is by definition venturing into the unknown. What if everything we ever thought about a given issue was wrong? We must ask that. Have we involved researchers from different disciplines to see what new insights they can offer from their unique vantage point? We must do that.

Issues simply cannot be understood from a single specialist viewpoint. Life does not happen in silos.

This is the beauty of York's interdisciplinary approach to research: exploring profound questions from all sides. The answers we find may be societal in nature or may increase our depth of knowledge in a given area. Both are equally noble pursuits. Much of York's interdisciplinary research aims to get at the very human topics that affect us all: air quality, vision, cities, gender, race, slavery, crime, bullying, sustainability, refugees. Not to mention health, wealth and commonwealth – all of the issues that drive our understanding of ourselves.

These issues simply cannot be understood from a single specialist viewpoint. Life does not happen in silos; neither should research. At the very heart of colliding disciplines may lie the nugget of insight that illuminates an entire topic. Research problems have a way of bursting out of their boundaries: an area that was once thought to be purely psychological now appears to have genetic components, what was once thought to be purely scientific now seems to have sociological components and so on.

We need to keep in mind that research – even scientific research – is not ultimately about process but about outcomes. The method, of course, has to be above reproach but it is the outcome that transforms.

York's fundamental opportunity lies in using university research and human capital to advance social and economic development. This is part of our broader commitment to knowledge transfer, not only through our graduates but by making our knowledge accessible to society at large. At heart, this is a very democratic view of research and one that fits well into the York tradition of making a difference in our world. York's engagement creates opportunities for our students to apply their intellects and for our researchers to see their work employed for the greater good.

We have a responsibility to disseminate knowledge in a form that society can use. This is not only our dream, but also our reality.

Mamdouh Shoukri is York's president and vice-chancellor.

2007

Keep On Golfin'

Activity – almost any activity – may be the key to aging gracefully

The first baby boomers will reach retirement-at-60 this year, making kinesiology & health science Professor Joe Baker's research all the more timely – he is looking at what it takes to age successfully. "Demographics indicate a remarkable aging trend in North America," says Baker. By 2026, for instance, the number of adults aged 65 and over will roughly double. "So we need to better understand the aging process," Baker says. "My research investigates whether ongoing physical activity can promote healthier, more successful aging."

To track how physical ability declines over a lifetime, Baker, who is based in York's Faculty of Health, came up with the novel idea to study 96 professional golfers, collecting data on scoring averages, driving distance, driving accuracy, putts per round etc. What he found was a decline in golf performance as the pros aged, but also that a high level of performance could be maintained with regular activity (as opposed to power sports such as sprinting where performance is biologically constrained).

"Our research tells us that it's important to keep active," says Baker. "Any activity is good activity even if it's walking to the store. While it's true there is consistent evidence indicating physical and cognitive abilities decline with age, there's contradictory evidence as to whether it is actually due to age. Inactivity may have much more to do with any decline."

Baker's results also suggest that activities where performance is largely determined by cognitive and motor efficiency (chess, golf and tennis) may be more resistant to age-related decline.

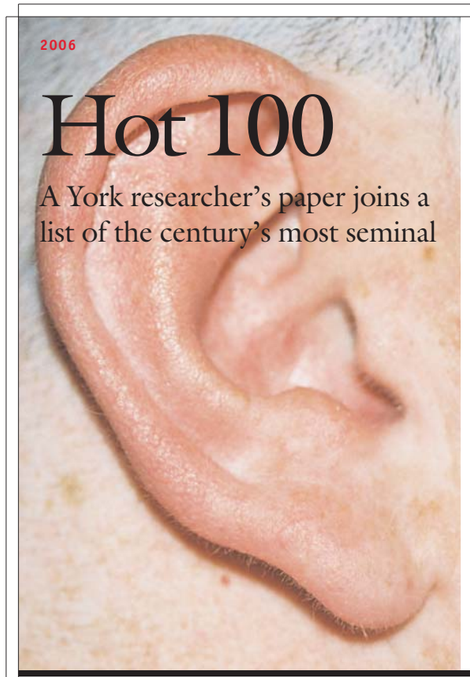
DRIVE FOR SUCCESS: Baker shows the way

PHOTOGRAPHY BY KC ARMSTRONG

2006

Hot 100

A York researcher's paper joins a list of the century's most seminal



Take 100 years and mix in 100 of the best academic articles published in the last century. Make a book out of it. Sound interesting? Well, a recent article co-authored by York education Prof. Connie Mayer and researcher Gordon Wells has been selected for just such a project by Oxford University Press (OUP).

Their 1996 article, "Can the linguistic interdependence theory support a bilingual-bicultural model of literacy education for deaf students?", was chosen as one of 100 seminal papers OUP has published in the century since it began printing learned journals. It appeared in the *Journal of Deaf Studies and Deaf Education* and is one of the most frequently cited articles the periodical has ever published.

Mayer and Wells took up the long-standing issue of deaf children's difficulty in acquiring print literacy while acknowledging the importance of natural sign languages to the development and education of deaf children. They showed that the claim that English literacy can be achieved without exposure to English in some form is untenable. Mayer holds a doctorate from the Ontario Institute for Studies in Education (OISE) and has been teaching full time in York's Faculty of Education since 2002. Her research on the effectiveness of two-way text messaging through pagers in enhancing the educational experience of deaf and hard-of-hearing students has received wide coverage in the media.

Wells is currently an education professor at the University of California at Santa Cruz and was teaching at OISE when he co-wrote the article with Mayer.

2007

The Risk Offshore

A unique atlas shows the environmental impact of oil & gas operations

An electronic marine atlas could help protect endangered species in the Atlantic Ocean. The unique atlas is a collaborative effort between York's Faculty of Environmental Studies (FES) and the Newfoundland-based Alder Institute. Colouring in the Offshore: An Atlas about Species at Risk and Oil and Gas Activity off Newfoundland and Labrador is the result of work by FES Professor Gail Fraser, and Janet Russell and Joanne Ellis of the Alder Institute. The atlas, produced as a CD-ROM, focuses on the possible environmental impact of oil production. "One of the biggest problems with offshore oil and gas in Newfoundland is that it's out of sight, hundreds of kilometres away," says Fraser.

To create the atlas, the group chose six endangered species – the blue whale, the harlequin duck, the ivory gull and three species of wolffish (northern, spotted and Atlantic) – that inhabit the open ocean, the coast, the air-sea interface and the sea floor. The overlap between endangered species' habitats and the petroleum operations revealed the broad potential for those operations to affect wildlife. "Environmental assessments generally only consider the impacts of offshore oil and gas at a 100-square-kilometre area around the platform, but in fact the impacts can be carried much further," says Fraser.

Whales can be impacted by noise pollution generated from seismic testing activities during oil and gas exploration. In contrast, seabirds are likely more vulnerable during the production phase, when small-scale oil spills are common and light pollution from gas flaring is most severe. "Some of the oil exploration happening on the west coast of Newfoundland seems to be [creating] a hotspot for blue whales, and this is an area that will likely be developed further," says Fraser. "It is very difficult to predict how oil and gas activities may impact the highly endangered blue whales."

Students Daniella Molnar and David Laws of the Master in Environmental Studies Program assisted with the project, which was funded by the federal Habitat Stewardship Program for Species at Risk.

2006

The Flo'nGlo Show

An interdisciplinary collaboration brings together art and science

Can life imitate art? And vice versa? Maybe, if new media artist Nell Tenhaaf and computer scientist Melanie Baljko have anything to do with it. The two York professors are working together to create interactive installations as part of a federal New Media Initiative. The idea is to create one or more installations in which humans interact with "low-fidelity" artificial agents.

Tenhaaf, a visual arts professor, has been engaged for some years in the field of artificial life – an interdisciplinary area of work at the intersection of art, technology and biology. In her 2005 sculpture Flo'nGlo, two-metre-tall "characters" converse with each other through electronically manipulated sound and very low-resolution, light-emitting diode (LED) video displays. Flo emits a relentless flow of abstract sound, while Glo responds with a chorus of voices.

The viewer does not interact directly with Flo'nGlo – the primary exchange is between the two sculptural characters. However, in the new collaborative work that Tenhaaf and Baljko will build, viewers will be actively involved in the conversations. "These scenarios are a true merging of our interests because they are both opportunities for scientific evaluation of hypotheses and for pushing the envelope of artistic interactivity," says Tenhaaf.

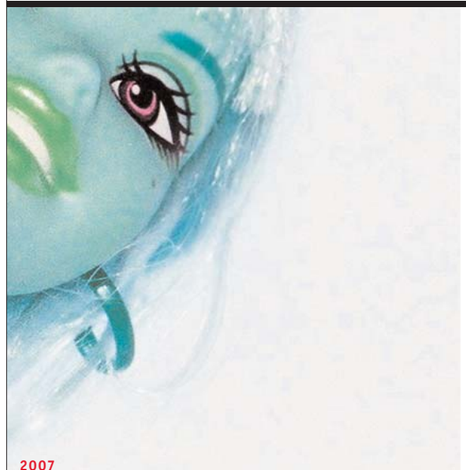
Baljko's research focuses on computational models of human-human communicative processes, especially those that involve individuals with communication disorders, that are computationally mediated, or that entail multiple modes of sensory-perception and articulation (a.k.a. "multimodal communication").

Tenhaaf and Baljko will jointly develop all aspects of the project: algorithms, agent architecture, visual and audio components. Their three-year project received a total of $148,150 – $60,000 from the Canada Council for the Arts and $88,150 from the Natural Science and Engineering Research Council of Canada.

2007

'Chameleon' Girls

A York expert finds that many young women repress their anger



Is a girl you know a chameleon? Not literally, of course, but psychologically? Research by Cheryl van Daalen-Smith into how young girls are socially coerced into suppressing their anger suggests that such repression often forces many to "live like chameleons" (as one of the study's participants said).

Van Daalen-Smith, a professor in York's School of Nursing, Faculty of Health, and the School of Women's Studies, has also been a practising public health nurse for 12 years. She says her two-year study of 65 young women aged 14-21 shows many feel "disbelieved" in response to their anger. (Anger, she adds, is a component of depression and is often – quite erroneously – confused with aggression.)

"My study found young women, whose legitimate anger is dismissed or silenced, change their outward selves in order to blend into a society that denies their right to feel and express anger," she says. Denied anger also prevents girls from both protecting and knowing the self – two key components of mental health and quality of life, she notes.

Denying anger can have other serious effects on mental health, says van Daalen-Smith, who has worked as a mental health nurse with children and youth. "Too often young women are medicated. Many of these young women told me that they felt instead they needed to have their stories and concerns believed and not judged by nurses and other health professionals."

She has published her findings/suggestions in a handbook for health care professionals: *Living as a Chameleon: A Guide to Understanding Girls' Anger for Girl-Serving Professionals.* Her bottom-line advice? "Don't silence angry girls. Don't medicate them. Listen. Professionals should be transforming how young women's anger is viewed, and how it is heard."

2005

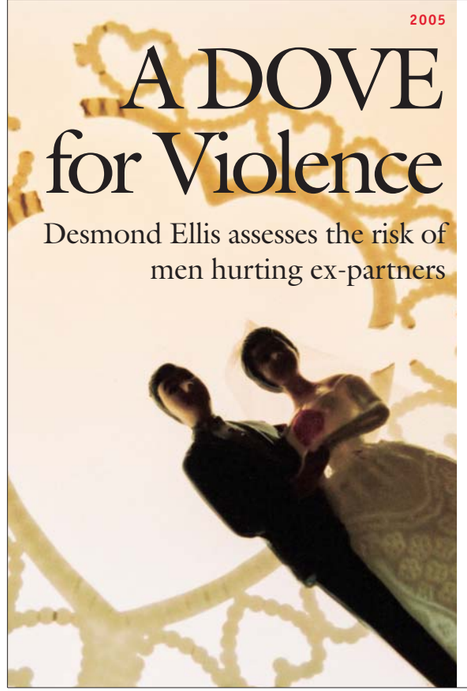
Web of Isolation

Women cope better than men with online stress

There's a love-hate relationship going on with Web-based communications technology, and nowhere is that more evident than in the academy, suggests a study by York sociologist Janice Newson and Ottawa-based writer Heather Menzies. Paradoxically, the same technology that makes keeping in touch with students and academic peers so easy can create feelings of social isolation from colleagues and a sense of time fragmentation, increased workloads and higher stress levels.

Using a 35-page questionnaire, Newson did a pilot survey of 100 professors at six Canadian universities to explore gender differences in time and stress management, and intellectual engagement. "Our pilot study discovered that professors bemoan the lack of personal contact now, especially with colleagues. Face-to-face meetings have been replaced by e-mail," says Newson. "On the other hand, we found online connectivity has helped alleviate women's sense of marginality and minority status in the academy."

In ticking stress indicators relating to the tech-driven culture, women reported higher stress levels than men did – from sleep deprivation and short-term memory loss, to problems concentrating and strained relations with colleagues. On the other hand, says Newson, "one of our most provocative findings was that women – compared to their male counterparts – showed a high degree of adaptability to the more fragmented, demanding and chaotic work environment at universities, and an even greater comfort level with its online culture."



2005

A DOVE for Violence

Desmond Ellis assesses the risk of men hurting ex-partners

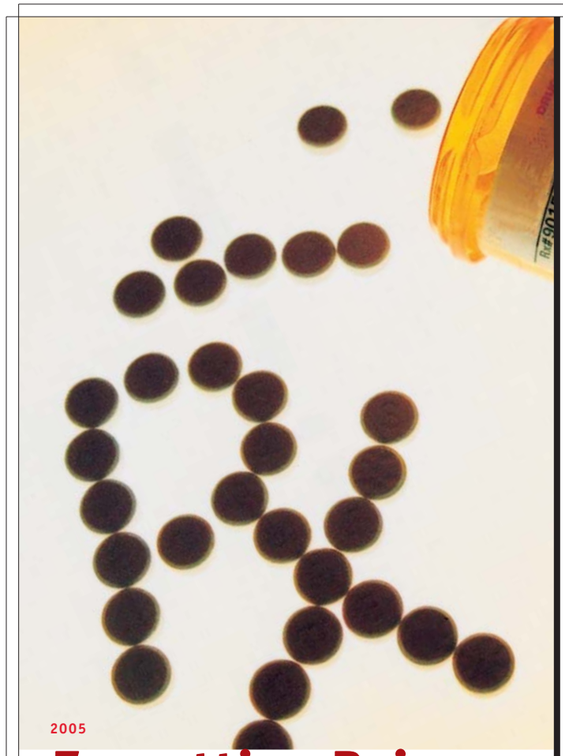
In 1991, not long after Patricia Allen, a young Ottawa lawyer, was horrifically killed by her ex-husband with a crossbow, her father, Ottawa police office George Allen, found out about York sociology Professor Desmond Ellis's research into male violence against female ex-partners. Ellis was in the process of developing a Domestic Violence Assessment Evaluation tool, called DOVE for short. Allen contacted Ellis and they met. Later a fund was set up in Patricia's memory from which DOVE (and other initiatives) now receives support.

DOVE is used by professionals and administered privately to male and female partners who are in divorce mediation, says Ellis, now professor emeritus. It uses 19 statistically significant predictors for risk of the likelihood of domestic violence after couples split. While it doesn't assess the risk of lethal violence, it does look at prior assaults, assaults resulting in serious injury, and other behaviours such as emotional abuse. Further high-risk traits could include a history of substance abuse, outbursts of violent anger, and a threat to harm or kill oneself.

Based on DOVE scores, individuals are placed in one of four risk categories ranging from low to very high. The percentage of persons in each risk category who are likely to harm ex-partners is also assessed. For example, 12 per cent of individuals who are in the low risk category are likely to seriously harm their partners during the first four months following the termination of divorce mediation. A comparable figure for individuals in the very high-risk group is 54 per cent.

"The point isn't to predict violence," says Ellis. "It's to prevent it. Any risk assessment instrument can be misused. Nothing is foolproof and we're careful to include caveats with the manual."

PHOTOGRAPHY BY RSQUARED



2005

Forgetting Pain

A York health expert demonstrates how to outfox the nervous system

As a graduate student, Joel Katz had been interested in why amputees could not only remember pain in phantom limbs but also experience it as real. It eventually led Katz, York's Canada Research Chair in Health Psychology in the Faculty of Health, to study the phenomenon of the central nervous system's hypersensitivity to pain. Katz wondered if there were ways of pre-empting our nervous system from learning about pain.

Working with anesthetists at Toronto's University Health Network, Katz has now demonstrated, using pre-emptive pain techniques on 145 women undergoing abdominal surgery, that the theory works. Results show that patients who received analgesic epidurals 20 minutes before surgery had significantly less post-operative pain than those who did not, or than those who got painkillers during surgery. Katz's research is important in understanding pain management and how to treat it with drugs before and after surgery. Ideally, if the brain can be prevented from becoming hyper-sensitized to pain in the first place, half the battle will be won. "It's clear," says Katz, "that the best way to forget pain is never to have learned it in the first place."

PHOTOGRAPHY BY RSQUARED

2005

Don't Argue About It

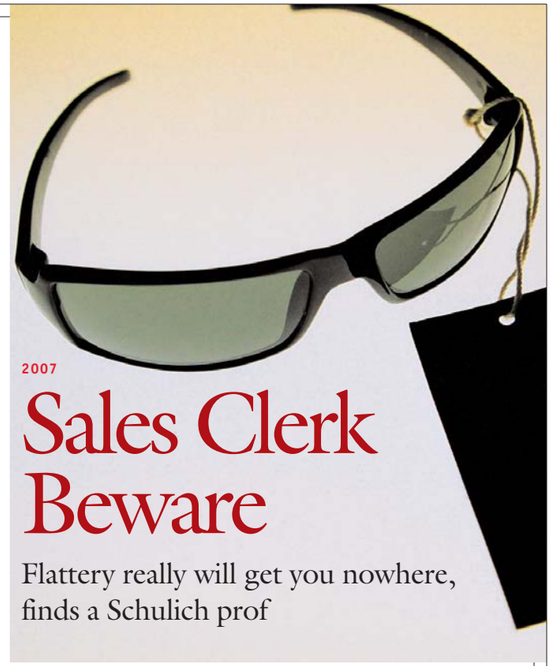
Michael Gilbert is a leading expert on the discourse of disagreement

York philosophy Professor Michael Gilbert learned how to argue the hard way – on the streets of Flatbush in Brooklyn. "I was this short Jewish kid, and although you couldn't call my neighbourhood a bad one, it had its moments. Basically, I learned to be a good talker and argue my way out of things. That's where it all started."

The "it" that Gilbert's talking about is how to conduct (and win) an argument. His argument expertise is backed up by decades of real-life practice, a PhD in philosophy, and eight years of teaching a night course at Woodsworth College called How to Win an Argument. After Gilbert did a radio interview about the course, a publisher called him and suggested they do a book with the same title. First published in 1979, the book is still in print in a second edition.

Arguing isn't about getting mad or blowing off steam, Gilbert says. "It's about listening carefully to the other person." He also cautions against confusing quarrelling with arguing. "Quarrels are a kind of argument, sure," he says. "Bad soup is still soup. But does it taste good? Is it good for you? The important thing in any good argument is that all parties come out feeling they've gained something. I might 'win' an argument, but if you feel slighted because of it, and I alienate you, what have I achieved? In the best arguments everyone feels he's scored some points."

As a Faculty of Arts researcher, Gilbert is also interested in the interrelation of emotion and argument. "Rationality is good, but it's also impossible not to be emotional when you're arguing about something." Can't argue with that.



2007

Sales Clerk Beware

Flattery really will get you nowhere, finds a Schulich prof

You're in a store buying a jacket and the sales clerk says, "Oh, you look great in that coat!" Do you trust such judgments? Not likely, says Kelley Main, marketing professor in York's Schulich School of Business. Main, along with colleagues Darren Dahl at the University of British Columbia and Peter Darke of Florida State University, wondered how consumers responded to over-the-top sales behaviour and how it might influence customer perception. Does flattery heighten consumer suspicion?

"One of our experiments tested for consumer responses to flattery during actual sales transactions," says Main. "We used 102 students as customers, buying sunglasses at a kiosk in a campus mall." During the experiment, sales clerks flattered student customers before the purchase, after it or not at all. In both cases of flattery, sales clerks used the same three statements, "That's a great pair of sunglasses. I think they look good on you. They really suit you."

After buying the sunglasses, students completed a questionnaire asking whether they received flattery, when it occurred and how "trustworthy" they found the salespeople. "Across this field study, and three other lab studies that we did, we showed that trust judgments occur through a combination of deliberative and automatic processing," says Main. Surprisingly she found consumer suspicion was evoked automatically (without need for deliberation), even when flattery came after the sale.

"If you have flattery coming after the sale, there's no real ulterior sales motive. You've already bought the product. But even post-sale flattery caused consumers to have negatively biased judgments of trustworthiness towards the sales clerk," says Main. Final analysis? Leaving customers alone to make their own decisions might be the best sales pitch of all.

2007

Pioneers at the Bar

A new book explores the lives of the first women lawyers

Female lawyers and judges seem unremarkable today. But until relatively recently, women worldwide faced huge obstacles to gaining positions in the legal profession. For instance, women in Quebec couldn't become lawyers until 1941; Harvard Law School didn't admit women until 1950; and a woman was not appointed to the Supreme Court of Canada until Bertha Wilson joined the bench in 1982.

A new book, *The First Women Lawyers* by Prof. Mary Jane Mossman of York's Osgoode Hall Law School, relates these facts and many more, including fascinating personal stories of some of the earliest women to enter the legal profession worldwide.

"It's comparative research," says Mossman, "so I've been looking at women lawyers in Canada and the US, but also in England, New Zealand, India and Western Europe. It's taken a long time because I've had to go to all these archives to find these women's stories, but it is amazingly exciting to be reading the letters that were written by them in the 1890s – about their experiences as 'the first women'. Some are confident, others experienced major setbacks. There's real anguish to many of their lives."

The First Women Lawyers explores the lives of some of the women who first initiated challenges to male exclusivity in the legal professions in the late 19th century and early 20th century. Those challenges took place at a time of considerable optimism about progressive societal change, notes Mossman. "My book reveals how a number of quite different women engaged with ideas of gender and legal professionalism at the turn of the 20th century."

PHOTOGRAPHY BY RSQUARED

2006

Goodbye, Chinatown

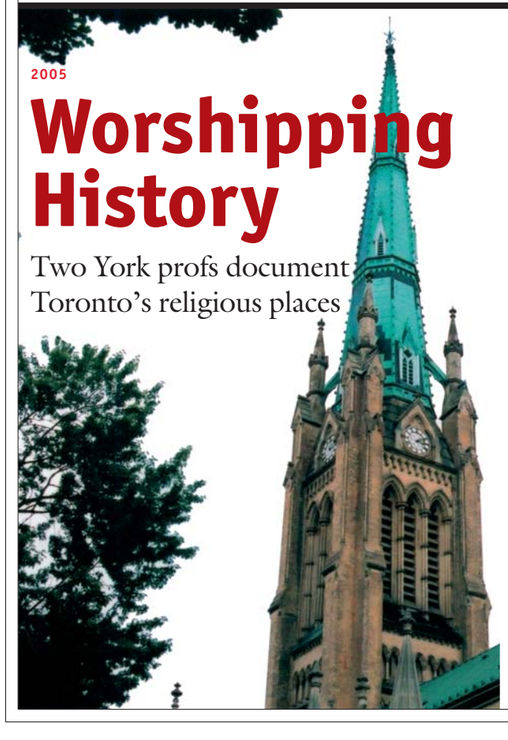
A York researcher traces the spread of Chinese businesses

The era of mom and pop laundries isn't a dirty word in the brave new world of Chinese owned and operated businesses, but it certainly isn't the norm any more. In fact, Chinese businesses in the Greater Toronto Area are growing in ways and places some might not realize, and are no longer relegated to T.O.'s traditional "Chinatown" areas. That's the finding of a recent study by York geography Professor Lucia Lo and co-author Shuguang Wang of Ryerson University.

The continuing myth is that Chinese businesses are family-oriented firms clustered in the centre of Toronto and are mainly retail and service operations whose clientele is Chinese-Canadian. Lo's study paints a different picture.

Lo examined data from a 1997 Dun & Bradstreet business directory and found Chinese businesses of medium to large size were located in every part of the GTA and no longer catered mainly to Chinese customers. "The 1967 Immigrant Act, which for the first time allowed immigrants of any race to enter Canada, along with the business immigrant program with entrepreneurial and investor components – much promoted in the '80s – caused considerable change in the size and structure of the Chinese community," says Lo. "And, most recently, mass global movements – of ideas and technology, people and resources – have also radically changed things."

Lo found that Chinese businesses are now represented in almost every sector of the economy, with the exception of the mining industry. Interestingly, she found a high concentration in manufacturing, especially of machinery and electrical/electronic equipment. "This diversification implies that contemporary Chinese businesses are no longer dominated by retail and service activities," she says.



PHOTOGRAPHY BY RSQUARED

2005

Worshipping History

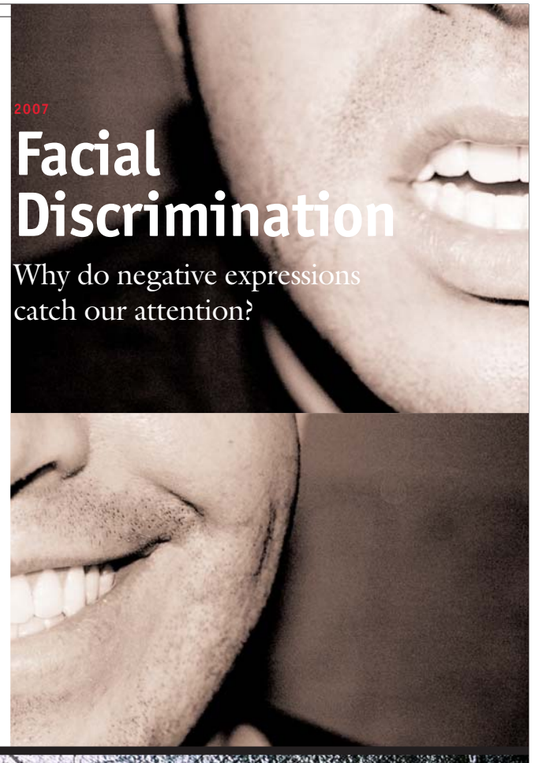
Two York profs document Toronto's religious places

Gabe Scardellato and Roberto Perin are on a religious mission – and a mission they pursue religiously. Nearly every summer Sunday since 1996, the two York history profs have met to walk around Toronto neighbourhoods. Their self-imposed task – which they love – is to document the history of 248 Toronto places of worship in pictures and words. They say the city's churches illustrate the story of Toronto, its neighbourhoods and the waves of immigrants who lived there, used them, and ultimately moved on. The pair have built a Web site documenting their findings at www.glendon.yorku.ca/placesofworship.

Scardellato and Perin tend to use the term "places of worship" – as in mosques, synagogues, temples etc. – as much as "church". Although, as Perin notes, "What's now a mosque might have been owned by several different denominations since it was built in the 1800s."

When Perin, based at Glendon, and Scardellato, who's in the Faculty of Arts, started walking in their west-end neighbourhood they noticed something curious. "Many of these churches had several signs out front," says Scardellato. "You might have Koreans sharing the same building as Bloor Street United or High Park United. We thought, 'Isn't this interesting. Maybe we could document the denominational changes over the years.'"

But they also found it was a way of documenting many historic houses of worship before they disappeared. Says Perin, "Since we began this, quite a few churches have been sold and torn down to put up condos."



2007

Facial Discrimination

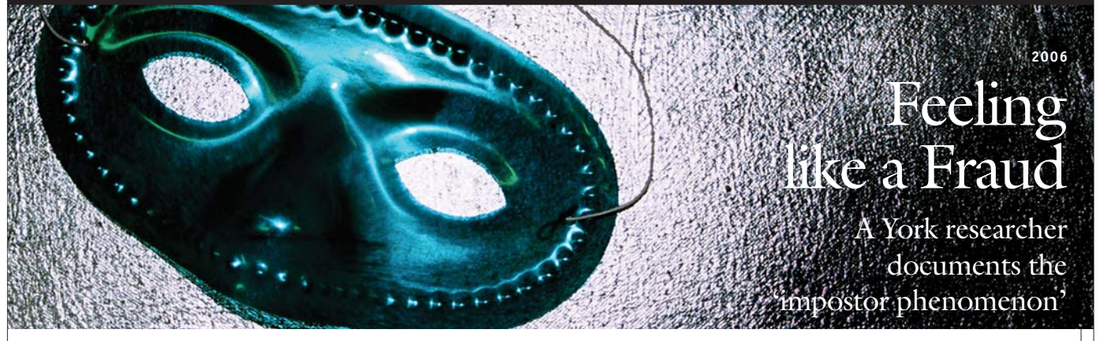
Why do negative expressions catch our attention?

Let's face it, the human face, with its hundreds of muscles and thousands of expressions, is the perfect window onto our emotional state (most of the time). So it makes sense that psychologists might have a particular penchant for studying it. John Eastwood does.

Eastwood, a clinical psych prof in York's Faculty of Health, studies human visual attention and is particularly interested in how faces communicate information (or how we interpret it). Surprisingly, his recent research has shown negative facial expressions tend to capture our attention, and focus it, more than positive ones do. At first, that might seem counterintuitive (since one might think an attractive face would be more noticeable). Not so, says Eastwood.

"It's not just that negative faces are out of the norm, they're also conveying important information. Lots is happening that we're not aware of, but we're processing information at a subconscious level. For instance, does this face represent a threat? And, if so, how much?"

Humans are probably hard-wired to pay attention (consciously or unconsciously) to faces right from day one, he says. "Face detection is part of our brain. And humans seem particularly sensitive to any face that might represent a threat. Other attention studies have suggested attention is mostly captured by things like motion or colour, but here we're really dealing with the meaning of an object," says Eastwood. "But how our attention is attracted and focused by objects such as faces, or how we make choices – and fine distinctions – about them, remains a mystery."



2006

Feeling like a Fraud

A York researcher documents the 'impostor phenomenon'

Ever had the feeling you're not qualified for that new job and will be "found out"? If so, you're not alone. "Chances are you're suffering from impostor phenomenon," says Diane Zorn, who teaches courses in business ethics in the Atkinson Faculty of Liberal & Professional Studies, as well as applied business ethics at York's Schulich School of Business.

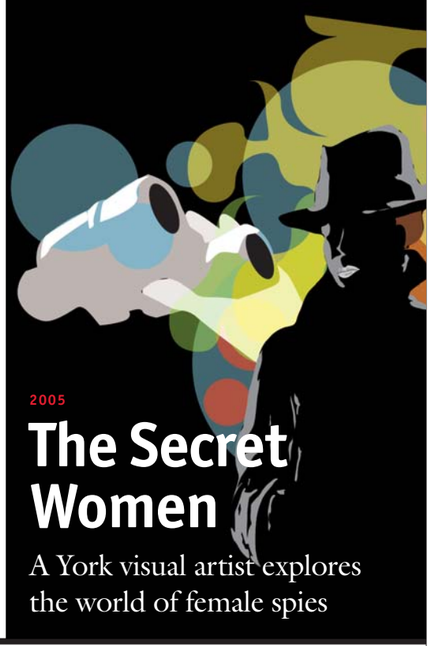
The impostor phenomenon (IP) often strikes high-achieving individuals – managers, CEOs, university professors – and manifests itself as an internal feeling of intellectual phoniness. "It doesn't matter what level you're at in your career or even sometimes how long you've been doing your job. Often people at high levels live in constant fear that they'll be revealed as 'frauds'," says Zorn.

Wouldn't a good therapist solve the problem? Not really, she says. "This isn't a psychological problem. My research argues it's a cultural phenomenon, not a psychological trait. It's a shared learned behaviour common to high achievers – people are left on their own, competition is intense, and there's not much of a mentor system. As a result, individuals develop an 'impostor cycle' – over-preparing, procrastination etc. They live in fear they won't ever be good enough."

What can be done? At present Zorn is busy doing consciousness raising about IP with new faculty and teaching assistants at York's Centre for the Support of Teaching and at other universities across Canada and the US. She also plans to document IP further at selected Canadian universities and hopes to write a book on the subject. Says Zorn, "We're still living with the monastic values universities were founded on. We need to get away from that."

PHOTOGRAPHY BY RSQUARED

UNIVERSE



2005

The Secret Women

A York visual artist explores the world of female spies

Installation artist and York visual arts Professor Nina Levitt knows a great topic when she see one (or is that *spies* one?). And that was exactly the case when, while she was doing a show at an Oshawa art gallery in 2001, the curator mentioned that an ultra-secret "spy camp" had existed nearby during the Second World War. More specifically, the camp trained women agents for espionage assignments. Levitt was intrigued.

"Camp X", as it was known, was so secret that even then-prime minister Mackenzie King didn't know about it. Britain sent many women spies to Occupied France, but information about their identities and their role has only been recently declassified. "The important role women played as spies wasn't known until after the war," says Levitt. "My work is a way of exploring how history gets constructed and, perhaps, its unfinished nature."

Levitt's most recent installation, shown in Toronto and Montreal and titled *Little Breeze*, is the eponymous nickname of famous British spy Violette Szabo. Entering the gallery, the viewer sees 1940s-style vintage suitcases scattered about the floor. Picking up a case triggers sound clips that play through a small speaker, and a corresponding video clip emerges on a large screen from a field of ASCII code (which developed out of secret codes used in WWII). In a second room are portraits of nine other female British agents with biographical texts. Speakers play the sound of a Morse code radio transmission and the interactive sound changes as viewers move through the room. A third part of the installation is a text work on the lives of other special operations women.

"It's ironic," says Levitt, "but women's very social invisibility allowed them to be visible, literally, in France and helped them gather intelligence."

2005

Stages of Marketing

'Product placement' has been around since early Broadway days

The insertion of a Coke can or a Prada handbag into films or TV shows is no accident. And in fact, "product placement" is apparently as old as the hills, or, at least, as old as theatre from around the turn of the 20th century, if research by York's Marlis Schweitzer is any indication.

Schweitzer, a theatre studies professor in the Faculty of Fine Arts, has been examining the "convergence" of theatre and the fashion industry in the US between 1893 and 1919. Her research is due out soon in book form. *Becoming Fashionable: Actresses, Fashion and American Consumer Culture* will explore the extent to which a heightened emphasis on accurate and expensive costuming in contemporary drama, vaudeville, musical comedy and the revue (among other factors) transformed commercial Broadway theatre into a department store showroom.

Says Schweitzer: "It might seem surprising to us now, but commercial Broadway theatre then did more than borrow marketing strategies and appropriate advertising rhetoric. Its interaction with manufacturers, ad agents and department stores absolutely facilitated the promotion, distribution and consumption of new products and product categories, ranging from cars and soda pop to the latest Paris fashions."

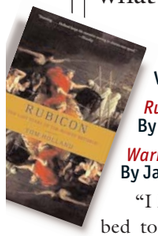
As a researcher, Schweitzer draws on her extensive background in theatre history, cultural studies, film and business history, and fashion and women's history. "My work has a broad appeal to scholars and students in a number of fields," she says. "It's a growing area of research that recognizes shopping as much more than a frivolous pursuit and I'm looking at the various ways in which women have used fashion and other commodities to negotiate a place for themselves within the public sphere."

PHOTOGRAPHY BY RSQUARED ILLUSTRATION BY ROB MACDONALD

BOOKS

What They're Reading

York researchers reveal what's on the bedside table



Doug Crawford
Canada Research Chair in Visuomotor Neuroscience:

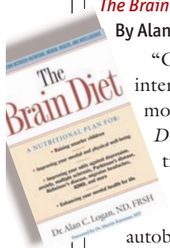
Rubicon
By Tom Holland

Warriors of God
By James Reston, Jr.

"I keep a pile of books next to my bed to ward off insomnia. Lately I have relied on popular history as a good alternative to pulp fiction. *Rubicon* tells the classic story of Julius Caesar's rise to power, but puts this into the broader context of the events leading to the dissolution of the republic. *Warriors of God* is the best-written account I have read of the struggle between two great medieval leaders: Richard the Lion-hearted and Saladin. The relevance for current international politics was obvious."

Henny Westra
Psychology professor, Faculty of Health

The Brain Diet
By Alan C. Logan



"Consistent with my divergent interests, I tend to read three or more books at once. *The Brain Diet* reviews research on 'nutritional neuroscience' or the link between nutrition and mental health. I also love all things autobiographical and the charming book, *A Chance Meeting: The Intertwined Lives of American Writers & Artists,* by Rachel Cohen, is about the mysterious influences on creativity and how 'chance' meetings can spark new directions. I also love dogs, and a good laugh, which is why I'm reading *Marley & Me* by John Grogan – a whimsical book about the antics of a precocious Labrador retriever."

2006

Selective Tuning

How the brain gets rid of visual clutter

Pay attention! Unfortunately, that's not always as simple as it sounds. Just ask John Tsotsos. Ever since he read an article on computers and character recognition in *Scientific American* as an undergrad, York's Canada Research Chair in Computational Vision has been fascinated by how we humans see our world. Now Tsotsos, a member of York's Centre for Vision Research and a professor in the Faculty of Science & Engineering, has solved a small piece of the human visual puzzle, tackling the age-old conundrum of how we select one object over another for visual attention.

"People used to think the brain used visual data in a hierarchical way. That is, we saw 'everything' but objects had a lesser place on the pyramid as you worked your way up to the top which was the focus of attention. But what we found was the brain actually *suppresses* objects to rid itself of visual clutter in order to focus. I call it selective tuning."

Tsotsos and his research colleagues at Otto-von-Guericke-University in Germany and the University of Iowa used a technique called magneto encephalography to measure changes in the brain's magnetic fields as it viewed a visual scene. They found direct neurophysical evidence of spatial suppression in a ring around whatever the brain chose to focus its attention on.

The team's findings have applications for the design of "heads up" displays used by pilots, where "visual clutter" could prove fatal, and Web pages – where it often proves annoying.

PHOTOGRAPHY BY RSQUARED

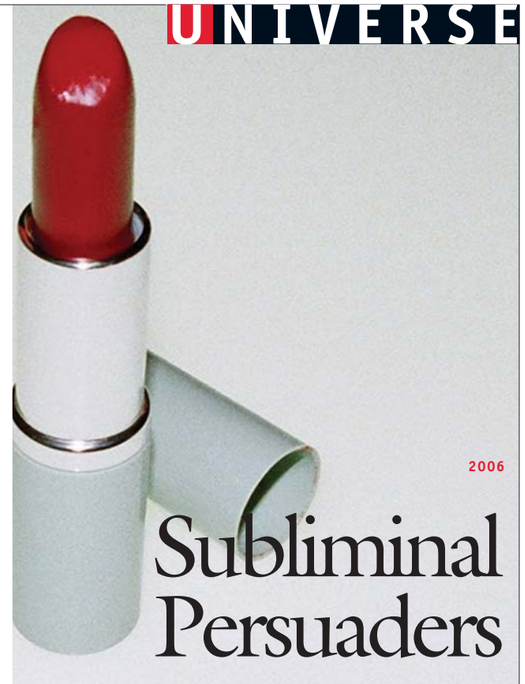
Subliminal advertising of the 1960s and '70s was supposed to quietly influence you to buy a Coke at the movie theatre. While most of those "hidden persuader" techniques have since been debunked, it turns out some covert triggers actually do work, and they have found a use in York psychology Professor Jennifer Steele's research.

"Flashing Coke ads so fast you couldn't see them at a conscious level was supposed to make you buy the product. It might have made consumers thirsty – but not necessarily for Coke," says Steele with a laugh. She has, however, found a more insidious aspect to the power of subliminal suggestion in her research into how "feminine" words – like pink or lipstick – can affect women and actually colour their attitudes toward math and science.

"Researchers have found certain suggestive words can elicit stereotype-consistent behaviours," says Steele. Knowing that, she was interested in whether or not subliminal suggestion would have a negative effect on women's attitude toward math or science.

Forty-six undergraduate women were shown feminine words for 80 milliseconds on-screen during a computer task. After subliminal priming, they were then asked to rate how pleasant they found tasks associated with math (an area traditionally dominated by men) versus arts-related tasks like analyzing a poem.

Women primed with feminine words showed a marked preference for arts tasks over math tasks, whereas women in control situations did not. "The results of priming are short-lived," says Steele. "But it shows that even if women don't endorse feminine stereotypes they can still be influenced by them through subtle triggers in their environment."



2006

Subliminal Persuaders

Feminine stereotypes can colour attitudes to math

2006

The Perils of Perfection

A study of grad students and depression highlights issues of achievement

Are certain personality styles more at risk for major depression episodes (MDEs) than others? The simplest answer seems to be yes. The question was studied in a sample of graduate students in their mid-20s who had a previous history of major depression. When certain personality traits were present, along with dysfunctional beliefs around achievement, the chances of a recurrence of depression was significantly increased, according to two recent studies by Myriam Mongrain, a York psychologist in the Faculty of Health.

MDEs are defined as a depressive episode lasting more than two weeks and typically around three months. Symptoms could include "feelings of guilt, reduced motivation, pessimism, and – in grad students – sleep loss and anxiety attacks," says Mongrain.

She found that a key element in predicting a recurrence of an MDE among her sample – with a median age of 28 – was something known as a "cognitive vulnerability in the achievement domain" along with an "autonomous" personality orientation. "This group tends to really value its freedom, is self-critical, and has perfectionistic standards. Typically, these individuals are overly hard on themselves and base their self-worth on meeting unrealistic goals. This would make the inevitable academic stressors of graduate school particularly difficult for them, and even precipitate another major depressive episode."

Mongrain says her research on depressive vulnerability should aid both clinicians and lay people. "My research recently was written up in a major daily and I had a number of people write to me saying they recognized themselves in my work. That's often the first step to healing."

PHOTOGRAPHY BY RSQUARED

2005

Madness Documented

A new Web site looks at an oft-hidden history

It's a mad, mad world and three York professors are intent on helping us understand it better. Well, not the world's insanity perhaps, but at least Canada's. Faculty of Arts Professors Megan Davies (Health & Society Program) and Kimberley White (Law & Society Program) and Prof. Geoffrey Reaume of the School of Health Policy & Management, Faculty of Health, have come up with the not-so-crazy idea of creating a Web site devoted to documenting the history of madness in Canada (www.historyofmadness.ca). Its purpose, says the site, is "to access part of our past that has too often been hidden from view".

Davies says its academic, archival and teaching value (say, as a Web resource for high-school students) will be unparalleled. "A Web site has much more potential for reaching people compared to a book that would end up on a university library shelf." She notes that the site is not only an archival resource about the history of madness in Canada (included online will be items like NFB documentaries, photos, case files, newspaper articles, oral histories, and related medical and psychiatric articles), but also a forum for patient input.

"As we develop the site there will be consistent representation from patients and consumers on the Web site committee and Web pages," says Davies. "It's definitely collaborative and represents a diversity of perspectives and disciplines." The bilingual site will contain links to educational resources, historical information, venues for discussion, and a place to undertake and publish research. "Madness is the dark side of living," says Davies, "but it's real life and it is both social and medical history. That's why it's important to have a resource that will archive this material, but it's also a place people can use to air and publish views and opinions."

2007

Blowing Good

An interdisciplinary look at wind speed and lake life

Why is a York atmospheric scientist studying the wind in Sudbury? It all started when a fourth-year biology student, Andrew Tanentzap, in York Prof. Norman Yan's lab noticed that a small lake near the city, once dead, was now coming "alive". Yan studies invasive species in freshwater lakes, and wind is known to affect lake turnover – a good thing.

Peter Taylor, an atmospheric scientist with the York Centre for Research in Earth & Space Science, says the student also noticed weather data showed a decrease in wind speed over recent decades. Taylor was called in to investigate why that was so. One of Taylor's specialties is using computers and mathematics to model the atmosphere's one-kilometre-thick "boundary layer" as it flows over topographic complexities such as hills, buildings etc.

Taylor found that a 34 per cent reduction in wind speeds from 1975 to 1995 appeared to be a result of significant changes in the "surface roughness" of Sudbury's surrounding area. At one time, the Sudbury area suffered huge environmental damage from sulphur dioxide emissions, and one aspect of reclamation was planting eight million trees. Taylor's modelling – taking into account natural features and roughness of snow, grass and trees – turned out to match wind speed data gathered at the Sudbury airport. Cause?

"Reforestation is likely the reason for dropping wind speeds over the last few decades," says Taylor. "The finding is important because it has economic, social and ecological implications. Wind speeds have an influence on economic decisions such as the placement of wind turbines. Wind also loads buildings and other structures and subjects them to stress, and it affects home heating costs too. It may also influence the biology of small to medium size lakes."

ILLUSTRATION BY ROB MACDONALD PHOTOGRAPHY BY RSQUARED

2006

UNIVERSE

Meteorologic Rise

How the Victorians began predicting weather

For some people, the weather is a daily source of speculation. But for Katharine Anderson, it's not our current forecast that concerns her so much as how the Victorian mind grappled with the then-emerging science of meteorology. At that time, the new networks of scientific observers and government offices to study the weather competed with traditional knowledge – based on intimate local experience, animal behaviour or, most notoriously, astrology.

"In the enterprise of weather prediction the scientists had only mixed success," says Anderson, a professor in York's Division of Humanities in the Faculty of Arts. "However, the Victorians were convinced that meteorology could become a highly measurable science. They saw no reason why weather couldn't be gauged as accurately as astronomy."

Unfortunately, quantifying the weather proved much more problematic than the scientists hoped. Anderson has charted Victorian meteorology's bid for scientific legitimacy in her latest book, *Predicting the Weather: Victorians and the Science of Meteorology*. "The invention of the telegraph, which could collect information and distribute forecasts quickly throughout the country, was one important impetus for believing accurate weather forecasts were a possibility," says Anderson. "Another reason was Britain's economic stake in shipping."

Daily weather bulletins were carried for the first time in Victorian papers, but proved so inaccurate that the dailies eventually dropped them. "In my book I explore how the Victorian notion of science evolved, and how science became professionalized as new instruments to measure the world were invented, and the technology to disseminate those results was developed."

PHOTOGRAPHY BY KC ARMSTRONG

Critical Mass

Michael Siu and his Centre for Research in Mass Spectrometry specialize in helping solve big problems – especially in health.

BY DAVID FULLER

Michael Siu knows he's having a good day when someone calls him with their problems. They call him from far and wide – all trying to deal with issues they have wrestled with for years. Most people would shy away from sharing others' burdens or adding to their own but Siu listens eagerly as they pour out their concerns about cancer, drugs and more. He takes it all in stride, relishing the chance to analyze their thoughts and help find a way forward.

How does he do it? With a well of patience gained from 30 years of practice, a genuine desire to help others that has won him the admiration of friends and colleagues the world over – and a mass spectrometer. As an award-winning expert in analytical chemistry and director of York University's Centre for Research in Mass Spectrometry, what did you think he'd use – a couch?

"We are problem-solvers," he says of his team in York's Faculty of Science & Engineering, which specializes in the latest methods of analyzing the make-up of our bodies and the pharmaceuticals we use to keep them healthy, as well as developing new instrumentation. "When our collaborators come

with interesting problems, it stimulates us," says Siu, who, in addition to being a Natural Sciences and Engineering Research Council of Canada Industrial Research Chair in Analytical Mass Spectrometry (and a Distinguished Research Professor) doubles as associate vice-president research, science and technology, in York's Office of Research & Innovation.

His collaborators are also leaders in their fields. Foremost among them is fellow York "mass spec" expert Diethard Bohme, Distinguished Research Professor and Canada Research Chair in Physical Chemistry, who heads the centre's Ion Chemistry Laboratory. Then there's Sam Benchimol, who brought his 20-year study of a cancer-fighting protein to York in 2006 (see page 24), in part because of Siu and the magic he can work doing electrospray mass spectrometry. One of Siu's earliest collaborators at York was biologist and University Professor Ron Pearlman, a world leader in the study of genetic information of single-cell organisms, which holds implications for human genomic research. Not everyone has the inclination to do truly collaborative research, notes Siu, but he strongly believes in it. "I think it's my nature," he says, "even before I came here."

One goal is to spot common cancers with a simple blood test

Siu arrived at York in 1998 after a successful career at the National Research Council Canada (NRC), where, as he puts it, he was "in the right place at the right time" to ride the technological revolution in biomolecular analysis: electrospray ionization – a Nobel Prize-winning discovery that made it possible to analyze and measure proteins with hitherto unheard of sensitivity and accuracy. "The concept of moving proteins from the solution to the gas phase in order to weigh them accurately was completely revolutionary. This was entirely virgin territory," Siu explains. He and his colleagues at NRC quickly modified an existing mass spectrometer and began exploring the new technology's capabilities. As the technique opened up new possibilities, Siu's work earned him recognition as an innovator and much sought-after collaborator. At the same time, he became active in his field's professional organizations and earned numerous honours, for both his service to the profession and his contributions to advances in analytical chemistry and mass spectrometry.

In addition to his work at the NRC, Siu was an adjunct professor at several Canadian universities, and a visiting professor in his native Hong Kong. Although he was quite happy where he was, the move to York allowed him to pursue collaborations with theoretical chemists, biologists and biomedical researchers. It also opened up new opportunities, especially an industrial research Chair co-sponsored by MDS SCIEX, one of the world's leading mass spectrometer manufacturers and an important partner in his research.

One of the many possibilities for biomedical applications of mass spectrometry that excites Siu is the discovery of cancer biomarkers. He heads a collaborative research team that comprises pathologists, analytical chemists and biochemists in discovering sensitive protein biomarkers that facilitate cancer diagnosis and prognosis. The goal is to spot common cancers such as endometrial cancer with a simple blood test, which can be performed non-invasively and efficiently. "If all of this works, after a year or two, we will actually have technologies that could be put in a kit and ready for clinical trials," he says.

Another application is determining the proteins that are present in a given organ or type of muscle. With this new knowledge, researchers like York biologist John McDermott can mount new studies of afflictions such as the muscle-wasting condition cachexia. In collaboration with Siu, McDermott can develop a better understanding of the molecular processes that lead to this condition and eventually how to regulate and mitigate these changes. "Electrospray mass spectrometry was recognized right off the bat as a fantastic enabling tool," Siu says.

As York's associate vice-president research, science & technology, Siu brings his enthusiasm for synergy to various boardroom tables, including the Ontario Cancer Biomarker Network. He works closely with YORKbiotech, a consortium of industry and public sector partners fostering innovation in York Region, home to many of Canada's leading medical devices companies (see page 26). With other York officials, he is involved with the Town of Markham, IBM, and vaccine maker sanofi pasteur Canada to develop the proposed National Centre for Medical Device Development, with York University as the leading academic partner. In 2006, Siu took part in a provincial trade mission to Japan that resulted in a memorandum of understanding between the University and the Foundation for Biomedical Research and Innovation in Kobe to promote the development and commercialization of innovative medical devices.

When you add up his teaching, research and administrative roles, Siu's penchant for collaboration keeps him busy, but it's clear he thrives on it. "I strongly believe that an associate vice-president research should do research – that is one thing that I will never give up," he says. "People often ask me, 'how do you do it?' Well, the days are long and there are seven days in a week," he adds with a laugh – and a note of thanks to his wife and daughter for their forbearance.

That's why, no matter how many people come to him with problems in a day, Siu counts it a good one when he is doing science, talking to students and colleagues, and together, coming up with good ideas and new insights for the next experiment. "That's a fantastic day." M

PRIZED PEOPLE

York faculty researchers have won numerous prestigious awards in the past two years (since mid-2005). Here are some of the honours.

Kym Bird
Professor, School of Arts & Letters, Atkinson Faculty of Liberal & Professional Studies
Ann Saddlemyer Award, 2005

The Association of Canadian Theatre Research gave Bird the biennial award for her 2004 book *Redressing the Past: The Politics of Early, English-Canadian Women's Drama, 1880-1920.*

Diethard Bohme
Canada Research Chair in Chemical Mass Spectrometry, Faculty of Science & Engineering
Chemical Institute of Canada Medal, 2007
Gerhard Herzberg Award, 2006

Both the CIC Medal, Canada's most prestigious chemistry prize, and the Herzberg Award, bestowed by the Canadian Society for Analytical Sciences and Spectroscopy, recognized Bohme's groundbreaking work in ion chemistry and mass spectrometry.

Wayne Cannon
Professor, physics & astronomy, Faculty of Science & Engineering
Laurels for Team Achievement, 2005

Cannon was part of an international team honoured by the International Academy of Astronautics for developing a virtual radio telescope system with a diameter four times the size of the Earth.

Allan Carswell
Professor emeritus, physics & astronomy, Faculty of Science & Engineering
Paul Hoffert
Adjunct professor, film, Faculty of Fine Arts
Appointed as Members of the Order of Canada

Carswell is an internationally recognized leader in laser radar (lidar) applications, and founder of Optech Inc., involved in NASA's 2007 Phoenix mission to Mars. Composer Hoffert, founder of the '60s band Lighthouse, is an expert on new media and formerly headed the CulTech Collaborative Research Centre at York. Both had their investitures in 2005.

Lorraine Code
Distinguised Research Professor, philosophy, Faculty of Arts
Eric Hessels
Canada Research Chair in Atomic Physics, Faculty of Science & Engineering
John McCamus
Professor, Osgoode Hall Law School
Inducted into the Royal Society of Canada

Being elected a Fellow of the society is considered the highest honour available for Canadian scholars and scientists. McCamus was inducted in 2006, Code and Hessels in 2005.

Esther Greenglass
Psychology professor, Faculty of Health
Lifetime Career Award, 2006

Greenglass received the award from the international Stress and Anxiety Research Society for her work in the areas of stress, coping, emotions and health.

Ellen Gutterman
Professor, political science, Glendon
Vincent Lemieux Prize, 2007

Gutterman, a new faculty member, won the Canadian Political Science Association's biennial prize for the best PhD thesis at a Canadian university in the past two years, for her work on international anti-bribery compliance.

Kent McNeil
Professor, Osgoode Hall Law School
Killam Research Fellowship, 2006

McNeil is using the $140,000 fellowship, administered by the Canada Council for the Arts, to research indigenous sovereignty and European colonization of western North America.

Kathryn McPherson
Chair, School of Women's Studies, and history professor, Faculty of Arts
Marion Dewar Prize in Canadian Women's History, 2006

The National Capital Committee on the Scholarship, Preservation and Dissemination of Women's History honoured McPherson for skilfully blending "expertise in women's history, health care research and women's studies."

Moshe Milevsky
Finance professor, Schulich School of Business
The Graham and Dodd Scroll Award of Excellence, 2006

Recognizing excellence in financial research writing, the international award was given to Milevsky and three co-authors by *Financial Analysts Journal*, published by the global CFA Institute.

Michael Siu
Director, Centre for Research in Mass Spectrometry, and chemistry professor, Faculty of Science & Engineering
F.P. Lossing Award, 2005

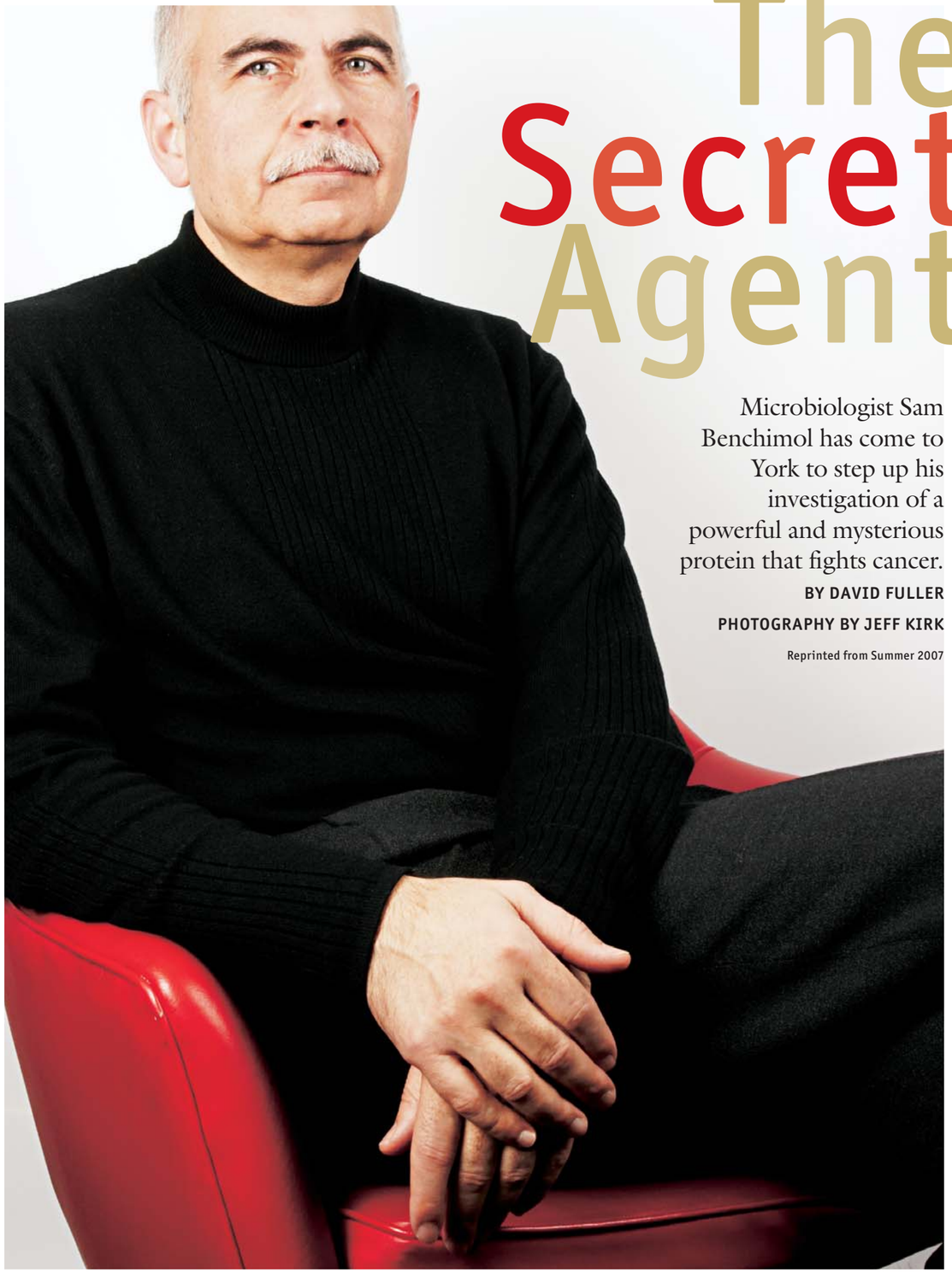
The award, given by the Canadian Society for Mass Spectrometry, recognized Siu's significant contributions to mass spectrometry.

Hugh Wilson
Acting director, Centre for Vision Research, and biology professor, Faculty of Science & Engineering
Helmholz Award, 2006

The International Neural Network Society honoured Wilson for achievements in perception and the neural modelling of visual functions.

Stephen Wright
Biology professor, Faculty of Science & Engineering
Alfred P. Sloan Research Fellowship, 2006

As a molecular biologist, Wright planned to use the coveted award (35 Sloan Fellows have become Nobel laureates) to extend his research into the genome evolution of plants.



The Secret Agent

Microbiologist Sam Benchimol has come to York to step up his investigation of a powerful and mysterious protein that fights cancer.

BY DAVID FULLER

PHOTOGRAPHY BY JEFF KIRK

Reprinted from Summer 2007

AGENT P53 HAS A LICENCE TO KILL. It is a highly trained professional that can scan secret code for suspicious activity and move quickly to neutralize the enemy, by persuasion or deadly force. First discovered 27 years ago, this counter-malignancy operative has become one of the world's most prominent weapons in the life-and-death struggle against an evil that affects millions. And, as with James Bond, its more famous human counterpart, no one's entirely sure how p53 accomplishes its mission but many are trying to find out.

Enter microbiologist Sam Benchimol, York's Canada Research Chair in Biomedical Health Research, whose 22-year pursuit of p53 has come to York's Faculty of Science & Engineering. Based in an unassuming lab in the Keele campus's Farquharson Life Sciences Building – it was still discreetly labelled "Women's Lounge" when he arrived in fall 2006 – Benchimol studies p53's every move, in an effort to unlock the mysteries of this world-renowned…protein.

Yes, p53 is a protein: a molecular agent involved in tumour suppression that Benchimol first encountered in England, in what is now Cancer Research UK's London Research Institute. His "M" in those days was Lionel Crawford, an international expert in animal tumour viruses and a co-discoverer of p53. The protein's function, researchers have since established, is to regulate cell growth, a task it performs so efficiently that it's been called nature's inherent defence against cancer.

"Fifty-three", as Benchimol familiarly dubs it, is present in every cell in our body. When damage occurs to a cell's DNA, p53 senses the problem and signals the cell to stop replicating and repair itself. If the damage is too severe, p53 exercises its licence to kill by triggering apoptosis, the technical name for cell death, and halts the runaway growth of cancer cells. But, in true Bond fashion, p53 must contend with enemy agents such as Pirh2, a gene that inactivates p53, allowing tumour cells to multiply freely. There are many types of cancer cells but because p53 is present in all of them, it has become a primary subject for cancer researchers attracted by its potential as a targeted therapy.

Benchimol first delved into this world of cellular cloak and dagger when he developed a fascination for the "really, very obscure" field of bacteriophages, viruses that attack bacteria. In the early '80s, when he was finishing graduate work at the University of Toronto, he chose to do his postdoctoral research with Crawford, who was working with the DNA tumour-virus SV40. When Benchimol returned to Toronto and joined Princess Margaret Hospital and U of T, he officially became a cancer researcher. He spent the next 22 years as a member of the Ontario Cancer Institute, where he collaborated with numerous colleagues including Alan Bernstein, now president of the Canadian Institutes of Health Research, the nation's major funder of health research, and Tak Mak, director of the Campbell Family Institute for Breast Cancer Research at the University Health Network.

The decision to come to York after all those years was a natural one for Benchimol. The chance to become a Canada Research Chair at this stage in his career was appealing, but equally important was the associated funding from the Canada Foundation for Innovation that would allow him to build a new lab with the latest gadgetry to aid his research. York's decision to establish a Faculty of Health, the first new Faculty at the University in 34 years, was also a factor, he says. "York and Stan Shapson [York's vice-president research & innovation] made it very clear that they were committed to developing biomedical health research and that I would be part of that development, which is very attractive," he says.

But, like a true science whiz kid – Benchimol says it was almost his only interest at North York's W.L. Mackenzie high school – the clincher was the fact that York has one of the neatest research gizmos anywhere, a mass spectrometer, and the award-winning expert who can make it do magic, Professor Michael Siu, director of York's Centre for Research in Mass Spectrometry. "Even though there was a 'mass spec' downtown we were sending samples to Michael's lab before I thought of coming here," says Benchimol, "Michael and I have a very good relationship and we're talking about a lot of things we can do together."

And, ultimately, it's not technology or funding that makes Benchimol glad to be part of the biomedical team at York but the interdisciplinary culture he has found at the University. One example is the research being done by York's biologists and kinesiologists on muscle cells – work that has direct relevance to a cancer phenomenon know as cachexia, a muscle-wasting syndrome that debilitates patients and prolongs or prevents their recovery. "You can ask different types of questions here, some I never would have thought of asking if I had stayed downtown," he says. "This muscle research would be a new opportunity and new initiative that we might get off the ground here."

So, for someone who helped write the book on p53 for the past 22 years, is change really as good as a rest? "Yeah," says Benchimol with a smile, "change is good."

Reaching Out

How York researchers are working with a wide variety of community partners to help spur Canadian innovation. **BY DAVID FULLER**

IN THESE EARLY DAYS of the 21st century, most diabetics and cancer patients still get their treatments the old-fashioned way: through a needle. Imagine, in a few years' time, a patient who can forget daily injections thanks to a tiny, implanted device, monitored from afar and programmed to deliver the life-saving treatment as needed. Or, picture someone with a disability using their eyes to guide a computerized wheelchair. These devices don't exist yet, but they could in the near future with the creation of a proposed National Centre for Medical Devices Development (NCMDD). It's an initiative designed to capitalize on the fact that almost half of all the companies in Canada's $5-billion medical devices industry are located in or near Markham, Ont., in York Region – right next door to York University and its community of researchers who are studying the science behind those devices.

The vision for NCMDD is being developed by the University together with a broad consortium of public- and private-sector partners. They are already demonstrating the power of collaboration. Companies like IBM and sanofi pasteur are working with York University to share their interest in promoting the strengths of the region, which competes globally for ideas and the business they generate. It's all part of a broader research and innovation outreach strategy in which the University and its partners share knowledge and insights to spark social or economic advancement in spheres as divergent as health, entertainment and regional planning.

The NCMDD initiative is designed to create new research and economic opportunities around an existing industry cluster. "With so much exciting growth and development already happening in the medical devices industry in York Region, a research centre would be an ideal way to build on existing knowledge and expertise," says Mark Lievonen, president of sanofi pasteur Canada, the Canadian arm of the globe's largest vaccine maker. "For example, new discoveries made at the centre could result in collaborations with world-class companies to help commercialize them."

That kind of result is what government agencies are looking for as an important addition to current funding models for research & development. "Governments do a lot of investment in basic research, which is critically important in the long term," says Stan Shapson, York's vice-president research & innovation. "But governments also want to look at opportunities for earlier returns on investment. That's why it's also important for a university to take applied research and, in some cases, graduate training and experience out into the local community."

Putting new knowledge to work has become a matter of economic survival. The federal government released its strategy for science & technology in 2006 and emphasized the need to stay with the innovation curve through collaboration among stakeholders, a path the University started down in 2001 when its Office of Research & Innovation was created. "The federal strategy charts where the country needs to go, and York University is already there," says Shapson. "York is ahead of the curve."

By working with companies like sanofi pasteur, IBM, and the more than 40 other partners that are now part of the medical devices initiative, the University also helps its own reputation and intellectual agenda by creating opportunities for its researchers to find new areas of study and more resources to pursue them. Lievonen sees the partnership as a natural blending of the University's strengths in doing basic research and the corporate sector's expertise in applying the results.

Lievonen is also enthused about sitting at the table with so many different partners and learning from them, sometimes in unexpected ways. Through his company's association with York, Lievonen learned serendipitously of the University's research and innovation outreach in the entertainment industry, a sector facing challenges similar to those in his field. He says he finds unexpected value in what he calls "crossover linkages" with these other industries that help inspire innovative thinking.

The entertainment initiative he refers to is the Consortium on New Media, Creative and Entertainment R&D in the Toronto Region (CONCERT) – a public-private consortium created to support research & development, commercialization and economic development within the entertainment and creative industries. Stakeholders from companies large and small – including AMD, Motorola, Apple and Xenophile Media – as welll as governments and industry associations are sitting down together at the invitation of York University, Ryerson University and the Ontario College of Art and Design. Their task is to look at Toronto's competitive strengths and weaknesses in the screen-based entertainment industry and map out a plan to ensure the region's global competitiveness.

> 'We wouldn't have access to this depth of expertise without York's network'

"It's easy to lose sight of the fact that your strength and competitiveness as a company is tied to the strength of the region," says Jim Mirkopoulos, vice-president of Cinespace Film Studios. He also appreciates the universities' role as intermediaries. "Sitting at a table with a group of stakeholders and competitors who would typically keep proprietary information to themselves has been incredibly refreshing," he notes. "Everyone realizes we have to look at the greater strength of the industry."

Shapson echoed that point at the consortium's launch in February, 2007. "We have dropped our institutional affiliations to sit at the CONCERT table," he said. "Our competition is global and not with each other."

"CONCERT really is the model for this kind of effort," says Mirkopoulos, whose film studio business depends on highly-skilled employees who understand the latest technological innovations in movie-making, such as those developed by York's fine arts researchers and computer engineering scientists. "The universities are the key," he says. "They are bridging a major gap in our competitiveness. The convergence of the academic- and private-sector partners has been fantastic."

Learning about opportunities is the challenge addressed by another key outreach initiative York University is mounting, part of a national pilot project in what's known as Knowledge Mobilization. This effort brings the University's researchers in the social sciences and humanities together with human service providers in York Region to look for innovative ways of doing things.

One example is connected to the projected growth rate for York Region over the next 20 years – 34 per cent, much of it from immigration. To learn more about coping with such a rapid influx of new people, the Human Services Planning Coalition (HSPC) – a York Region-sponsored planning body with representatives from social service agencies, police, the regional public school boards, health care providers and the regional government – came to York looking for an alternative to a proposed multi-million-dollar demographic study.

Enter Professor Lucia Lo, a geographer in York's Faculty of Arts, who studies immigrant settlement patterns. HSPC learned about Lo's work through Peter Ross, York University's representative on the HSPC Research & Innovation Action Group, and was able to make plans for a new study that will draw on Lo's expertise and data her team has already gathered. The study also gives Lo a chance to extend her research and put it to immediate use in guiding regional planning – a partnership arrangement that demonstrates the value of Knowledge Mobilization. "It's a very important partnership," says Simon Cheng, director of human services planning for York Region and an HSPC director. "We have so many community agencies in our group and they told me how exciting it is for them to see such knowledgeable experts sitting at the table beside them with information they can access."

In the past, studies such as Lo's might have been arranged on an individual, hit-or-miss basis with specific professors, says David Dewitt, York's associate vice-president research for social sciences & humanities. Now, communities and researchers can find each other as easily as visiting a Web site or talking to a York representative at a committee table. "York is embedded and ubiquitous at every community table," says HSPC member Daniele Zanotti, CEO of the United Way of York Region. "This is a very engaged York U. We wouldn't have access to this kind of depth of expertise without York's network."

York University researchers are involved in projects covering a range of disciplines, says Dewitt. "Knowledge Mobilization encompasses a huge area from fine arts, cultural studies, through nursing, through psychology, business and law; it covers the full range that you can imagine." York's Faculty of Health, for example, is working with hospitals in the Central Local Health Integration Network to develop ways for the University's researchers and the hospitals' research needs to become partnered, creating opportunities for both. Working with community service providers in this way enhances the University's intellectual agenda as well as the community's ability to help itself, says Dewitt. "We're building capacity among all partners."

To Shapson, the key to York's outreach efforts, whether in science & technology or the social sciences & humanities, is a shared philosophy and belief in the value of true collaboration and its power to open new areas of opportunity. "Our partners trusted they could work with us," he says. "Once you have this trust, doors open and exciting opportunities emerge."

The Slavery Files

Paul Lovejoy and his team have created a world-class resource at York's new Harriet Tubman Institute for Research on the Global Migrations of African Peoples.

BY OLENA WAWRYSHYN

PHOTOGRAPHY BY ANDY LEE

The first time York history Professor Paul Lovejoy set foot in Alton, a historic town in Madison County, Illinois, a delegation from the local black community held a ceremony in his honour and treated him like a VIP. It was the late 1980s, and Lovejoy had been attending an African Studies Association conference in nearby St. Louis, Missouri. A colleague insisted that Lovejoy make a side trip to Alton where, overlooking the Mississippi, there is a massive monument – a 93-ft-high granite column surmounted by a bronze 17-foot statue – dedicated to the abolitionist Elijah P. Lovejoy, who was murdered in 1837. The newspaper editor and minister died defending his printing press from an angry mob opposed to his impassioned editorials against slavery.

Growing up in the 1950s, Paul Lovejoy was well aware of the role played by his ancestor Elijah – and Elijah's younger brother Owen, a prominent politician – in the abolitionist movement. Like Elijah, Lovejoy's father was a minister, who preached against segregation from pulpits around the state of Maine. As a youth, Lovejoy himself was a civil rights activist. Nevertheless, the York professor was overwhelmed by the reception in Alton. "Knowing what my specialization is, they welcomed me as if I were a brother," says Lovejoy.

So it was an especially poignant moment for Lovejoy when he oversaw the recent inauguration of the Harriet Tubman Institute for Research on the Global Migrations of African Peoples at York. "I was elated," says the historian and author of numerous books on slavery. And for good reason: aside from the sense of continuing the family cause, there was his appointment as director of the institute and its official opening by Governor General Michaëlle Jean, fittingly on March 25, 2007, the 200th anniversary of the British law abolishing the slave trade.

The new institute is devoted to the study of global migrations, history and heritage of African peoples. Unique in Canada in its research focus, it is named after Harriet Tubman, the Maryland woman who fled slavery in 1849 and then helped others escape through the Underground Railroad that moved enslaved blacks from the US to Canada.

The work of the institute crosses many disciplines. "The research draws on subjects ranging from music to biography to culture and religion," says Lovejoy. "We are interested in issues of identity and ethnicity, and all of these components have a gendered aspect."

Lovejoy's interest in African history originated during his years as a graduate student at the University of Wisconsin-Madison, home to one of the earliest African studies programs in the US. He learned Hausa, an African language, while completing his dissertation on the caravan trade in West Africa. Then, in 1971, Lovejoy came to Canada to take up a position in the History Department at York University, and has been there ever since.

Over the years, he has established a reputation as an eminent African studies expert through his research and the publication of numerous books, including what has become a seminal text, *Transformations in Slavery: A History of Slavery in Africa*. He also co-edited, with University of Stirling, Scotland, history

ISSUES OF IDENTITY: Hunt (left), Lovejoy and Addoun

Professor Robin Law, the biography of Mahommah Gardo Baquaqua, an enslaved African who was sent to Brazil, but escaped slavery in New York City and then journeyed to Boston and Haiti. During his research, Lovejoy discovered a Canadian connection – Baquaqua had penned his autobiography in Chatham, Ont., a fact previously unknown to scholars.

In the late 1990s, Lovejoy and a group of his History Department colleagues, including Professor David Trotman, the Tubman's Institute's associate director, and Professor José Curto, set up a departmental research centre focusing on the black diaspora. In the process, they built up a network of associates and institutional connections around the world and made York an international hub of excellence in the field.

The work of the Tubman Institute, which grew out of that centre, is global in scope because the movement of Africans was a worldwide phenomenon, says Lovejoy.

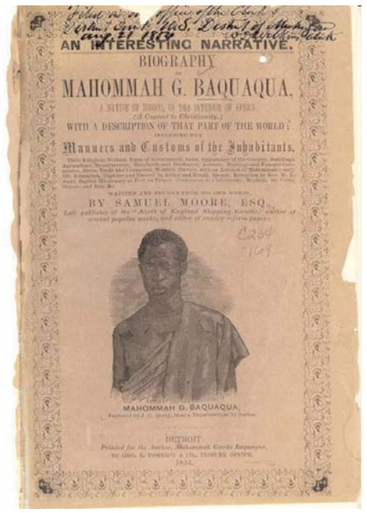
The institute has 44 associates representing 24 institutions in Africa, the Caribbean, Latin America, Europe, the US and Canada. Among them are the prominent Schomburg Center for Research in Black Culture of the New York Public Library and the Wilberforce Institute for the Study of Slavery and Emancipation at the University of Hull in England.

Armed with digital cameras and laptops, researchers from York and other institutions are carrying out fieldwork in at least 14 countries, digitizing historical documents which are then stored in the Tubman Institute's digital archives. The institute is developing a highly advanced database system that will allow wide access to the institute's large repository of information.

Many of the Tubman documents tell the forgotten stories of enslaved blacks. Thanks to the research of Nadine Hunt, who is completing a PhD in history under Lovejoy, more will know of the existence in 18th-century Jamaica of a young "negroe boy" named Fortune (valued at £45), a man recorded as Bobb (£60) and a woman named Cuba and her two children (£100). They were duly listed, with their deemed commercial value, as the property of the late Robert Mantle in the inventory of his estate from March 12, 1766.

Hunt found and digitized this document and many similar ones in the Jamaica Archives in Spanish Town, Jamaica. "I am looking at the economy in the Caribbean region in my dissertation, but I am also making a connection to the enslaved people because I think they are important. They provided the labour, and their story is an important one to tell," says Hunt.

The Saskatoon-born researcher also chanced upon a document that shed light on her own past. "My mother's family is from Paisley Village in Hanover, Jamaica, and I came across a reference in England last year about a Paisley Estate in Jamaica," she says. The document records that the estate was "owned by Samuel Cleland: 124 slaves, 120 stock, 3 white men, 3 white women and children, 76 hhds [hogsheads] of sugar." The village likely developed out of the estate.


AN INTERESTING NARRATIVE.
BIOGRAPHY
OF
MAHOMMAH G. BAQUAQUA.
WITH A DESCRIPTION OF THAT PART OF THE WORLD;
Manners and Customs of the Inhabitants.
BY SAMUEL MOORE, ESQ.
MAHOMMAH G. BAQUAQUA.
DETROIT.

ESCAPE TO FREEDOM: Baquaqua's book

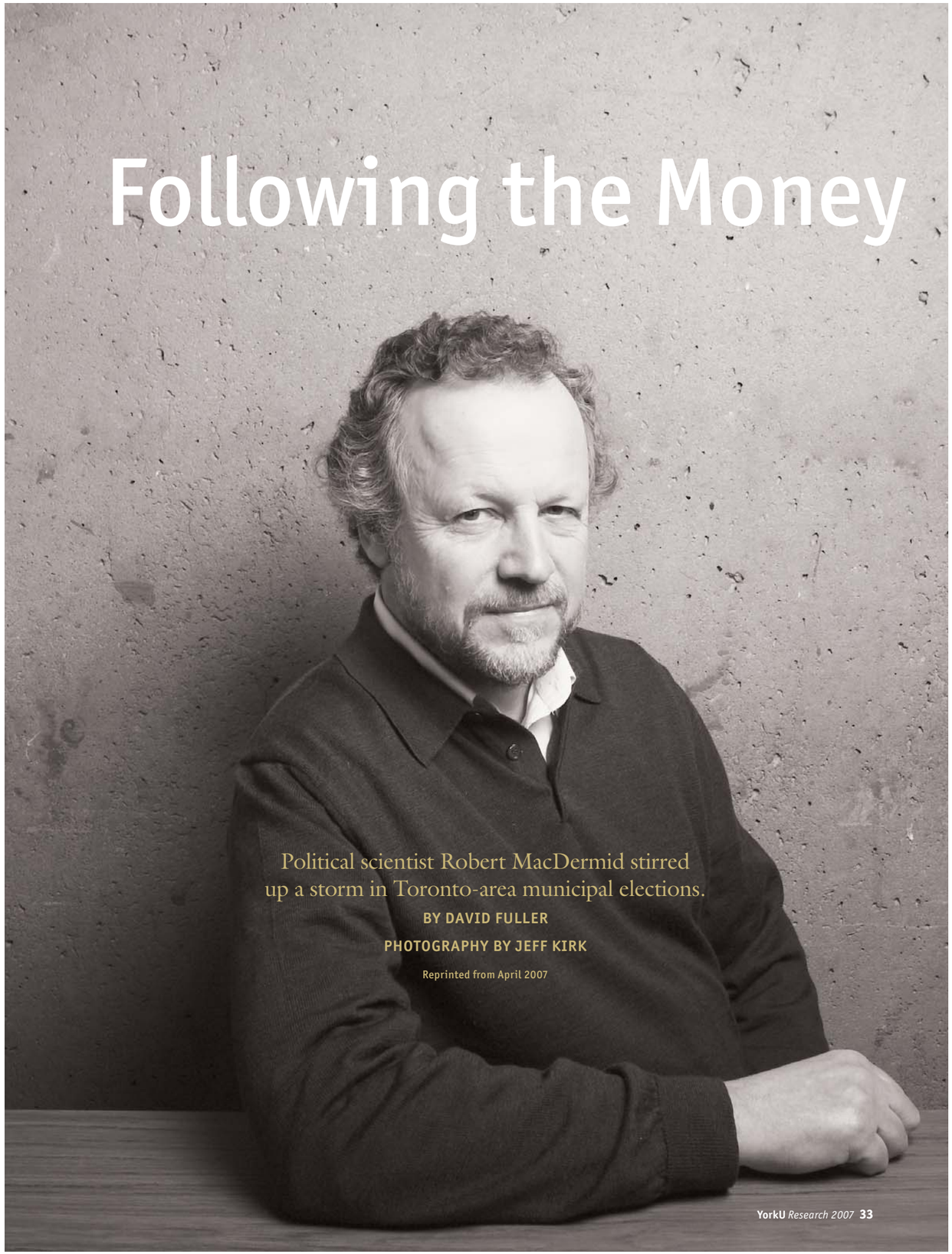
Another one of Lovejoy's doctoral students, Yacine Daddi Addoun, is digitizing 18th- and 19th-century archival material in Algeria, France, Mali and Portugal, relating not only to blacks enslaved by North Africans, but also to white Europeans who were captured by corsairs – sea-faring mercenaries – and held in North Africa. Documents Daddi Addoun has found include an emancipation contract granting freedom to 14 Portuguese held by private owners, and letters written by enslaved Portuguese to their government and families. Daddi Addoun, who grew up in Algeria, is using such source materials to compare perceptions and power relationships in slavery. He is also studying how attitudes towards slavery have changed in Islam.

Lovejoy says the studies taking place at the Tubman Institute can lead to social innovation. Research into cultures and diversity has practical applications in shaping public policy that tackles present-day social injustices, such as human trafficking, and in educating people to act as informed citizens of a global society.

Yet misconceptions persist, he says. For example, many people think that Canadian involvement with slavery was only in the defence of freedom through the Underground Railroad. In reality, it was more complicated. "They do not realize that there was slavery in Canada until 1834," says Lovejoy. Slaves were held in Upper and Lower Canada from the early 18th century. In 1793, the lieutenant governor of Upper Canada, John Graves Simcoe, famously passed the Act Against Slavery, but the law was gradual: it outlawed the importation of new slaves but did not emancipate those already held captive. Another largely overlooked fact, says Lovejoy, is that the enslaved in Canada included not only Africans, but also Native people.

The aim of the Tubman Institute is to sweep away such ignorance about the past and help society better understand the present, he says. "We have to understand that our combined past has involved the massive enslavement of African people during a particular time," says Lovejoy. "That has a legacy into contemporary times, right up to today and it takes shape in many ways."

Following the Money



Political scientist Robert MacDermid stirred up a storm in Toronto-area municipal elections.

BY DAVID FULLER

PHOTOGRAPHY BY JEFF KIRK

Reprinted from April 2007

Mention York Professor Robert MacDermid's name to a local politician in the Greater Toronto Area these days and you'll get a reaction. Which is odd, since mild-mannered academics, even if they are political scientists, seldom rate much notice from those caught up in the frenetic scramble for votes. For MacDermid, a professor in York's Faculty of Arts, that all changed in the spring of 2006, when he presented his latest study on election campaign finances at the Congress of the Humanities & Social Sciences held at York's Keele campus, just as politicians were gearing up for Ontario's municipal election battles. What he wrote made front-page news in the *Toronto Star* and sent candidates falling over each other trying to get on the right side of what his research revealed.

As the covert whistle-blower "Deep Throat" said in the 1976 Watergate film *All the President's Men,* the way to find out what's really going on is to "follow the money". MacDermid eventually reached the same conclusion as a political scientist. "I was brought up as a person who looks at polling data, and then I got interested in TV ads," he recalls. "When you realize how expensive the ads are, you begin to wonder, well, where does all the money come from?" During the 1998 provincial election campaign, MacDermid began studying lists of campaign contributors that were available online for the first time and noticed that many of them were developers. "I began to connect companies together and you quickly get a picture," he says.

In 2003, MacDermid was approached by members of VoteToronto, a grassroots organization that tracks politicians' voting records, who were interested in putting data he compiled from the 2000 election on their Web site. MacDermid's list of contributors to candidates for mayor proved a hit with Toronto journalists, who referred to the information in their coverage of the 2003 campaign. That election, which saw David Miller elected as mayor, turned on concerns about corporate influence thanks to the MFP computer licensing scandal and a push by pro-development councillors to build a bridge to Toronto's Island Airport.

Flash forward to the 2006 campaign and MacDermid's Congress paper. Journalists were by now accustomed to calling him for comments on election finance, so he guessed the media might be interested in an advance copy of his latest study, "Funding Municipal Elections in Toronto", in which he looked at the 2003 data on contributions to candidates for mayor and regional and local councils in 10 GTA jurisdictions – most of which were located in Ontario's threatened greenbelt. "They put it on the front page, for heaven sakes," recalls MacDermid, with a chuckle tinged with just a hint of mischief. And, like the proverbial cat among the pigeons, the study had political feathers flying as candidates rushed to explain why they had accepted campaign funds from the development industry.

The study was particularly telling in Vaughan, where both candidates in that city's bitter contest for mayor – Michael Di Biase and Linda Jackson – made it onto MacDermid's top-20 list of corporate favourites. Di Biase's campaign was funded 93.5 per cent by corporate donations, according to the study, compared with 77.3 per cent for Jackson's. As MacDermid points out in his study, the value of a developer's land bank is directly tied to political decisions on how it will be used, so there's powerful incentive to back your local developer-friendly politician. It's an imperative that offends MacDermid's sense of political fair play. "I mean, who would care if [the developers] spread the money across everybody, but, of course, they don't," he says. "They very specifically give it to candidates who are pro-development and, when they do support them, they tend to win overwhelmingly."

The kerfuffle over his research and the obvious boost it gave to progressive candidates' morale, if not always their vote tallies, might cause some to wonder if MacDermid is just a tad more than professionally interested in all this. After all, this son of a federal civil servant grew up in Ottawa, where politics is part of the air you breathe. He was a riding president for the NDP in his area and is now on the board of VoteToronto. But he dispels any notion that he is a career activist. "I started off in geography and geology, studying rocks," he says. Years later, when a friend won the local nomination for Bob Rae's NDP and asked MacDermid to run his campaign, he initially declined, explaining "academics don't do practical things like that." His interest in election data stems partly from an affinity for computers and the growing number of statistics he can crunch as he examines the wellsprings of power. But it also comes from a yearning to be relevant. "Academics often write about theory; they sometimes miss reality," he explains. "It's something I've never been happy with."

His professional detachment notwithstanding, MacDermid shows no sign of discomfort over being drawn directly into the political fray and plans to "follow the money" in future campaign studies. You can just hear the collective groans from city hall.

VOICES OF A DIASPORA

Haideh Moghissi explores how life – and attitudes – can change for Muslim émigrés like herself.

BY DAVID FULLER

PHOTOGRAPHY BY SOPHIE KINACHTCHOUK

Reprinted from October 2006

IT'S EASY TO UNDERSTAND why "political sociologist" Haideh Moghissi is passionate about her current research. She is examining the diaspora experience of immigrants from Muslim-majority countries, a five-year project that she and two York colleagues were to complete in late 2006. Moghissi lived the experience herself, fleeing Iran in 1984 with her husband and two sons to come to Canada and, eventually, York's Atkinson Faculty of Liberal & Professional Studies.

In 1978, as a founder of Iran's National Union of Women, Moghissi, along with most Iranian intellectuals, was involved in the struggle against Shah Mohammed Reza Pahlavi's heavy-handed modernizing of the country without real democratic reform. When hard-line Islamists co-opted what she calls "our revolution" and brought Ayatollah Ruhollah Khomeini back from exile early in 1979, Moghissi and her friends realized things had gone very wrong for their vision of the country's future. "We knew within three months," she says with a note of disappointment still evident in her voice, "but it was our country and we wanted to change things. We didn't want to leave."

Four years after the revolution, Moghissi and her husband – Saeed Rahnema, now also a York professor – secretly sold their house to raise the bribe money they needed to obtain passports and a way out of the turmoil. An onslaught against dissident intellectuals that intensified during the Iran-Iraq war, and the approach of military service for their eldest son, prompted the final decision to go. After stops in Austria and France, the family settled a year later in Kingston, Ont., which Moghissi had visited once before when her husband was a graduate student at Queen's University. The former head of the Old Manuscripts Division in Iran's National Archives, Moghissi still entered Queen's graduate school with some trepidation – it was more than 20 years since, as the daughter of a judge, she had completed her undergraduate law degree at Tehran University. After receiving her MA and PhD, she began her teaching career at Queen's, then came to York in 1994 as a professor of sociology.

The Diaspora, Islam and Gender Project began in 2001. With funding from the Social Sciences and Humanities Research Council of Canada, Moghissi and her colleagues have collaborated with researchers in Canada, Jerusalem, Iran, Britain and France to explore how the hostility that immigrants experience in new countries can strengthen their attachment to their homelands. "In many cases," says Moghissi, "discrimination, overt and covert racism, and exclusionary practices force Muslim immigrants to become more conservative and religious than they ever were in their original countries."

Protests earlier this year over anti-Muslim cartoons in a Danish newspaper are a case in point. Moghissi joined 10 other academics and activists of Muslim cultural backgrounds in signing a public letter urging Canadians not to be intimidated by Islamic extremists over the issue. "I don't like either the politics of silence or the politics of niceness on issues like this," she says. Not that she didn't empathize with the protesters. "The reactions to the cartoons, disproportionate as they were, reflected deep-seated grievances against virulent racism and rage against the aggressive, unbalanced policies of Western powers in the Middle East," Moghissi says. But she thinks Muslims fell into the trap and did what the extremist provocateurs wanted them to do.

Western reaction to the incident highlighted another concern for Moghissi: "the historical blindness that reduces the identity of people from predominantly Muslim societies to just religion and does not see our profound differences." A disappointing example was the Ontario government's attempt in 2004 to endorse the use of Sharia law in arbitration. That ill-fated initiative, with all its attendant difficulties for women's rights, still leaves Moghissi shaking her head in disbelief. "It is a colonial mentality," she says. "The government talked to the men with beards, the self-appointed 'community leaders' who do not represent the majority of Muslims in this country." Politicians, the media and some academics, she says, still can't liberate themselves from the perception that all people who come from Muslim-majority countries are a homogenous, conservative crowd with one voice. "This is pure racism."

If it sounds like Moghissi has maintained her activism over the years, she has – but at a price. "Even now, I don't feel safe," she says, alluding to right-wing criticism of her three books and numerous articles on women and Islam. As she embarks on a new, Ford Foundation-funded project with Rahnema, a political scientist, to study immigration and resettlement policies and the experience of Muslims in the West, Moghissi feels hopeful that younger voices are now pushing for justice and democratic rights in her home country. "It's time," she says. But it's hard to imagine a time when Haideh Moghissi will ever give up speaking her mind.

DUE SOUTH

In the name of science, York's Thomas Hawke has been wrestling seals in Antarctica.

BY DAVID FULLER

PHOTOGRAPHY BY KC ARMSTRONG

Reprinted from April 2006

PICTURE THE MOLECULAR PHYSIOLOGIST: a lonely, white-coated figure bent over a microscope, toiling with the minutiae of fleshy solutions in his dimly lit basement lab. Routine? Now, place him in a blazing red parka and jazzy sunglasses speeding across Antarctica's stunning frozen landscape on a snowmobile. Or, view his youthful face on the Internet, grinning in an explorer's makeshift digs a few hundred kilometres from the South Pole, answering challenging questions from high-school students at the opposite end of the world.

Put these images together and you've got a good composite picture of Thomas Hawke, professor in York's School of Kinesiology & Health Science, and his anything-but-routine job as a stem-cell biologist. And that's exactly how Hawke, a former professional lacrosse player and avid runner who specializes in muscle biology, likes it: serious science to challenge the mind and enough physical work to keep in shape. In fact, a shortage of challenge almost ended his career before it started when he considered dropping out of undergraduate studies at the University of Guelph. "If not for lacrosse, I probably would have dropped out," he says. But when he reached his final year at Guelph, he met a faculty member who was studying muscle biology and found the spark that ignited his smouldering sense of curiosity.

That interest in the science of physical activity led Hawke to explore the mysteries of muscles and made him a perfect candidate to join the team of Project B-018-M, a nine-week expedition that began in October, 2005, to study the amazing Weddell seals of Antarctica, organized by researchers from the University of Texas Southwestern Medical Center at Dallas. He was invited to join his three American colleagues on the trip because of his expertise in muscle stem cells. Being fit enough to wrangle seals as he took samples from them or to dig out snowbound storage huts was also a factor. It helped, too, that he had worked with team leader Shane Kanatous during three years of post-doctoral research at UT Southwestern. "That was a big thing for Shane, making sure everyone could get along," Hawke explains. "We were going to be together in small living areas and there was no place to go to get away from people." In his award-winning project Web site, www.polarscience.ca, which he maintained with help from Canadian science outreach organization Yes I Can!, Hawke described meeting fellow researchers Steve Trumble and Rebecca Watson and the sense of relief when they realized their shared interests and backgrounds would make for a harmonious sojourn.

But the trip wasn't without its concerns for the Faculty of Health professor, who joined

ICE AGE: Scenes from the team's Antartic visit – that's Hawke behind the sunglasses

York in 2003. As if his professional bonds weren't enough to think about, Hawke was also leaving Beth, his wife of six weeks, for the second extended period in their six-year relationship. The couple were also apart during her years studying in Toronto while Hawke worked in Dallas. "A long-distance relationship we were used to but it was still tough," he said. "We have a running joke between us: How can I miss you if you won't go away?" But the chance to travel to Antarctica to study the Weddell seal with its amazing ability to deep dive for long periods without coming up for air – a trait that has important implications for potential heart disease therapies – was too good to pass up.

The team's journey began with an 11-and-a-half-hour flight from Los Angeles to Auckland, New Zealand, followed by an hour's hop to Christchurch. There, team members boarded a US Air Force C17 jet for a five-hour flight 3,500 km due-south to McMurdo Station, located on the volcanic rock of Ross Island. On arrival, team members immediately started a week of training, learning how to live and work in the coldest region on the planet: everything from riding a snowmobile and studying the weather to radio communications and waste disposal. (For environmental protection, nothing – not even human waste – is left behind in Antarctica.)

For Hawke, who was making his first trip to this extreme climate, the training included a special initiation dubbed "Happy Camper School", an overnight survival test where rookies are given only a small field bag with the bare essentials: tents, some tools, a single-burner camp stove, water and dehydrated food. His group of fellow first-timers had to set up camp in a howling "Condition 2" storm with wind speeds of up to 102 kilometres an hour, wind chills of between -59 C and -73 C and visibility of less than 400 metres. And it was summer in the Antarctic. As if to underline the vagaries of conditions in this inhospitable land, the storm ended once they had pitched their tents, leaving the rookies with little to do but gaze at a stunning Antarctic sunset.

Weddell seals, the object of all their preparation, live happily in this environment and, in order to find them, team members had to travel an hour from camp in a clumsy vehicle called a Pisten Bully to holes in the sea ice where these amazing creatures come up for air. It was here that team members' physical fitness came into play. As one researcher gently wrestled a seal to hold it still, others took samples of muscle tissue using needles and bare hands – all the while observing standards of care for the animals' safety required by project sponsors, the National Science Foundation. Once collected, the tissue samples were packed onto a snowmobile and rushed back to camp by Hawke, who would then spend several hours processing them while the rest of the team made their way back in the much slower Pisten Bully.

The samples are critical to the project's two streams of research on Weddell seals and their remarkable ability to adapt to their environment. Hawke's work is focused on stem cells and their role in growth and regeneration of the Weddell's muscles with their unique properties. Team leader Kanatous is interested in a particular protein within the seals' muscles that helps with oxygen transfer and allows these land-based mammals to stay submerged for as long as 87 minutes. Both investigations are aimed at understanding how muscles – particularly human heart muscles – might be repaired after damage from heart disease. One potential therapy, mentioned in a newspaper clipping on Hawke's bulletin board, involves injecting stem cells into the heart to strengthen it. The still experimental procedure was performed in Thailand in 2005 on the ailing Hawaiian crooner Don Ho, who then resumed performing at age 75.

As he talks about stem cells and the different theories about their therapeutic potential, Hawke reveals the intense, inquisitive nature that is the stock-in-trade of all researchers. His experience on the Antarctic ice shelf, he says, has given him new research material for his lab – and renewed inspiration to delve deeper into the mysteries of physical life.

Shaken All Over

Christine Sismondo has stirred things up in the world of cocktails.

BY MICHAEL TODD

PHOTOGRAPHY BY KC ARMSTRONG

Reprinted from Summer 2006

When Christine Sismondo says "down the hatch", trust her, she knows what she's talking about. And so she should. Sismondo is author of a recent, definitive book on the history of the cocktail and cocktail arcana. Read it and you'll find out more than you probably ever thought you could possibly know about the drink – from its history and preparation to where to buy the world's most expensive one (Paris Ritz, 400 euros). And she throws in some classic cocktail recipes for good measure.

The book, titled *Mondo Cocktail: A Shaken and Stirred History* (yes, Sismondo worked her name into the title), is indeed "mondo" at 12 chapters, exhaustively researched, entertainingly written and full of wonderful lore about a drink that is both glamorous and tasty if well prepared. Mondo's chapters are each centred on a different drink, from the martini to the bloody mary.

Her publisher, McArthur and Company, did an initial print run of 7,500, and the media attention the book has received makes it seem like a bestseller. "I don't know exact sales figures yet," says Sismondo, "but word on the street says it has been selling well." Sismondo got the idea for the book when she took a year off from teaching. "I wish I could tell you it was all planned and strategic but it wasn't. It's really a cross-over book, not an academic one by any means."

A York grad (BA Hons. '96) and now a York researcher and lecturer in the Faculty of Arts (she teaches courses on new media), Sismondo says it was her undergraduate and graduate studies in American literature and history that piqued her interest in the subject of cocktails. So many literary, political and society figures she encountered had well-documented connections with alcohol – from Hemingway and his frozen daiquiri to Abe Lincoln's sordid past as a bourbon distiller – that "I felt the phenomenon needed to be written about," she says.

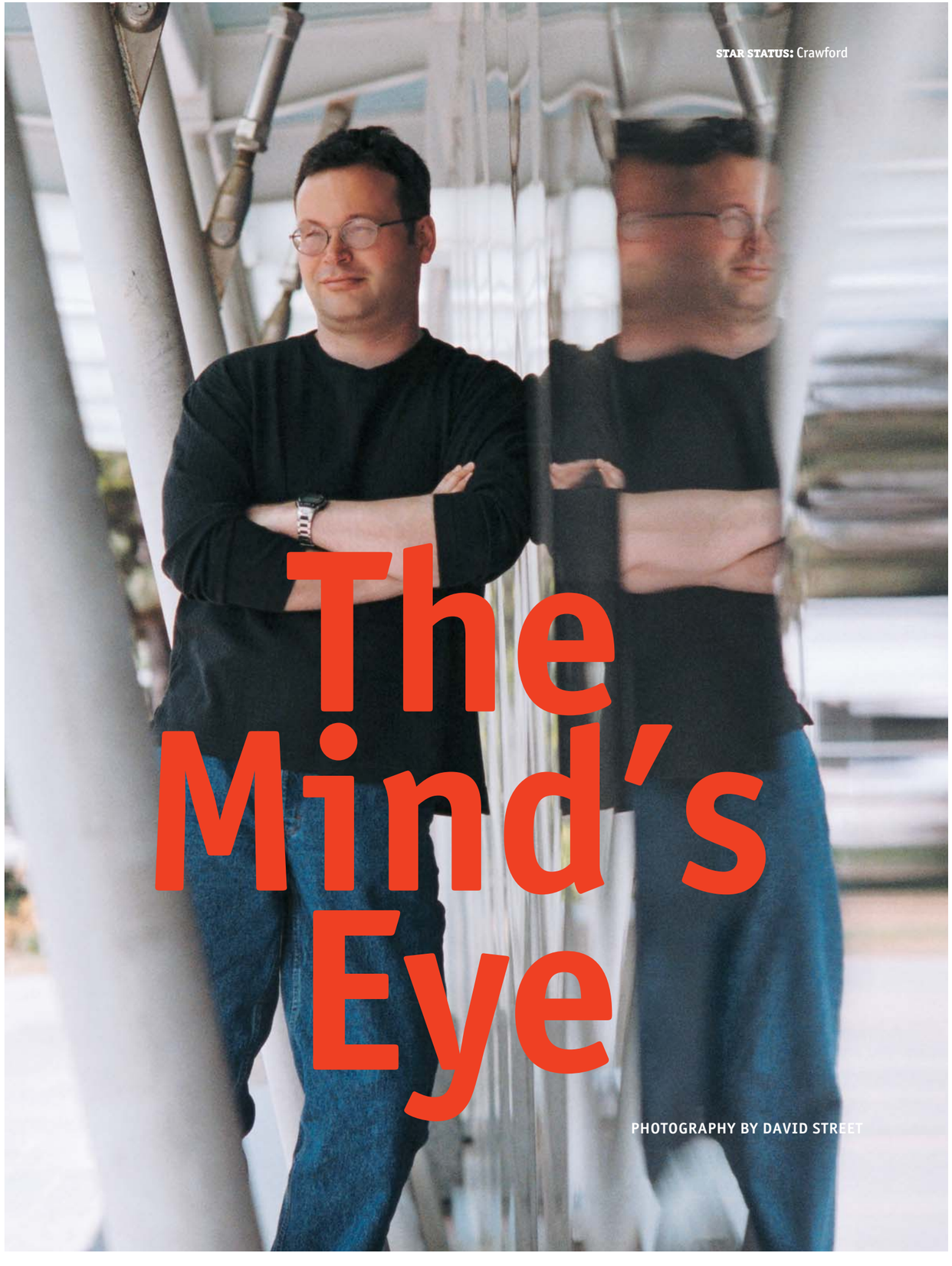
"Examining the use, or abuse, of alcohol is really a great barometer of how we see ourselves, our society," says Sismondo, who learned about cocktails the hard way – by making them as a real-life bartender for 15 years. (She hasn't lost her touch for mixing a good drink either, and was a recent finalist in a Toronto-based competition to create a signature cocktail for the Royal Ontario Museum's sparkling new addition.)

"I thought I could use cocktails to explore what they say about us as a culture, from gin and the Age of Reason to the family fortunes made during Prohibition." As an example, Sismondo notes in her book how the age of cocktails has influenced the language – from the cocktail dress to cocktail parties. "It's not even important that cocktails get served at those parties," she says. "Just by announcing that's what you're having people know it's a particular time of day and event. It denotes a certain toniness. Cocktails are a terrific entrée into the culture. They give us access to literary history and theory, colonialism and even some scientific history."

As a devoted culture watcher (she has a blog and has written widely on food and done many articles on the food industry, including pieces on restaurants with S&M themes), Sismondo had noticed that pot-distilled whiskies, microbrewery beers, and fruit coolers were taking their toll on the traditional liquor cabinet. Sales of time-honoured staples like rye, scotch, gin and brandy were plummeting. But she also noted a trend in the resurgence of the classic North American cocktail. She attributes that to consumers wearying of so-called pre-mixed martinis (bearing little resemblance to the gin-and-vermouth original), and a renewed attraction to gourmand culture, which brought with it a reinvigorated curiosity about the cocktail itself.

Sismondo came by her fascination with the world of bars and mixed drinks as a kid while travelling widely with her parents. "We'd stay in hotels and my mom and dad would always drag me along to the bar where I'd soak up the atmosphere and eat ice cream while they sipped their martinis. As a kid I always thought it'd be a great job, it looked so sexy."

Now that she's finished her cocktail book, she is focussing on future projects like a book on "people's vices and the narrative of addiction", she says. "I find the public reaction to legal and illegal substances fascinating. Maybe it's because I grew up in Ottawa where not much happened. I've found vice has always held a special attraction for me. Sex, gambling, drinking. As fodder for a writer, it's all good."



STAR STATUS: Crawford

The Mind's Eye

PHOTOGRAPHY BY DAVID STREET

Doug Crawford, winner of the 2005 Steacie Prize, gave up his guitar for brain research. **BY MICHAEL TODD**

Reprinted from October 2005

IT WASN'T UNTIL HIS THIRD YEAR at the University of Western Ontario, while an undergrad, that Doug Crawford had his epiphany. That's when he decided to stop playing electric guitar three hours a day, and concentrate more on studying science. "At the time, I had the usual fantasies about becoming a rock star," says Crawford, who comes from a family with a farming background in southwest Ontario. He was the first among them to attend university.

Although he's not on stage cranking out tunes, Crawford has still earned star status. In spring 2005, he received the prestigious Steacie Prize. The award is given to a promising young Canadian scientist or engineer who is 40 or under. Essentially it's the Canadian science establishment's version of an Academy Award for its younger members. Past Steacie honorees have included such scientific big guns as chemist John Polyani, who went on to win the Nobel Prize.

Crawford, who holds the Canada Research Chair in Visuomotor Neuroscience at York, is also a member of York's Centre for Vision Research and a professor in the departments of Psychology, Biology and Kinesiology & Health Science. He's in charge of a lab that's engaged in three areas of vision research: eye-hand coordination; 3-D gaze control; and trans-saccadic integration (piecing together perceptions across different gaze fixations). In part, the award – York's first – recognizes the contributions to brain science made by Crawford and his interdisciplinary team of 20 researchers.

"I wasn't your prototypical geeky science kid," says Crawford. But he was always very curious about the natural world and how it worked. "As a child I was interested in frogs, bones and rocks and that kind of thing. I remember one day showing up on the back porch with a decomposing raccoon and asking my mom if we could do something that would strip all the flesh off it. I think there were a few childhood dissections sprinkled in there, too. And in Grade 4 I did a project on the human body."

One curiosity – considering that much of what Crawford and his labs now study is concerned with vision and the brain – is that in Grade 5 he proposed a project to his teacher on the vision of his pet tropical fish. "I wanted to know how they could see, or what it was they were seeing. It's strange when you look back on things like that."

But Crawford says his interests as a university student weren't all science-related. He had an abiding interest in philosophy. "I was interested in the human mind and body. And now here I am looking at visual systems as they relate to our brain – our minds, if you want to think of it that way."

Philosophy, he says, still very much ties into what he does or, at least, his approach to science. "I'm interested in basic science but I've always tried to find a medical application for what I do. My work can help particularly where you have people with stroke or trauma damage to their visual or motor systems."

He and his collaborators recently released a groundbreaking study (appearing in the April issue of the respected journal *Nature Neuroscience*) that should aid stroke and head injury victims' rehabilitation. "We showed that our theory of spatial memory and eye-hand coordination can explain the problems observed in patients with damage to the parietal cortex of the brain," says Crawford.

"The question is: How do you know – after you've looked at an object and then are looking at something else – where that original object still is? How are we able to reach for it, more or less accurately, without actually looking at it?" asks Crawford. The scientists knew the brain creates visual maps (and keeps revising them) as we move our head and our eyes, he notes. "We showed this earlier using computer models, behavioral recordings and brain imaging, but this time we were actually able to use these findings to explain some unusual problems in brain-damaged patients. Amazingly, we found that these patients could reach quite normally to remembered objects, or quite poorly, depending on how they turned their eyes just before their reach." The simple secret, Crawford found, was that people with damage to the right side of the parietal cortex needed to look left, and vice versa. "So this is something they can learn to do to help them recover, and it is also a way for doctors to diagnose their problem."

Crawford says the parietal cortex relies on one fairly simple spatial "language" (or map) to guide our movements, whereas other areas of the frontal cortex can be thought of as "multilingual". Medical researchers are now working on ways to "hook up" these areas with prosthetic devices which may allow stroke or other trauma patients to regain certain movements.

Expect more such insights from Crawford's lab. "What I really enjoy these days is the synergy between training students, and research itself," he says. And if he wasn't busy being a scientist, what would he like to be doing? "Working as a writer. I'm too old for the rock guitar thing now."

Urbane Researcher

Roger Keil leads a new institute at York focused on the city.

BY MARTHA TANCOCK

PHOTOGRAPHY BY SOPHIE KINACHTCHOUK

Reprinted from Summer 2006

YORK HAS ALWAYS BEEN ON THE CUSP, geographically speaking. Neither downtown nor in the suburbs, the Keele campus is situated in what Roger Keil calls the "in-between city". It's the fluid periphery where global cities like Toronto really do their morphing as immigrants settle and shift. And it will distinguish the new City Institute at York University from other urban research centres. "We're at the line where the old city meets the new city, the interface between Toronto and the outer city. We're right in the middle of a completely new landscape of urbanity," says the environmental studies professor and the institute's first director. "The in-between city is where we are. We have a unique opportunity to say something others cannot."

That's not to say the City Institute will focus only on its own backyard – or that urban research is a novel endeavour at York. In fact, researchers at the University are renowned for their global expertise on city issues, ranging from housing and the urban economy to immigration and transportation. Until now, however, they have worked disparately. The City Institute will change that.

"We're not inventing something," says Keil. "We're already doing urban research at York. The City Institute is an organizing principle, an attempt to bring things together." Among 1,400 faculty, 80 of whom have been identified as urban scholars, such an institute will foster awareness and lead to more collaboration and interdisciplinary projects. To the outside world, governments in particular, it will signal that York is ready to tackle city-related research.

Considering Keil's academic pursuits, it should come as no surprise that he sees the City Institute as a robust research centre that is also socially responsive. "I think the University needs to play an active, critical and empathetic role in the city. The city is not a laboratory rat. It is also our home."

Toronto has been Keil's home since 1991. Multilingual and cosmopolitan, the 48-year-old German lives in the trendy Beaches area with his two children and Swiss wife Ute Lehrer – also a York environmental studies professor specializing in urban research. Keil has lived in three major metropolises, including Frankfurt and Los Angeles. "I consider Toronto one of the luckiest things to happen to me. It's the best place I have ever lived in my life." That's high praise from a scholar of the planet's truly global cities and a world traveller who revels in ethnic, social and cultural diversity.

Keil has always been interested in cities but it wasn't until he was well on his way to a PhD that he found his calling. Out of high school, Keil wanted to be an urban planner and before he even enrolled at university he had a thesis in mind: he would design a city entirely accessible to wheelchair-bound people like his younger sister, a concept well ahead of its time. "She influenced my whole outlook on the world," he says of his enduring interest in social and environmental justice.

Instead of urban planning, he went for a teaching degree, but seized a chance to take urban and black studies – and learn all about America's inner-city ghettos – during a third-year exchange to the University of Illinois. Back in Frankfurt, he rejected teaching in favour of doctoral studies in political science. One day, casting about for a thesis, he read an article by John Friedmann in which the leading American urban planner observed the emergence of a network of world cities. "A whole bunch of lights went on in my head," says Keil. He would study global urbanization. He bought a ticket to Los Angeles to do field research and completed a doctorate in urban politics.

Now Keil teaches courses on global cities, urban and regional environments, politics and planning. Co-author of *Nature and the City: Making Environmental Policy in Toronto and Los Angeles,* he is also editor of the *International Journal of Urban and Regional Research*. And he's a founding member of the International Network for Urban Research and Action, which is involved in urban activism and research in different cities.

Eighty per cent of Canadians now live in urban areas, Keil points out. "York is at the doorstep of a fantastically rich growing immigrant metropolis. There are some pretty big urban issues out there." York's City Institute will be a catalyst, a "one-stop urban research centre" where researchers work with community partners to address those issues, spawn real-world solutions to big-city problems – and "move forward to create a better city."

As York expands its graduate program, doctoral student Andrea Martin looks at the plight of kids with chronic pain.

BY MICHAEL TODD

PHOTOGRAPHY BY SOPHIE KINACHTCHOUK

Reprinted from February 2007

When Children Suffer

ANYONE WHO HAS CHILDREN knows that the experience of a child in pain is traumatic – not only for the victim but also for the caregiver. So it seems astounding that – until relatively recently – children were thought to experience pain differently from adults. The result? Often children with post-operative pain, or long-term chronic pain from cancer or other illnesses, suffered needlessly. The medical community came late to the idea that children experience pain – well, painfully.

It was this disturbing discovery that propelled Andrea Martin, now a York PhD candidate in psychology, into the world of pediatric pain research. It happened at Toronto's Hospital for Sick Children where she was working for a year as a research technologist, in between completing her BA at Queen's University and beginning her master's in psychology at York.

"During that time I had access to a lot of research talks and rounds," says Martin. "One of those events included a talk on pediatric pain and I was shocked to hear that only a few decades ago the medical community didn't believe children experienced pain the way adults do. The prevailing feeling was the nervous system in children was underdeveloped compared to adults. As a result, acute pain and ongoing chronic pain was under-treated in children. That's when I got interested in exploring the whole area of how children experience pain."

Martin's ground-breaking research looks at the impact of age and gender on long-term health outcomes for children with chronic pain, or CP. At 27, she's already been published in a top international journal in the field and has made several presentations at national and international academic gatherings. "There's mounting evidence that CP experienced in childhood impacts pain experienced later in adulthood," she says. "It's a complex phenomenon. We define chronic pain, as distinct from childhood's usual bumps, cuts or bruises, as any significant pain that lasts three months or longer. CP is a poorly understood problem that affects all aspects of children's lives – family, school, friends, self-esteem and quality of life."

Researchers such as Martin are part of a growing cohort of young academics York hopes to attract in the coming years. The latest *University Academic Plan* calls for a significant increase in graduate enrolments to bolster the University's research culture and enhance its academic excellence. Already, there are some 5,000 graduate students doing research in approximately 45 different master's and doctoral programs, making York's Faculty of Graduate Studies the second largest graduate Faculty in Ontario. (In 1963, FGS was launched with 11 graduate students in a single program.) York's plan is to increase both the numbers and the proportion of graduate students in the total student body.

At the same time, as York gears up for its 50th anniversary celebrations in 2009, it has launched the largest fundraising campaign in its history – "York to the Power of 50" – with an ambitious goal of $200 million. One of its key priorities is to recognize and support the graduate research work of students such as Martin. "Support is especially important," says Vice-President Academic Sheila Embleton. "Both financial and mentoring support. It's a highly competitive environment now and that means along with funding we have to provide outstanding programs and opportunities to contribute to the University's research and teaching enterprise."

Martin's work is clearly going to make a difference. In order to capture a diverse array of children with CP, she surveyed young people who had attended the Hospital for Sick Children's specialized pain clinic. Her study explored the impact of age, sex (the physiological male and female makeup) and the presence of associated psychosocial factors on long-term pain and disability outcomes. The final study included 143 children and adolescents – 95 females and 48 males, aged 5 to 23. "We need longitudinal studies to examine developmental changes in the transition from childhood to adolescence, and adolescence to adulthood," she says.

Martin found a high proportion of children diagnosed with chronic pain continued to experience it for a prolonged period. And for those who do, its frequency increased with age. Of 89 patients still experiencing pain, 67 per cent reported that it interfered with their life in many areas, including their ability to attend school, to go out with friends and work at a job.

Martin also found that females were significantly more likely than males to report continuing pain, to use specific pain control methods, and to receive treatment. "These findings may reflect a gender difference in North American society when it comes to reporting pain," says Martin. "Females may be more willing to report pain, whereas males are often expected to be 'strong and brave', so they may endure pain longer, unlike females, before taking medication."

Her recommendations? "Our findings indicate the need for more research to evaluate the effects of treatment on long-term outcomes. When psychosocial factors are identified as contributing to children's pain and disability, clinical teams need to ensure parents and children understand the role of those factors as well as the importance of psychological therapies in conjunction with pharmacological treatment."

TO GET THIS FAR, Martin has held prestigious, highly competitive external scholarships from both the Natural Sciences and Engineering Research Council of Canada and the Canadian Institutes for Health Research. She has also received important support through an Ontario Graduate Scholarship (OGS), a matching program in which the provincial government adds $2 for every $1 donated through the York University Foundation, thereby tripling the impact of the gift. "Securing gifts for graduate student support, including ones that are matched by the OGS program, is a fundraising priority of the York to the Power of 50 campaign," says Paul Marcus, president and CEO of the York University Foundation. FGS interim dean Ronald Pearlman points out that "much of the innovative research at a university is done by, and with, graduate students. Support for these students, to allow them to fully devote their time to their studies and research, as well as providing them the space to be creative in their thesis and dissertation work, is essential."

York is also at the forefront of a national agenda, notes Prof. Joel Katz, Martin's PhD supervisor and Canada Research Chair in Health Psychology in the Faculty of Health. "The benefits of funding initiatives for trainees and young investigators are far-reaching, and extend beyond the direct effects the research has in improving the lives and health of Canadians," says Katz. "Funding for the next generation of scientists will also help Canada retain and attract highly qualified people who might otherwise seek employment elsewhere."

Needless to say, Martin has her own feelings about getting the backing she needs. "A PhD takes a long time to complete," she says. "It can be challenging to support yourself and live and still get your work done. When you add up the costs of travel to a conference, for instance, it gets expensive. Yet it's important to share ideas with colleagues – and get the message out that York has great research going on! Having this support means a great deal." To her, and to the kids in pain.

WAR OF THE WORLDS

York scientists are at the forefront of the battle against invasive species.

BY DAVID FULLER

PHOTOGRAPHY BY GEOFF GEORGE

Reprinted from October 2005

The alien invaders have been among us for years. They came quietly, unobtrusively: some by air, others by land and sea. Most were invited to our shores by complacent citizens, serene in their assurance of their empire over nature. As their numbers grew, the invaders gathered strength, preparing for the wave of assaults now crashing upon us. Habitats have been destroyed and victims have suffered starvation, convulsions, comas and death. It is truly a war of the worlds.

Is it science fiction? Not at all, says ecologist Dawn Bazely, professor of biology in York's Faculty of Science & Engineering and co-author of *Ecology and Control of Introduced Plants* (2003). The invaders are all too real, and Bazely and her colleagues are the real-life scientist heroes looking for ways to save our economy, habitats and lives. They have realized that, while scientific research is an essential part of the solution, this is a broad social, political and ethical issue. Their interdisciplinary counterassault forms part of a global effort to understand and control invasive species as diverse as the microbic SARS virus and the 25-metre-high Tree-of-heaven that can grow out of a crack in cement. The danger can literally hit home. In some residential neighbourhoods, notes Bazely, "we ought to document how property values have declined because all the trees have been chopped down to stop the Asian long-horned beetle."

Invasive non-indigenous species – INIS, or invasives, as they're sometimes called – represent just a tiny fraction of the 1,442 non-indigenous species that inhabit Canada's lakes, forests and farms, most of them introduced, accidentally or intentionally, by humans. But these keystone species dominate the ecosystems they settle into, causing disruption to everything there. Researchers such as economist Peter Victor of York's Faculty of Environmental Studies (FES) are still trying to accurately assess the economic impact of invasives but he pegs it somewhere between $13.3 billion and $34.7 billion in Canada. The figure is US$125-140 billion south of the border.

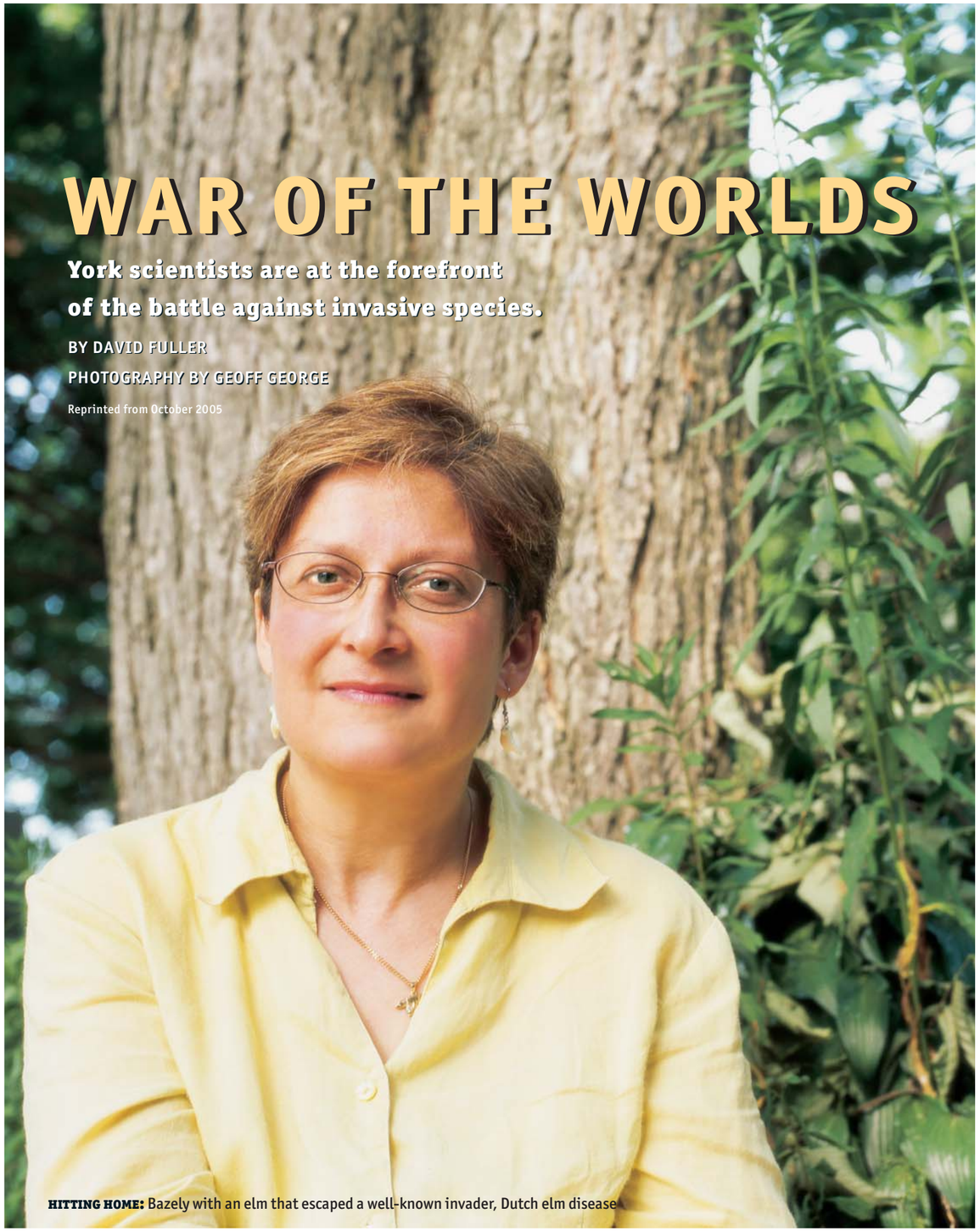
In 2004, the York Centre for International & Security Studies and York biologist Laurence Packer organized a national conference in which participants from fields as diverse as mathematics, philosophy, ethics and the law looked at a wide range of issues relating to invasive species. The event highlighted York's growing expertise in this struggle. One of the most notorious aquatic invaders of the 1980s, zebra mussels, shut down the water supply of a town in Michigan for three days thanks to its capacity for rapid growth in the nitrogen-polluted waters of the Great Lakes. It and another species from eastern Europe, the spiny water flea, are the focus of York biologist Norman Yan's research for Ontario's Ministry of Natural Resources at a field laboratory in Dorset, Ont. Jocelyn Martel, biology professor in Glendon's Multidisciplinary Studies Department, has charted the land-based invasive Norway maple in his ongoing research into interaction between plants and herbivores.

The deadliest and most costly arrival of recent years came to Toronto and other cities by plane, in the lungs of travellers infected with the SARS virus. Another potentially fatal airborne invasive, West Nile virus, flew into our habitat on infected mosquitoes. How these threats to human health spread and interact with the environment is the subject of mathematical modelling research led by York's Jianhong Wu, Canada Research Chair in Applied Mathematics. At a workshop on Mathematical Modelling of Invasive Diseases held at Winnipeg's National Microbiology Laboratory, mathematicians, public health researchers and two ecologists discussed the need for an interdisciplinary response. Bazely, who spoke at the meeting, was delighted at the inclusion of ecology, which is often separated from health research.

There are some experts – the "learn-to-love-ems", as Bazely calls them – who contend we're overreacting and cite the benefits of, for example, zebra mussels. These creatures' feeding habits do contribute to clearer water that promotes the growth of water plants and a more hospitable environment for ducks and other desirable species. But, with the high cost of controlling the mussels' spread into water systems, they are still considered an undesirable menace. To better define the term invasive, researchers like York FES Professor Leesa Fawcett, who studies public attitudes and environmental education efforts about pests and invasive species, hope to clarify the answers to questions such as "what is a pest?" and "who decides which species are dangerous and why?" Her FES colleague Jennifer Foster, an expert in ecological restoration, has written about the relationship between native and exotic species, questioning assumptions that the exotic varieties are universally damaging. It's a complex issue – after all, Canada's wheat and cattle originally came from elsewhere. Bazely agrees that most introduced species have little impact on ecosystems – it's just that it doesn't take many to wreak havoc.

The Canadian government is waking up to the economic impact of invasive species, and has set aside $85 million in funding. Bazely has attended many meetings with government staff developing something she sees as urgent: a Canadian National Strategy on Invasives, echoing similar policy and legislation efforts in Europe, Australia, New Zealand and the US.

To Bazely, all the activity has already produced a helpful result, one that York is actively promoting: increased collaboration among researchers Canada-wide. "Academics," says Bazely, "are actually having conversations with academics from other disciplines they wouldn't normally have." The war isn't over.



HITTING HOME: Bazely with an elm that escaped a well-known invader, Dutch elm disease

Emotional Connections

York's Stuart Shanker is helping to pioneer a groundbreaking method of treating children with developmental disorders. **BY DAVID FULLER**

PHOTOGRAPHY BY JEFF KIRK

Reprinted from February 2006

STUART SHANKER IS FUN to talk with. He's engaged, enthusiastic, encouraging and he listens well. So it's little wonder he was such a big hit with the kids at a Toronto daycare in 2005 when he dropped by to talk about his work. Being preschoolers, they had no idea he was the director of an early childhood development research facility receiving $5 million that summer day – York's largest-ever private research donation. They also didn't care that he is an Oxford graduate with five degrees and a Distinguished Research Professor of philosophy and psychology in York's Faculty of Health. All they knew was that their friend Stuart was sitting on the ground with them, eye-to-eye, including them in all the excitement.

The ground-level meeting with children was more than a photo opportunity for the assembled media who had come to hear about the launch of the Milton & Ethel Harris Research Initiative (MEHRI) that Shanker heads. He was demonstrating a fundamentally important interaction between children and caregivers and an intervention technique for helping children learn, especially kids with disabilities such as autism or attention deficit hyperactivity disorder. It's a direct response to what he calls the "old genetic determinist idea" that some children are born with a mental health disorder and there's not a lot you can do about it. "In fact it's not like that," he says. "The child may be born with significant biological challenges which, in a certain environment, will lead to these disorders, but that doesn't mean we can't figure out ways of intervening to try to prevent this from happening." By interacting emotionally with the children at the daycare, Shanker was demonstrating the pioneering clinical technique that promises to make York a world-leading centre in evidence-based research on the early identification and treatment of children with developmental and other sorts of disorders.

Developed by his colleague, Stanley Greenspan, clinical professor of psychiatry and pediatrics at George Washington University Medical Center, the technique is known as DIR, short for Developmental, Individual-Difference, Relationship-Based model. It is based on the idea that emotions conveyed by parents or caregivers when they interact with a child spark the development of complex connections in the brain without which the child cannot develop language and other skills. Using this technique, Shanker says parents and therapists can re-establish a child on his or her trajectory of emotional development, even in severe cases where traditional therapies have failed. The groundbreaking theory about human evolution, intelligence and thinking that lies behind this technique was the subject of *The First Idea* (Da Capo Press, 2004), the book by Greenspan and Shanker that won an award as psychology book of the year and first attracted the attention of Toronto-based philanthropist Milton Harris. As an entrepreneur with an interest in human brain development, Harris, who died in 2005, was already supporting anthropologist Jane Goodall's work with primates when he read the book.

In the early '90s, Shanker studied primates with Sue Savage-Rumbaugh of the University of Georgia. When they received a research grant for their work on bonobo apes and language acquisition, it included a facility for treating autistic children and a condition that the study would include child research. That became Shanker's brief. A specialist on the writings of 20th-century Austrian philosopher Ludwig Wittgenstein, he found himself working with autistic children, trying to teach them how to communicate. Shanker the philosopher had become a psychologist. The transition was a natural one for him: at Oxford he studied Wittgenstein's language theories while he delved into the latest thinking on knowledge development in infants with leading experimental psychologist Jerome Bruner. His background prepared him for the day, in 2004, when Harris introduced him to Goodall. "Anyone familiar with Jane's work will immediately realize that the developmental hypothesis Stanley and I present in *The First Idea* was one of Jane's most important arguments," Shanker says. "She saw the importance of caregiving and she saw that these caregiving styles get passed down socially from one generation to another, not genetically."

The interdisciplinary research, which Shanker says York is "unbelievably, uniquely positioned for", has its inspiration in dynamic systems theory, which is transforming many fields of scientific research, including anthropology, biology and primatology. It also informs the thinking of the scientist members of the Council of Human Development, an international interdisciplinary body co-directed by Shanker and Greenspan. Their guiding principle is that early childhood – as early as 4 to 6 months – is the most important time in a human being's development. "We're bottom-up scientists," Shanker says. "If we save the life of one kid, that's enough for a lifetime's work. So we are very focused on how we can get to the individual family and provide them with the tools that will help them maximize their child's development."

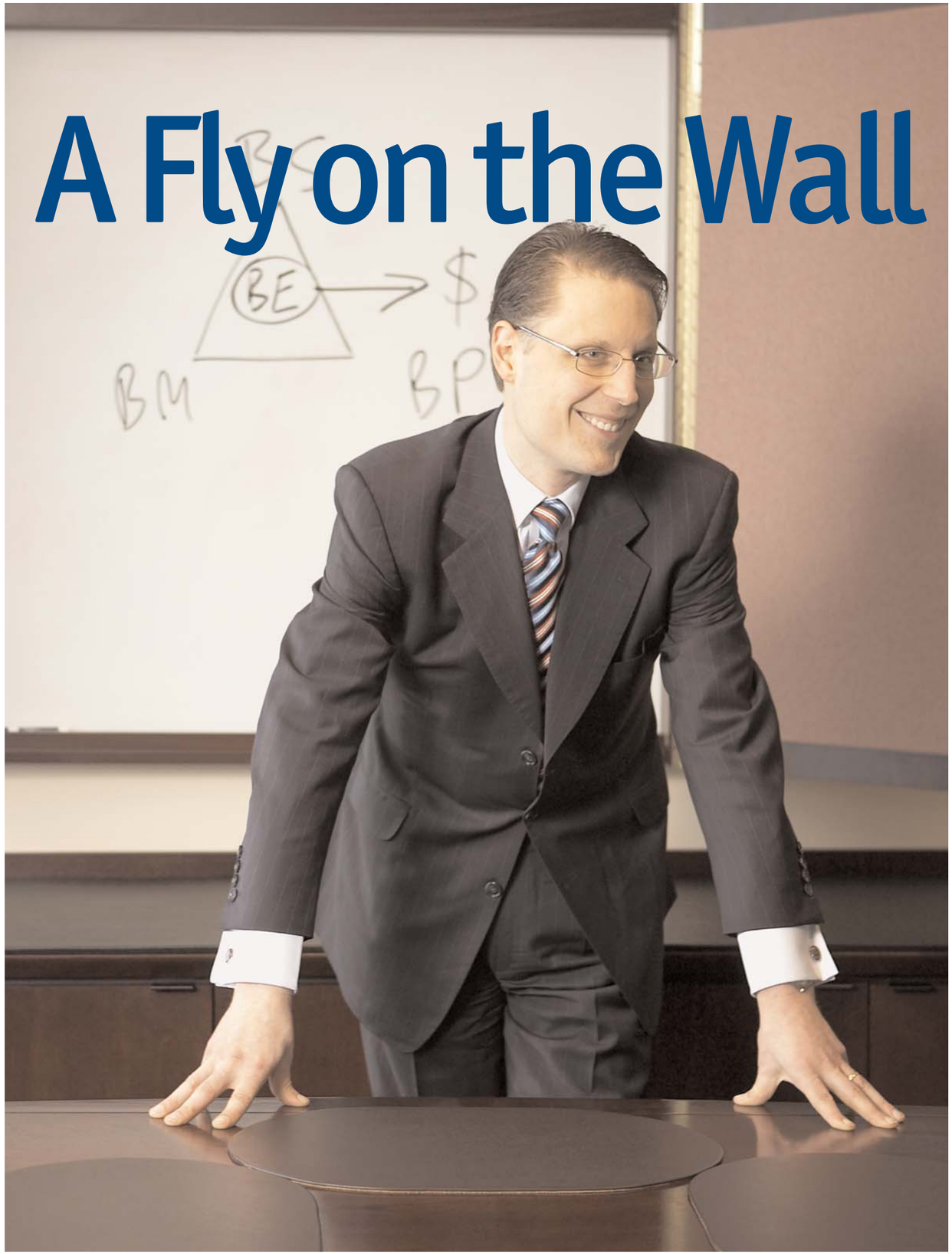
It is this prime directive that motivates Shanker to happily throw himself down in the sand to talk with three-year-olds. He looks forward to the day when he and MEHRI's team, led by researchers Devin Casenhiser and Jim Stieben at the Atkinson Faculty of Liberal & Professional Studies, can develop a protocol tailored to individual learning styles that will help identify a child at risk and devise a program to maximize that child's developmental potential. That's when he'll know for sure, the first idea truly was a good one.

A Fly on the Wall

Richard Leblanc boldly went where few scholars had gone before: inside the corporate boardroom. **BY MARTHA TANCOCK**

PHOTOGRAPHY BY ANDY LEE

Reprinted from December 2006



RICHARD LEBLANC'S LIFE CHANGED forever on March 4, 2003. That was the day he defended his doctoral thesis on corporate governance at the Schulich School of Business, and the memory of it still makes the 41-year-old York professor flush with pride. After he'd finished the oral defence, members of the panel stood up, extended their hands and said: "Welcome, Dr. Leblanc." They had accepted his dissertation without asking for a single revision.

Suddenly he had six free months ahead, six months he'd reserved for thesis revisions. What would he do? He and his girlfriend Nancy Cote, whom he'd met at law school in Windsor, decided to get married. But when the Catholic priest insisted they attend pre-nuptial classes for 14 weeks, Leblanc balked. "I didn't want to go to school any more." He was 37 and had spent his entire life at school earning one university degree after another. He and Nancy flew to Las Vegas, lined up at the Little White Wedding Chapel and took their vows. It was March 15, the same day *The Globe and Mail* happened to publish a story about his ground-breaking research on how corporate boards really work. The phone began to ring and ring. While her groom did media interviews in their honeymoon suite, the bride played the slots downstairs.

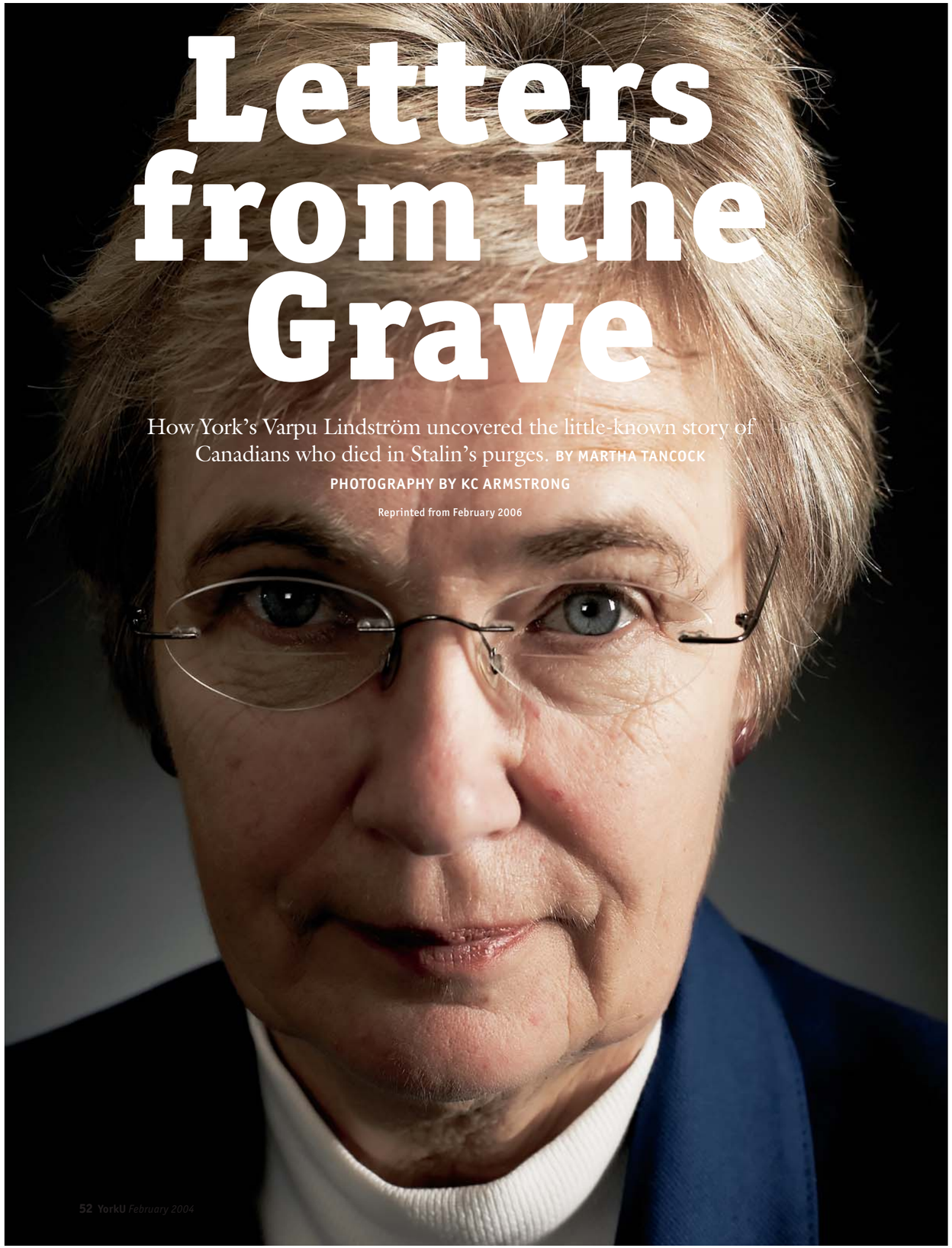
Leblanc is thought to be the first scholar to gain such wide-ranging, unfettered access to the meetings of corporate boards. Originally interested in studying how board structure affects board performance, Leblanc eschewed the usual analysis of board documents for a fly-on-the-wall approach. Nobody had ever tried this before. Once one board let him in, others were quick to acquiesce. Over five years he attended meetings of 21 boards – of financial institutions, oil and natural resources producers, hi-tech companies, non-profit agencies and Crown corporations – and interviewed 194 high-powered directors, including former prime ministers and premiers. His notes, which now fill 12 four-drawer filing cabinets, led Leblanc to unconventional conclusions. What makes an effective board has everything to do with group chemistry, leadership style, and individual competencies and skills – not size, composition and independence as was widely believed. In the wake of the Enron collapse and other corporate scandals, when shareholders were demanding more independent directors as a hedge against corruption, Leblanc's deductions were controversial.

Word spread fast and Leblanc was deluged with invitations. Overnight he went from obscure doctoral student to jet-setting academic. *Inside the Boardroom: How Boards Really Work and the Coming Revolution in Corporate Governance*, the book he and his PhD adviser, Schulich Professor Emeritus James Gillies, wrote and released in 2005, has been flying off shelves in Canada, Britain, Australia and New Zealand, and translated into Russian and soon, possibly, Chinese. It is "truly pioneering work," says Donald Jacobs, dean emeritus of the Kellogg School of Management, Northwestern University, in his foreword, highlighting chapters that list 10 types of board members – change agents, cheerleaders, conformists, controllers, critics etc. – and how to identify them. Leblanc's next book, tentatively titled "Fixing the Boardroom", features diagnostic tools for assessing board effectiveness.

Life for Leblanc hasn't always been so fast. Growing up in Timmins, a small town in northern Ontario, he played peewee hockey like the other kids. But unlike the others, he spent Saturdays holed up in the school library waiting for his father, the principal, to catch up on paperwork. "I would just work, work, work, work, work." Education, he decided, would be a ticket to success – and out of the mining town – and, except for the year he got sidetracked by fraternity parties, he sustained a relentless work habit. After high school, he spent the next 19 and a half years earning six degrees: a BSc in psychology and an MBA from the University of Toronto; joint law degrees from the University of Windsor and University of Detroit Mercy; a master's degree from York's Osgoode Hall Law School and his PhD in administration from Schulich.

Leblanc is the kind of guy who will jump out of his chair, grab a marker and start drawing charts to explain his research. In a word, driven. Even Nancy has a tough time enticing him away from his work. On a recent trip to Barbados, he spent 11 out of 12 days closeted in the hotel room clearing up files on his computer while she read on the beach. On the last day of their idyll, he emerged to go snorkeling with her before catching the plane home. "She's very understanding," he says.

The year 2005 was a watershed for Leblanc. York's Atkinson Faculty of Liberal & Professional Studies appointed him professor of corporate governance, law and ethics. He began collaborating internationally on diagnostic surveys that will further his own research. And just shy of his 40th birthday, *The Globe and Mail* included him in its prestigious Top 40 under 40. Life couldn't be sweeter. "I had absolutely no idea! You just put your head down, be humble, work hard, be diligent, and let your work speak for itself."



Letters from the Grave

How York's Varpu Lindström uncovered the little-known story of Canadians who died in Stalin's purges. BY MARTHA TANCOCK

PHOTOGRAPHY BY KC ARMSTRONG

Reprinted from February 2006

As Varpu Lindström strolled down Park Avenue in the fall of 2005 fall, her heart skipped a beat. There in the heart of bustling Manhattan was a big poster advertising *Letters from Karelia*, a documentary she had just spent five years researching. Until the 75-minute film was released, few knew about 2,800 young Finnish-Canadians who heeded the siren call of socialist Russia in the 1930s and ended up victims of Stalinist purges. "It was not even a footnote in Canadian history books," says the York historian. Now, thanks to filmmaker Kelly Saxberg and the National Film Board, hundreds of thousands know about the dream turned nightmare that still haunts the Finnish-Canadian community – and fuels Lindström's current quest to discover what happened to the families of those caught in the Karelia "fever".

For 30 years, Lindström has been rummaging in the dusty closets of Canadian history for buried tales of immigrant Finns who settled in Ontario's northern mining towns and logging camps. Her mission began one summer while she worked as a Finnair public relations officer and heard old immigrants talk about how hard it was to carve out a new life in Ontario's backwoods in the 1920s. Lindström, whose father had dragged her "kicking and screaming" at 14 from Helsinki to Oshawa, could relate. "I thought, my goodness, somebody should record this." So she did. The tapes inspired her BA, MA and PhD theses and launched her academic career at York in an emerging new field – Canadian immigration history.

In 1988, Lindström travelled to Russia for the first time. During *perestroika*, she gained access to government archives and confirmed rumours that many Canadians had been killed as part of Stalin's purges. Twelve years later, she would get an unexpected opportunity to return – and dig deeper.

It came after Saxberg, hunting for story ideas in the trunk of her own Finnish heritage, happened upon Lindström's PhD thesis, *Defiant Sisters: Social History of Immigrant Women*. Who, she asked Lindström, would make a good interview? Lindström recommended Taimi Davis, a feisty 93-year-old communist activist living in Thunder Bay, Ont. Just as shooting began, two yellowed letters arrived for Davis from Finland.

The letters were written on June 10, 1942, by Aate Pitkänen, Davis's brother, mere hours before the Finns shot him for being a Russian spy. Though a sympathetic warden couldn't mail the letters during the war, he never threw them out. Fifty-eight years later, his journalist son found and read them on Finnish national radio. Listeners were moved and wanted to know what had happened to Aate's Russian wife and baby son Alfred. So did a stunned Davis. Saxberg's lens suddenly shifted to a dramatic new storyline.

Letters from Karelia traces Aate's journey from Depression-era Canada to resource-rich Karelia, a Russian province near the Finnish border, to build a hoped-for better society. At the film's heart is his son Alfred's journey to discover the father he never knew. To help make the documentary, Lindström came aboard as historical consultant and threw herself back into the research she had started 12 years before. A Russian reality-TV show found 60-year-old Alfred, a doctor-researcher in Moscow, and introduced him on air to two Canadian cousins. With help from the warden's son, Lindström combed Russian and Finnish newspapers, war archives and the warden's diaries to establish how Aate – multilingual, a passport-carrying Russian citizen and national ski champion – escaped Stalin's purges and was recruited to spy on enemy Finns. Villagers also led her to a gruesome and, until recently, unknown site – one of many mass graves in Karelia containing Canadian migrants.

Letters from Karelia has been a sensation and has spurred Lindström to go further. More than 420,000 watched it on Finnish national television after its release in September, 2005. Thousands more have viewed it at screenings across Canada – including the Toronto premiere at York – and film festivals in Europe and North America. After almost every screening, someone has come forward to tell Lindström of relatives who disappeared in Karelia. She and a team of Russian scholars – supported by the Missing In Karelia Fund established by the York University Foundation – will start searching execution records and other archives to find out where these "disappeared" Canadians are buried and what happened to their orphaned children and spouses. That information will be posted on a Web site. After Letters, "I realized how important family reunification is," says Lindström, who is based in York's Atkinson Faculty of Liberal & Professional Studies. The work also offers a chance to study how state terrorism worked at a local level.

The story of Aate resurrects the memory of "hundreds of ordinary men, women and children who had the best intentions to build a new socialist society and became innocent victims of the purges," says Lindström. "Letters shows the human side and complexity of history," she says of an episode that still arouses left-versus-right antagonism among Canadian Finns. "The main reason for me doing this film is I firmly believe that every human being deserves dignity in death. It doesn't matter whether they are your enemies. They are human beings."

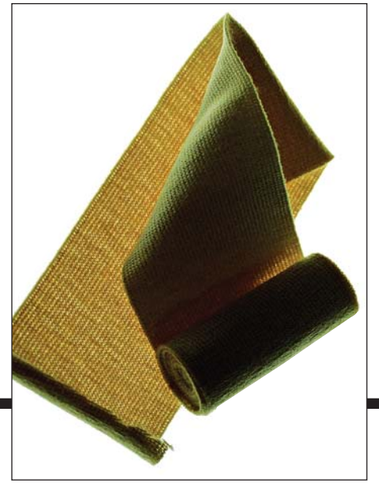
From nursing to psychology, the expertise in York's new Faculty of Health will put the wellness of the nation under a powerful microscope.

BY DAVID FULLER

PHOTOGRAPHY BY RSQUARED

Reprinted from October 2006

Healthy and Wise



NEWS FLASH: Stroke victims, heart patients and people suffering pain after surgery are just a few of the many Canadians who are benefiting from the efforts of York researchers. University scientists are working to help such patients regain use of their muscles, survive heart attacks and recover from operations quickly and more comfortably. But wait a minute – how can this be happening at York, which has no medical school?

You'd be forgiven for that query, since some of the best health scientists in the country have been working in relative obscurity as members of three different Faculties. That all changed, however, with the creation of the first new Faculty at York in 34 years: the Faculty of Health, which came into being officially on Canada Day 2006.

The new academic home for York's health researchers brings together four academic streams: health policy & management (from the Atkinson Faculty of Liberal & Professional Studies), nursing (from Atkinson), kinesiology & health science (from Science & Engineering and Arts), and psychology (from Arts and Atkinson). Psychologist Harvey Skinner, former Chair of the Department of Public Health Sciences at the University of Toronto, has joined York as founding dean to continue the job of pulling it all together in a new, highly interdisciplinary environment.

The reasons for the change are relatively simple, even if creating a new Faculty won't be, says Sheila Embleton, York's vice-president academic, who shepherded the new entity into being in response to longstanding interest from both working academics and the health community. It's all about raising profile with government, funding agencies, donors, the public and the York community itself. "So often we find that people just don't know that there's any health research or teaching at York," says Embleton. "It was all buried in various other places. That's not a comment about the research or the teaching; it's all great and it just deserves to be more visible."

Gill Wu, dean of the Faculty of Science & Engineering when the new Faculty was being created, says it was "the right thing at the right time". A major rethinking of Canada's health infrastructure is underway, and York's reputation for interdisciplinary research makes its Faculty of Health a natural centre for helping transform the system from a strictly biomedical model to a wellness model aimed at reducing the cost of health care through prevention and smarter use of resources. "It's about team approaches and team management to both well and unwell patients," says Embleton. Adds Atkinson Dean Rhonda Lenton, "This was York's opportunity to define how postsecondary education in the area of health could be done differently."

Doug Crawford, Canada Research Chair in Visual-Motor Neuroscience based in the Psychology Department, says the new Faculty will provide a key focus for York's interdisciplinary research. His work on eye-hand coordination at York's Centre for Vision Research, which includes computer scientists, psychologists and kinesiologists, will help astronauts, people with disabilities and everyone in between. Crawford has seen an impact on funding agencies already. "When we met with a panel from the Canada Foundation for Innovation, it was very clear that they understood the direction that York is moving in by creating a Faculty of Health and expressed an interest in whether we would mount a neuroscience program."

Crawford hopes to win approval for a $25-million brain research facility that would be the largest health project ever at York. Since 1999, York has won a total of just over $15 million from the Canadian Institutes of Health Research, the field's main funding body in Canada. Now the University sees strong prospects for attracting new funding, new researchers and, ultimately, new graduate and undergraduate students looking for careers in health. Already, the York University Foundation has received new gifts and matching funds totalling $800,000 to support students in the nascent Faculty.

It will be a dynamic enterprise. Long a champion of improving the health of all Canadians, York's first dean of health hopes the new Faculty will tackle issues such as disparities in health status among Canadians, especially in low income and Aboriginal populations, as well as outreach programs aimed at sustaining the health-care system by developing integrative approaches. And, he says, York is the perfect place to do it. "There's a lot of interest among the hospitals, primary care and community health settings in the 905 region," Skinner notes, "and there's a real opportunity to design good systems" that can overcome what he calls the "tyranny of the urgent". "Health promotion is not on [Prime Minister] Stephen Harper's agenda, waiting lists are," he says. "There's enormous pressure on governments, and the trouble with prevention is that there are no quick fixes."

Not every health researcher at York is changing homes. The Faculty of Science & Engineering still has prominent researchers in chemistry and biology working in such areas as cancer drugs, muscle proteins and genetics. And the Faculty of Health will continue to seek out partnerships with colleagues from other units, such as York mathematicians who are looking at the spread of diseases like SARS and West Nile virus. There are also health law experts at Osgoode Hall Law School, industry analysts from the Schulich School of Business and health specialists in other Faculties ready to collaborate.

There's still a lot of work to do. Faculties aren't created overnight but Skinner says he's looking forward to the challenge. "I love building, transforming, creating," he says. "York has shown a lot of courage in creating a new Faculty. This is a great opportunity to have an impact on improving health, locally and globally."

INTO A NEW WORLD: Fisher

Caitlin Fisher is finding high-tech ways to bring 'strange and unique linkages' into a narrative.

BY DAVID FULLER

Reprinted from December 2005

Digital Storyteller

PHOTOGRAPHY BY SOPHIE KINACHTCHOUK

CAITLIN FISHER'S 21ST-CENTURY research in York's Faculty of Fine Arts is so speculative, even her funders are hedging their bets a little. The official outlook on her work as Canada Research Chair in Digital Culture says "innovations may include the refashioning of conventions used in film," the quintessential 20th-century art form. Although Fisher can't predict exactly how those conventions will change, she is certain digital technology is already transforming the way Canadians read, write and communicate with one another. What that means for storytelling is what she wants to learn more about, once she gets into the lab.

Wait a minute…the lab? Why, you may ask, does an award-winning writer, artist and editor need a laboratory? Because, in one version of the future cinema, we may be using computerized goggles to access the ever-increasing layers of meaning that multimedia techniques are bringing to the art of the narrative. As part of her research into new ways of telling stories, Fisher is looking forward to the installation of augmented reality (AR) technology, developed at Atlanta's Georgia Institute of Technology, in a state-of-the-art facility in the new Accolade East Building. She hopes the lab will give creative minds from many disciplines a chance to experience and react to how storytelling is changing in an age when video games outsell Hollywood films.

Fisher's theoretical work also has implications for other areas affected by digital technology, such as what it means to archive memories in an era of blogs and personal databases, and how museums and other public spaces can use computers and global positioning satellites to enhance interpretive aids. Making sense of the many currents in this digital wave suits Fisher's outlook on the world. "A lot of my work has been about connecting disparate pieces of data, the ability to show people what I thought were strange and unique linkages."

Fisher began her academic life as an economist and gravitated to theorizing about economic social justice. She eventually did her PhD in social and political thought at York after studying at both the University of Toronto and Carleton. "I was fleeing fine arts," she admits. "I come from a family of poets and writers, visual artists and papermakers. I rebelled by becoming an economist." But while working in the area of feminist political economy, she became ever more intrigued by creative approaches to contemporary political thought, by attempts to communicate philosophical ideas in forms that departed from the traditional, and by efforts to weave together creative and academic work. At the same time, programs began to appear for writing hypertext, or linkable computer prose, and Fisher saw its potential in approaching both theory and "multiple pathways to narrative". "It seemed such an ideal direction," Fisher recalls, "and I sort of realized I was no longer a traditional political economist."

As her artistic heritage reasserted itself, Fisher began writing with a group of friends called the Stern Writing Mistresses and became particularly interested in technology's effect on storytelling. Her 2001 hypermedia novella, *These Waves of Girls,* won the 2001 International Electronic Literature Award for Fiction and she is founding editor of the Web-based *j_spot: Journal of Social and Political Thought.*

In defending her thesis just after her mentor and supervisor Ioan Davies died suddenly in February 2000, Fisher became the first and only doctoral candidate at York to submit her work in entirely digital form. For her and Davies, who argued in favour of the unique presentation, the medium was the message; it represented her growing fascination with how the connections between those disparate items of data can be communicated with the help of technology. Films of the future, she suggests, could be composed of different pieces of media stored in a database and served up by a computer in a progression that conveys the artist's thought process as well as intended meaning.

Recipient of a University-Wide Teaching Award in 1999, Fisher also conducts a graduate course on future cinemas with York colleague Janine Marchessault, Canada Research Chair in Art, Digital Media and Globalization. But, says Fisher, while the prospect of AR technology has interested the Canada Foundation for Innovation enough to put out calls for designs of head-mounted retinal displays, you may have to wait a bit longer for the experience. "I don't imagine that many people in the next five years are going to experience AR," Fisher says. "But I think, as a form, it's very interesting to think about moving images and spacialized sound and what it means to bring that technology with you walking through a space and into a story." And wherever her research leads her, Fisher is sure she's in the best place to do it. "York," she says, "is very good at enabling this kind of interdisciplinary work."

EXPLORERS: Chesser (left), Hornsey, Quine, Zhu and Shan

It is Rocket Science

York's space engineers work at the cutting edge of spacecraft design.

BY DAVID FULLER
PHOTOGRAPHY BY LINDSAY LOZON

Reprinted from April 2007

AFTER DECADES IN BUDGETARY LIMBO, interplanetary space exploration is heating up again. It's a great time for space research and, like Neil Armstrong when he first stepped onto the surface of the moon – four years after the first space scientist came to York in 1965 – the University has taken one giant leap to boost its standing as one of Canada's leading space research centres. The five-year-old Space Engineering Program, the only one of its kind in Canada, has doubled its expertise with the arrival of three faculty members with industry experience in spacecraft design. The three – engineers Hugh Chesser, George Zhu and Jinjun Shan – joined colleagues Jim Whiteway, Richard Hornsey, Wayne Cannon and program director Ben Quine in 2006, and two more will be hired in 2008.

Long known for its work on environmental research instruments carried on satellites such as WINDII, SCISAT and OSIRIS, York will take centre stage in Canada again in August, 2007, when NASA's Phoenix Scout Mission to Mars launches with a package of instruments aboard designed by York scientists. Whiteway, Canada Research Chair in Space Engineering and Atmospheric Science, specializes in the design and use of laser remote sensing (lidar) instruments to measure atmospheric conditions here and on Mars. Quine heads a consortium that is trying to put an unmanned vehicle on Mars. Together, they teach students how to build satellites that will take instruments, and eventually people, into space.

It's the future of human space travel that captivates everyone's imagination and poses quite a number of engineering challenges. "There's a little secret to space flight," explains Quine. "It makes people very sick." Although space travel is now 50 years old, it's still a trick to keep spacecraft right side up when there is no "up", and functioning properly while travelling at 25,000 km/h in zero gravity and frigid temperatures.

For example, on China's Shenzhou 5 spacecraft, which uses solar panels to power some of its systems, engineers discovered an unforeseen vibration problem that prevented the huge, flexible panels from rotating properly towards the sun. Shan, who teaches courses in payload design and space vehicle dynamics, helped develop a motion-control system using motors to counter the vibrations while he was a member of the Chinese space program. "There was no theory to guide the design," explains the graduate of China's Harbin Institute of Technology. Shan first became enthralled with space when he read about Armstrong and the Apollo 11 mission and nursed a childhood dream of becoming a space engineer. He says he is particularly pleased to join the York space team, which stresses interdisciplinary research.

Controlling spacecraft in flight is another challenge. It takes a deft hand to steer a fast-moving spaceship into a docking port not much bigger than a manhole cover. Zhu, who has a PhD in naval and ocean engineering from China's Shanghai Jiao Tong University and a second doctorate in mechanical and industrial engineering from the University of Toronto, designed vision-based robotic controls to dock passenger bridges to aircraft during his 11-year career in Canada's aerospace industry. Zhu's current research interest focuses on a space-based tether propulsion technology – a giant space sling that could catch flying spacecraft in low orbits and swing them to higher orbits or even other planets.

Getting to space on a rocket can be bumpy, and once there, it's cold outside. Chesser's expertise in spacecraft engineering gained from his years working for some of North America's leading space firms will help engineering students learn how components can be made to survive the rigours of a space mission. Chesser has a master of applied science degree from the University of Toronto and more than 15 years' industry experience. One of his priorities is to help introduce the use of state-of-the-art computer-aided design and analysis applications into York's program. His experience at U of T includes participating in the design, build, test and launch (from northern Russia in 2003) of the MOST microsatellite – a.k.a. Canada's "humble" space telescope.

The Space Engineering Program makes up one third of York's School of Engineering and recently earned accreditation as a space program – no easy task in an already rigorous process when there are no others like it. York's entire program focuses on the design, manufacture and integration of space systems, including satellite communication systems, remote sensing technology and scientific payloads, as well as the design and management of complex hardware and data systems. Although the program is still relatively small, with about 70 students, Quine says it gives York a practical capability to support its space science research and groom young engineers for the next half-century of space exploration.

And not just by NASA. As Quine points out, the day is fast approaching when governments won't be the only ones funding human flight space programs. "That model is unsustainable," Quine says, noting the increased interest among private firms in space travel and exploration. "We're beginning to see the commercialization of space."

PROJECTS

Boldly Going

York is a leader in space research

Reprinted from Summer 2006

A STRONAUT AND ALUMNUS Steve MacLean takes great pride in York University's space-related research, which he can readily list off, finger by finger. Indeed, York is one of Canada's leading space research universities, with experts participating in projects for NASA, the Canadian Space Agency and other major organizations around the world. At York, these heavenly men and women are based in the Department of Earth & Space Science & Engineering, the Department of Physics & Astronomy, the Centre for Research in Earth & Space Science and the Centre for Vision Research, among other units. Here is a partial list of how they are helping human and machine go where none have gone before.

PUTTING THE MET ON MARS: York University, Optech Inc. and MDA Space Missions have built the MET, or meteorological instrumentation package, for NASA's 2007 Phoenix mission to Mars that will search for water and possible signs of life.

CHECKING EINSTEIN: York and the Harvard-Smithsonian Center for Astrophysics are participating in the NASA/Stanford University experiment, Gravity Probe B, to prove – or disprove – Einstein's General Theory of Relativity. A York-led team of experts is tracking movements of the probe's guide star IM Pegasi.

AN ISSUE OF GRAVITY: York is conducting research for the Canadian Space Agency on how gravity, or lack of it, can affect human perception – including that of astronauts in the International Space Station.

AN ISSUE OF GRAVOL: University researchers are also working on a project sponsored by the US National Space Biomedical Research Institute to find ways to treat space sickness in order to make long-distance space travel more endurable.

WHO HAS SEEN THE WIND?: A group of York scientists have. Their latest project to better measure global wind patterns and atmospheric composition, called SWIFT, on Canada's Chinook satellite is the successor to the recently concluded, 14-year WINDII project.

WEATHER BY GPS: York is in charge of a second instrument on the Chinook satellite called ARGO, designed to use "spin-off" GPS data to study temperatures and water vapour in the upper atmosphere.

SERIOUS ABOUT OZONE: York scientists are key players in OSIRIS, a Canadian instrument on the Odin satellite that images the stratosphere and ozone layer.

ACE UP THEIR SLEEVE: York is involved with ACE (Atmospheric Chemistry Experiment) – the science mission of SCISAT, Canada's first scientific satellite in more than two decades – with a focus on assessing damage to the ozone layer over the Arctic.

VERY SPECIAL TELESCOPE: York likes VSOP – no, not the brandy, the radio telescope (Very Long Baseline Interferometry Space Observatory Project). The University provided the unique high-precision instrumentation for the award-winning telescope, whose virtual size (if it had a conventional dish) is four times the diameter of the earth.

THE GALACTIC NEIGHBOURHOOD: York is a member of the Science Working Group of the Kepler mission, NASA's Discovery project to see if Earth-size planets – and therefore the possibility of Earth-style life – are common or rare in inhabitable zones around other stars.

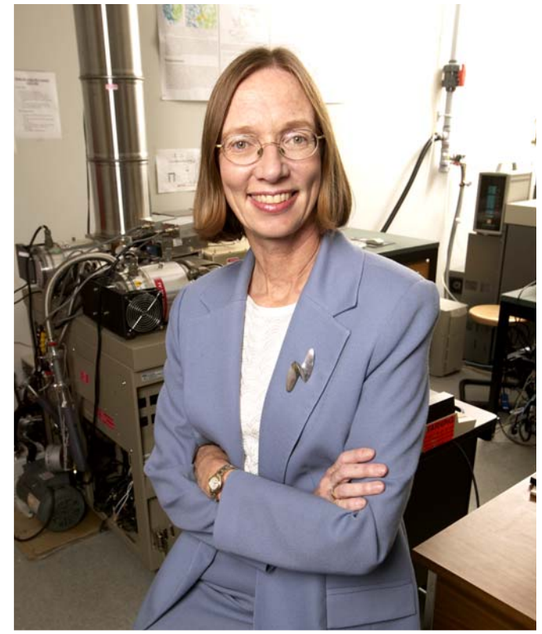
MARS LANDER, EH?: York-led Northern Light is a consortium of technology companies that hopes to put a Canadian-built lander on Mars within a few years.

WATER WORLD: Astronaut Steve Maclean trains for a spacewalk (top) and emergency bail-out (bottom two) before his 2006 space shuttle mission

LAW

Considering the Alternative

Osgoode's Joan Gilmour looks at issues raised by non-traditional medicine. BY CATHY CARLYLE



LIKE MOTHERHOOD, complementary and alternative medicine can't be bad – or can it? After all, it's perceived as natural and, therefore, "safe". It is that sort of issue that has led Joan Gilmour, a professor at York's Osgoode Hall Law School, to specialize in the broad field of health law, a growing area of practice.

Gilmour has been involved in a three-year project funded by the Toronto Hospital for Sick Children Foundation, examining legal, clinical and ethical issues surrounding the use of complementary and alternative medicine, or CAM, with children. She and her fellow researchers, with expertise in bioethics, pediatrics, complementary and alternative medicine as well as law, know that people involved in the treatment of sick children are faced with some very tough choices.

"We are putting together a series of case scenarios for parents and health-care providers, as well as institutions that are making policies about this. And we are talking in practical terms, so that they can think about how decisions would apply in their situations," says Gilmour. "For instance, if a child has been prescribed conventional medicine for a serious, underlying health condition, and if the young person is also taking a natural health product, what is the interaction between the two? Is it up to the doctor to ask parents whether a child is taking a natural remedy as well as the prescribed one? And, under what circumstances ought that be a part of the health-care provider's legal and ethical obligations?"

Out of thousands of natural health products, doctors may be familiar with ones that many people choose to use to treat certain health problems. But they cannot know about all alternative care products, says Gilmour. "In another scenario we have developed, parents might ask their doctor about referrals to CAM health-care practitioners. If the child, for example, is nauseated from chemotherapy, and if conventional medication doesn't help, perhaps the parents would want to try acupuncture for the child, since that treatment has been known to help in some cases," she explains. "The question then might be, can parents expect the conventional physician to advise them of this type of complementary, alternative care?"

In another case, Gilmour says parents may want CAM to be provided alongside traditional treatment within the hospital, or else to bring in a CAM practitioner for a child who is an inpatient. Gilmour is considering what the physician's and hospital's response should be.

"We have also developed scenarios about children who have life-threatening illnesses, for whom various forms of conventional treatments may not be working," she says. "What if the parents then decide to try a type of complementary care, either as a true alternative or along with conventional care? What are the limitations on a parent's ability to make that decision, especially if it would entail not continuing with a physician's recommended treatment?

"People may differ about where a child's best interests lie," Gilmour points out. "There are different cultures and religions – but at the same time, do we say that what is permissible differs for a child of one culture than another?"

Gilmour and her colleagues are developing recommendations for both parents and health-care providers, as well as for hospitals. "These are the things you have to take into account," she says of the process. "These are the limits on your abilities to make decisions, and this is the range of decisions that would be permissible."

How I track the decline of the songbirds. **BY BRIDGET STUTCHBURY**

Wings and a Prayer

It's easy for me to break the ice at a cocktail party. When asked the inevitable question of what I do, I sometimes answer "bird detective". Yes, I hide miniature radio-tracking devices on songbirds like the wood thrush and Acadian flycatcher and begin a stake-out. Listening carefully to the tell-tale beeps on my hand-held receiver, I follow unsuspecting philanderers through the forest as they sneak off to have a one-minute stand with the next-door neighbour. I even do DNA testing on their kids so the evidence of infidelity (one out of every three females cheats on her mate!) will stand up in the court of scientific journals.

I follow unsuspecting philanderers as they sneak off to have a one-minute stand.

This detective has turned her attention, and her tracking skills, to solving a more sobering mystery. Our songbirds are gradually disappearing, and the silent spring that Rachel Carson feared does not seem like such a far-fetched fable after all. At least two dozen species of songbirds have suffered a significant drop in numbers since the 1960s, over 30 per cent in some cases, and include birds like the rose-breasted grosbeak, wood thrush, eastern kingbird and bobolink.

The size of a population depends on credits and debits, just like the balance of your bank account. Breeding produces new recruits for the next summer (credits) and the deaths of adults during migration and on their tropical wintering grounds removes individuals from the population (debits). When populations are on a downhill slide, reproduction is not keeping pace with adult mortality.

Seems simple enough to figure out; just measure how many offspring are produced each year. With some patience and practice, just about anyone who doesn't mind tromping around forests (mosquitoes, black flies and all) can learn how to find bird nests, count how many eggs are laid and then see how many nests evade detection by hungry blue jays, crows, squirrels and chipmunks. The trickiest part of measuring a bird's success in raising a family is following the fate of the little nestlings after they leave their nest, the so-called fledgling period. This is where the bird detective comes in; radio-tracking allows me to find the fledglings and know their fate.

Hooded warbler nestlings, for instance, hatch out of their tiny egg as wriggling little pink embryos with naked bodies and closed eyes. When they hop out of the nest at the ripe old age of nine days, they are awkward, bulgy-eyed early teens with short stubby tails who cannot even fly. Still, it is safer for the young birds to leave home than to be sitting ducks in a nest full of noisy brothers and sisters. The parents continue to feed their increasingly mobile offspring for another three to four weeks until the kids are fully grown and ready to leave their parents for good. The fledglings are hard to find because they are smaller than a cell phone and well camouflaged, a needle in a forested haystack!

My students and I found that only 20 per cent of hooded warbler nestlings actually survived the three-week fledgling period. One victim's remains, and the still working radiotag, were found underground in a chipmunk burrow, and another's signal was tracked to a moving object, a satisfied garter snake! Another was found mauled, its radiotag chewed up by a feral cat.

When all the threats are taken into account, a female hooded warbler produces only one-fifth of a daughter, statistically speaking, each breeding season. So she would have to live for five years just to make the equivalent of a single daughter who survives to become a mother herself. This would be an unlikely event indeed, since most warblers live only 1-2 years at best. If I suffered the same prospects as a hooded warbler, I would have to give birth to 10 children just to have one daughter produce any grandchildren!

Migratory songbirds are slowly going down the drain because not enough young survive to replace the parents who die each year. If we do not help our songbirds, I may soon have to raise eyebrows by answering "bird undertaker".

Bridget Stutchbury is a professor of biology in York's Faculty of Science & Engineering and author of *Silence of the Songbirds: How We Are Losing the World's Songbirds and What We Can Do to Save Them (2007)*.

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- A PSYCHOLOGIST SEES AN ADDICTION
- A CHEMIST SEES $C_8H_{10}N_4O_2$
- A KINESIOLOGIST SEES A MIRACLE

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