in edition
The UNIVERSITY of WINNIPEG
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RESEARCH ISSUE

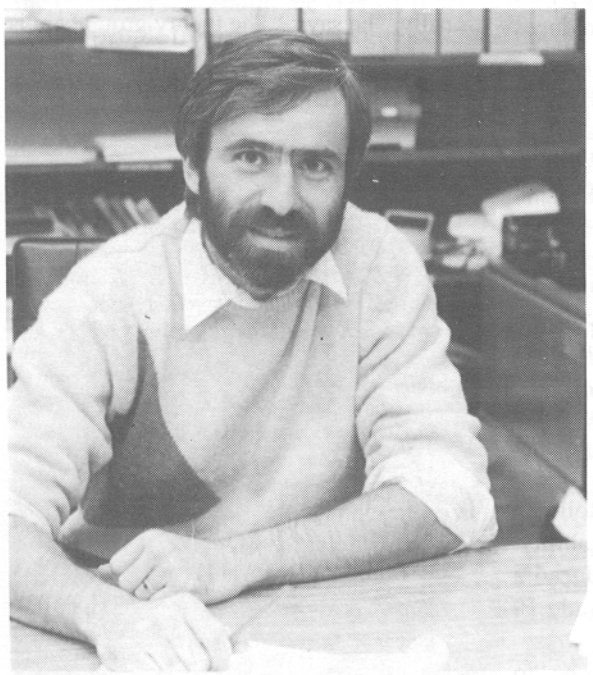
Physicist Gravitates Toward Black Hole Research

In the 1970s, Physics Professor Gabor Kunstatter spent a summer trying to prove that black holes didn't exist. Back then, there was only one black hole candidate. "It didn't make sense to me that there would only be one," he explains.

Times have changed, and so has Kunstatter's belief in black holes. "Now you can just download a picture of a black hole off the Internet," he says. "Black holes aren't just theoretical constructs. They've been observed by astronomers."

He adds: "Experimentally, black hole research has changed a lot in recent years in part because of the Hubble Space Telescope. Theoretically, things aren't changing all that fast."

A black hole is a region of space that has such a high concentration of matter, nothing can escape its gravitational pull—not even light. For a black hole to form, the earth's mass would have to collapse into a volume the size of a tennis ball.



Gabor Kunstatter: "Most theories of gravity admit black hole solutions. In order to construct a theory (of gravity) without black holes, you would have to work really hard."

"One of the interesting things is that once you have such a high concentration of matter, it just keeps collapsing until it quite literally tears a tiny hole in the fabric of space time," reports Kunstatter.

Despite the pictures on the Internet, evidence of black holes is still circumstantial. But he notes, "Most theories of gravity admit black hole solutions. In order to construct a theory (of gravity) without black holes, you would have to work really hard."

According to world-renowned physicist Stephen Hawking, black

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Model Forest Movement Continues to Grow

The model forest movement continued to blossom as representatives from across Canada gathered for a conference in Winnipeg, May 12 - 15.

"People Growing with Forests" was the theme of the conference and, according to Rod Bollman, chair of the Biology Department at The University of Winnipeg, the interest in model forests is, indeed, growing here and around the world.

This event came on the heels of a very successful international conference last fall in Chihuahua, Mexico which attracted about 250 participants from 11 countries, including a sizable contingent from Canada. Bollman was among the participants.

According to Bollman, Canada has taken a lead role in model forest development, with 10 designated areas. A model forest is a partnership of various groups, each having their own interest in a particular forest resource-based site. The partnership works towards a balance of preserving the environment while sustaining social and economic activity in the area.

Canada, U.S., Indonesia, Russia and Mexico have all established model forests; other nations plan to establish these territories in the near future.

The international perspective of the Mexico conference was enlightening, says Bollman, as many countries struggle to achieve sustainability of their land in a context of poverty and hardship.

"A country like Mexico is not backwards in knowledge," explains Bollman. "They just have to think about their people's everyday survival. If you're hungry, you have a very different view of cutting a chunk of forest."

But Bollman points out that these problems are not insurmountable — they just demand creative alternatives. For example, in one model forest in Mexico, introducing a better variety of corn has boosted productivity by 70 per cent on some village plots. The higher yield—and higher profit—reduces the pressure on farmers to cut trees to supplement their income.

In our province, the Manitoba Model Forest, a one-million-hectare tract surrounding Pine Falls, is heading into its second five-year term.

Despite a 50 per cent cut in federal government funding and the elimination of the Chair in Forest Ecology, Bollman remains confident that the project can continue to build on the gains of the first five years.

"During our first term, we brought together a diverse group of people with a wide range of interests. Local and provincial government officials and environmentalists sat down with academics and paper mill executives. While we haven't reached a consensus on everything yet, the various sides are listening and making progress."

He adds that the project has moved a long way in determining what diversity exists in the area and has made some headway on local management strategies for woodland caribou and moose.

As chair of the Model Forest's Formal Education Committee, Bollman points to the steps made to increase public understanding of sustainability, particularly with young people. "In the past five years, we've produced a video and teacher's workbook, which can be used as part of the grade 10 curriculum."

In the next five years, the goal of the Manitoba Model Forest will be "to take what we've learned and implement it," says Bollman. The focus will also be on developing criteria and indicators to measure sustainability in the area.

Black Holes

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holes aren't really black. Instead, microscopic processes outside the surface of black holes cause evaporation, so all information about what fell into the black hole is lost forever. So far, nobody knows where this information goes.

"The resolution of this problem is thought to lie at the intersection of the microscopic world of quantum mechanics and the macroscopic world of Einstein's gravitation," says Kunstatter. "We need to find a unified theory for these two types of phenomena. I'm interested in black holes because of what they might tell us about this unified theory."

He is trying to construct simplified mathematical models to describe the qualitative aspects of black holes. "Hopefully, you don't have to get quite to the complexity of the real world to find out what you want to know."

Kunstatter is one of four theoretical physicists at The University of Winnipeg, all of whom belong to the Winnipeg Institute for Theoretical Physics. Founded in 1991, the institute pools the financial and "theoretical" resources of Manitoba's three universities to bring in visitors and hold seminars.

"It's given theoretical physics in Manitoba a sort of presence nationally and internationally," he says. "The theory group here is one of the strongest theory groups in the country, because we all collaborate and work together."

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This is the last issue of in edition until September.

Chemistry Professor Recognized for His Significant Contribution

Chemistry Professor Harold Hutton has been honoured with the 1997 Outstanding Chemist Award by the Manitoba Section of the Chemical Institute of Canada. The award was presented last week at the CIC's annual general meeting. "It was completely unexpected," Hutton says. "I was just busy doing exams when I got the call."

According to Associate Professor of Chemistry Desireé Vanderwel, Hutton was chosen for the award based on his significant contribution in all aspects of his work: "People felt that, over his career, Harold had made an outstanding contribution not only because of his balanced commitment to teaching, research and administration, but also through his community outreach activities with the high schools."

The news left Hutton, the first University of Winnipeg professor ever to receive the award, rushing to prepare a presentation for the meeting, where he spoke on "Recent Experiences with 2D NMR."

Harold Hutton received the Outstanding Chemist Award for his significant contribution to chemistry through research, teaching and community service.

NMR—or nuclear magnetic resonance—is a valuable technique for investigating molecules with certain types of nuclei, and looking at specific interactions that occur. This ongoing investigation has constituted a great portion of Hutton's work throughout his academic career.

The technique creates images Hutton likens to "geographical contour maps" that help researchers distinguish between different types of molecules present in the same system. While NMR has come to prominence in recent years because of its medical applications, Hutton notes that it also has broad applications in chemistry.

Hutton is also currently working on a project with colleagues from the University of Arizona that involves a protein known as cytochrome c_2, which causes electron-transfer reactions in living organisms. The molecule plays an important role in converting energy within an organism into a particular action or occurrence.

"The purpose of the research is to try and find out how electron transfers occur. We know that they do, but the process is unknown," he explains. "NMR allows us to observe how the large cytochrome c_2 molecule arranges itself in space, and what changes in structure occur when there is an electron transfer (the loss or gain of an electron)."

Recently, Hutton also collaborated on research with Alaa Abd-El-Aziz, also a member of the University's Chemistry Department, on transition metal complexes.

In addition to his research and teaching responsibilities, Hutton has worked with Manitoba's Department of Education on the development of high school chemistry exams for years. As well, he was instrumental in reinstituting a provincial science fair, the Manitoba Schools Science Symposium, in 1971. That symposium challenges hundreds of students to create projects every year, and Hutton remains its facility coordinator.

Hutton says his contact with students continuously presents him with new learning opportunities: "I learn something new every year through teaching, sometimes because of the way students ask questions, and sometimes because they will answer an exam question in a novel or intriguing way that gets me thinking along a new line."

Student Research Takes an Innovative Look at Urban Spaces

The planning and design of our cities and neighbourhoods has an impact on us all, yet few take a critical look at how our surroundings affect our lives. Students in Mary Ann Beavis' "Women and Urban Environments" course, however, become re-sensitized to their environment from a feminist perspective, and then turn an analytical eye on familiar territory in order to prepare a research paper.

While many students conduct historical and statistical research as part of the project, a great deal of the research is observational. "It's a different kind of assignment than the usual research paper, and some students get very creative," Beavis says.

After teaching the course for three years, Beavis realized that a collection of the innovative papers would provide insight into how a project like this can be tackled for those teaching and taking similar courses. The result is *Women and Urban Environments Volume 1: Feminist Analyses of Urban Environments* (IUS Publications; Student Paper 9), edited by Beavis. The publication's six student research papers examine a variety of spaces from a perspective that takes into account the values, roles and challenges that comprise women's lives.

Beavis, senior research associate at the Institute of Urban Studies, notes that a "women in planning" movement has brought many issues to the forefront. Among the most obvious is safety. "Men tend to have a sense of invulnerability, whether it's realistic or not," Beavis explains. "But women almost always have the sense that there is danger, or that they need to keep their guard up because danger could be lurking around the next corner."

Therefore, urban design that encourages activity on neighbourhood streets, as well as features like ample lighting and angled corners on buildings to increase visibility are seen as important features from a feminist perspective.

Beavis asserts that "spaces primarily occupied by men are designed differently than those occupied by women," citing the tendency for receptionists and secretaries—almost always women—to work in spaces prone to interruption, while men tend to have more private offices. "Quite often, an area is designed so that the receptionist is 'framed' by design elements or in a window, like a decoration."

Although many of us have become inured to the scantily-clad female mannequins and sexually-explicit advertising in our culture, Beavis asks her students to pay attention to the way in which urban images of women differ from male images. "There are graphic representations of women—and often soft pornographic advertising—throughout the urban environment, but there are very few public art representations of powerful women," Beavis explains. Even the standard symbols on things like pedestrian-crossing signs are predominantly male; where women appear, they are smaller background images.

"I ask my students to be sensitive to all these aspects," Beavis explains.

Most of the 15-25 students who take the third-year course annually are female, but not all. One male student, Richard Lupu, wanted to fully appreciate the experiences of women in the urban environment—so he dressed as a middle-aged woman and headed to Polo Park Mall.

"He found the mall a really accepting environment, because it was designed with women in mind," Beavis says. However, his experience was drastically different when, accompanied by a female friend who posed as his daughter, Lupu went as a woman to a car dealership. Details of Lupu's experience and accompanying photographs are included in the publication.

In "Ecofeminism and Urban Parks," Karen Paquin bases her arguments on ecofeminist theory, an interpretation of history that sees parallels between the domination of women and nature. She contends that just as spaces containing nature are "engineered" within cities, so "women's spaces within the city have also been engineered by men." Paquin also touches on the safety issue: "Women are especially vulnerable in parks after dark. Poor lighting, plentiful hiding spots and isolated areas combine to make parks something for women to avoid."

"A Feminist Analysis of Linden Woods Suburb," by Carrie Miller, combines an historical account of the development of suburbs with an analysis of Linden Woods, and finds the Winnipeg suburb sorely lacking in feminist values like diversity, accessibility, safety and ecological sustainability.

Miller contends that the suburb's design deters social interaction and activity on the streets—activity that would provide surveillance and a sense of safety. She also cites street designs that dictate long, indirect routes to get to bus stops and the lack of walking and cycling paths as problematic. (Because research indicates that fewer women than men own cars, alternative transportation issues are critical from a feminist-urban planning perspective.)

"Prior to taking the course, I had never questioned the plans or design features of our cities," Miller admits. "However, now I have a hard time understanding where the ideas came from."

The second volume of *Women and Urban Environments*, slated for publication late this summer, will include papers that describe what a city designed by women might be like.

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New UWSA President Favours Team Approach

Elizabeth Carlyle, who assumes the role of president of The University of Winnipeg Students' Association (UWSA) this month, describes her style of leadership as team-oriented. "I don't think it's a good idea to only have one person call the shots," she says.

Carlyle brings a wealth of experience to her new position. During her five years at the University, Carlyle has served on the UWSA as co-vice president student services and co-vice president advocate, worked on *The Uniter*, and represented Manitoba on the national board of the Canadian Federation of Students. Although she will graduate in June with a BA in environmental studies, she plans to continue her studies toward an honours degree in anthropology.

"To me, academics are complemented by all the other things that I do," says Carlyle. "The learning curve is a lot quicker if you combine academics with other work you like to do."

Carlyle is one of 15 students who ran in this year's UWSA election as part of the Coalition to Rebuild the UWSA (CRUW). All 15 were elected. "We tried to choose people from diverse backgrounds," she notes. "Not only do we have a good board for next year, but we have a strong group of supporters to work with us."

She sees the UWSA as having three key roles: as a representative of students; as a service provider; and as a liaison to the internal and external community.

New UWSA President Elizabeth Carlyle: "To me, academics are complemented by all the other things that I do."

"The Students' Association has to be representative of the students on issues like tuition fees and appeals," she says, adding, "The services are really crucial to making student life easier." The community liaison aspect of the organization involves working with the students and administration on campus as well as community organizations, students' associations at other universities, and, when possible, the provincial government.

"I've learned a lot about how to work with the administration,"

see UWSA PRESIDENT continued on page 2

Invest in Your Election Predictions

Feeling confident in your ability to predict how the votes will tally in the June 2 federal election? You can put your money where your predictions are by playing the Election Stock Market (ESM), and learn something about how markets work at the same time.

According to Phil Cyrenne, University of Winnipeg professor of economics, the ESM was developed at the University of British Columbia as a teaching and research experiment designed to test the efficiency of markets to collate and aggregate the information held by traders. "It provides participants with a hands-on introduction to the stock market and what influences it," Cyrenne explains, adding that the ESM has proven an accurate predictor in previous federal and provincial elections. "In a number of instances, the stock market approach has beat the predictions based on public opinion polls."

Cyrenne became familiar with the ESM project while on sabbatical at UBC, where he assisted the project managers during the last B.C. provincial election.

Cyrenne notes that using real money mimics the operation of real financial markets and inspires decision makers to use greater care. Participants can invest as little as $5 or as much as $1,000 in three markets: the Popular Vote Market, the Seats Market, and the Majority Government Market. In all markets, traders try to make money by buying and selling shares in the various parties.

Cyrenne goes on to note that the UBC and the project organizers, Professor Thomas Ross, Professor Werner Antweiler, Jr. and Brian Kapalka, the market organizer, receive no remuneration from traders for operating the ESM.

To learn more, visit the ESM website at http://pacific.commerce.ubc.ca/ubc-esm/, where you can also register to play.

COMING EVENTS

"Coming Events" is compiled by University Relations. Planning an event on campus in the fall? Please let us know. Send ***written*** *information to Lois Cherney, University Relations, 10 working days in advance of the event. Basic details are required: what, when, where, sponsor, price of admission (if any) and the name of a contact person.*

Some of the following events have been re-scheduled due to the flood crisis in Manitoba.

MON., MAY 19
• **Victoria Day**—University closed.

MON., MAY 26
• **Board of Regents** meets in Riddell Hall at 5:30 p.m.

THURS., MAY 29
• Five students or former students of the University will present papers in a panel called **Feminist (Re)Visions of Identity in Canadian Traditional and Popular Culture** from 7-9 p.m. in Room 1L07. All are welcome. In June, the students will present at a joint session of the Canadian Women's Studies Association and the Folklore Studies Association of Canada at the Congress of Learned Societies in St. John's, Newfoundland.

SUN., JUNE 1
• **Spring Convocation** for the conferring of degrees, honorary degrees and awards will begin at 2 p.m. in Duckworth Centre.

WED., JUNE 11
• **The Alumni Association's Annual General Meeting** will be held in Riddell Hall, beginning at 7:30 p.m.

FRI., JUNE 13
• **Continuing Education will hold its graduation ceremony** for those who have completed certificate and diploma programs at 7 p.m. in Eckhardt-Gramatté Hall.

TUES., JUNE 17
• **A reception to honour retirees and long-service employees** will be held at 3 p.m. in Riddell Hall.

MON., JUNE 23
• **Board of Regents** meets in Riddell Hall. The Board's Annual General Meeting will follow the regular Board Meeting. For time and details, contact University Secretary Roger Kingsley at 786-9115.

THURS., JUNE 26
• The **Collegiate graduation** will be held at 8 p.m. in Duckworth Centre.

TUES., JULY 1
• **Canada Day**—University closed.

FRI., JULY 18
• **Spring Term lectures end.**

MON., JULY 21
to FRI., AUG. 1
• **Spring Term evaluation period.**

MON., AUG. 4
• **Civic Holiday**—University closed.

MON., SEPT. 1
• **Labour Day**—University closed.

MON., SEPT. 8
• **Fall Term lectures begin.**

NSERC Grant

In addition to those named in a previous issue of *in edition*, **Ortrud Oellermann** (mathematics) also received a grant from the Natural Sciences and Engineering Research Council for her study into average graph parameters, augmentation problems and generalizations of Menger's theorem. The NSERC grant provides $12,500 for each of three years.

UWSA President

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she notes. "Although there will be areas where we differ, I think we have a lot of good opportunities for working together."

While serving as president, Carlyle plans to take one full course to ensure that she stays in touch with the student experience. "I can't live the life of every student on campus, but I can make every effort to be grounded in the campus environment," she says.

Employee Changes

ARRIVAL
Munna Zaman
Technical Support Level 2
Centre for Learning Technologies

POSITION CHANGE
Rick Oleski
From: Assistant to the Dean, Office of the Dean
To: Admin. Assistant 3, Student Services

DEPARTURE
Karen Wilson
Office Assistant 2 (part-time)
Switchboard

Help Desk to Offer More

Technical Support Services' Help Desk is undergoing some changes. According to Ken Krebs, coordinator of user support and training in TSS, the Help Desk has reduced its hours for the summer, and is now available only on weekdays from 9 a.m. to 7 p.m.

Beginning in September, the Help Desk will expand its mandate to include providing assistance for University-supported software as well as the Internet, and will become the primary University source of contact for computer assistance. To handle this increase in service areas, the Help Desk will increase its staff to four.

The late-summer issue of the *Tech Talk* newsletter will carry complete information on the Help Desk's expanding role.