

# *in edition*

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## **Brain Function Studied Using Magnetic Resonance Imaging**

A \$2.5 million collaborative research agreement between The University of Winnipeg and the National Research Council is expanding our understanding of the brain's function, and paving the way for dramatic improvements in medical science.

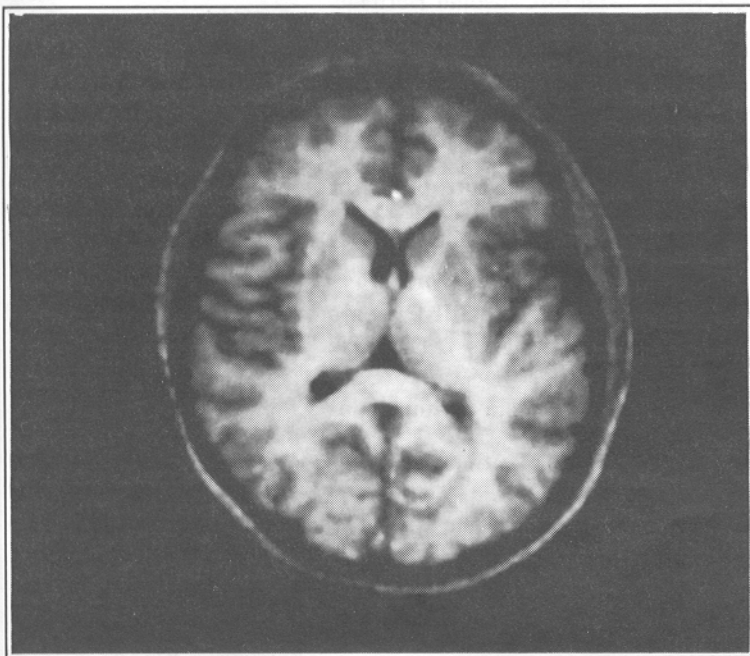
While other research has looked at the brain's structure, this unique project uses magnetic resonance imaging (MRI) to study brain *function*. Employing magnetic fields with four times the sensitivity of those used in hospitals' clinical MRI units, researchers can detect changes that occur when parts of the brain become active.

The research is being conducted at the

NRC's Institute for Biодiagnostics by University of Winnipeg faculty members Michael McIntyre and Jim Peeling, along with Jim Saunders, head of MRI research for the NRC, neurosurgeons Garnet Sutherland and Owen Williams, and an array of chemists, physicists, neuroscientists and mathematicians.

According to McIntyre, the complexity of this research necessitates the input from so many fields: "In any experiment, we have five or six people who are very involved, and three or four others who are contributing.

*See MAGNETIC RESONANCE,  
continued on page 2.*



*Researchers use magnetic resonance imaging to gather information on the brain's function. Shown here, an oblique axial scout image provides a picture of the areas in the brain currently being studied.*

# Research Issue

  
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## Magnetic Resonance ...

*continued from front page*

One of the best things about working at the NRC is that it can provide the unusually broad range of expertise needed for this kind of study." He adds, "Our access to this facility and to the technical support staff is really a tremendous research opportunity."

The MRI project is being done in three phases. The first objective was to clearly understand how the images reflect brain activity, so that researchers could be certain of what they were observing. In other words, the methodology of MRI had to be clearly established.

Methods were tested by observing the effect of stimulus on the visual cortex. "We tested our methods against an area of known function to determine the accuracy of the imaging method," explains McIntyre.

The second phase, underway since last summer, involves acquiring sufficient data about the normal range of brain function in order to establish normative standards. This phase, in which some experiments have been completed, has resulted in surprising findings: "We tend to think of the brain's hemispheres as specialized, and of tasks being either a left or right hemisphere task. In an experiment using what we thought was clearly a left hemisphere task, there were surprising amounts of right hemisphere activation. We're finding a degree of bilaterality that wasn't anticipated."

Subjects are drawn from a carefully screened pool of volunteers that include University of Winnipeg students, whose interest in MRI was piqued by a visit to the facility.

Anatomical images are taken to pinpoint the area of the brain being studied, and angiographic images are used to locate blood vessels and exclude them from further analysis. The brain is then imaged under varying conditions. The same task or stimulus is repeated many times, offset by periods of rest so brain activity can be seen to return to a baseline level. In this way, researchers can ensure any changes in signal relate to the stimulus or task, and not to an unrelated factor.

The procedure produces brightly-coloured pictures and graphs that are used for analysis. Subjects may take an image of their brains home with them.

McIntyre is hopeful that the collaborative agreement, in place for another two years, will be renewed. In addition, as research results are published, members of the research team will be pursuing other grants to fund the remarkably expensive experiments.

McIntyre and neurosurgeon Owen Williams are contemplating entering the third phase of the project, which involves applied work on select patients. Explains McIntyre: "We'll be using the normative standards we've established as a touchstone for studies in application."

One example of application is McIntyre's current work with a cardiology group who, along with pharmaceutical manufacturers, are searching for effective neuro-protective agents that help to protect the brain from damage during traumatic events like surgery. Imaging the brain before and after heart by-pass surgery will provide valuable insight into what occurs in the brain, and will allow the scientists to determine if neuro-protective agents are effective.

MRI research may also prove vital in improving the individual treatment of attention deficit disorder in children, and could lead to increased understanding of and more effective relief from internal pain.

As McIntyre asserts: "Magnetic resonance imaging is going to have an incredibly wide and important range of application."

## Campus Notebook

• **Rais Khan**, professor of political science, was invited to testify regarding the Act to Establish the Department of Canadian Heritage (Bill C-53) before the House of Commons Standing Committee on Canadian Heritage in December, 1994.

• **Geoffrey Scott**, professor of geography, has published a book entitled *Canada's Vegetation: A World Perspective* (McGill-Queen's University Press). The book provides an overview of Canada's vegetation within a global context.

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Comments, suggestions and submissions are welcome. (All material is subject to editing.) The deadline for the next issue is Feb. 27.

*in edition* is printed on recycled paper. After you have finished with this issue, please pass it on to a friend.

## Working Together, Thinking Together

Deborah Begoray thinks videotape can be an important tool in improving the collaborative skills of high school students.

Begoray, who joined the University faculty last summer as an assistant professor of education, has initiated research to study how students function in groups, and to develop techniques that will increase their competency when working together. She calls it the "Working Together, Thinking Together" project.

As a pilot project, Begoray will go into a St. James-Assiniboia high school this spring to observe grade 10 students as they work on a group writing project.

"I'm looking for a change in their approach to a collaborative project, and for overt awareness of what they have done," she explains. "I'm going to compare different ways of encouraging metacognitive reflection—can they monitor their thinking processes, and can they control them?" Begoray speculates that awareness makes a person more able to change ineffective behaviour, and to continue effective behaviour.

Following the pilot project, which will involve five students, she plans to observe a full class for two years. The class will be split into three groups, all working on writing projects and then reflecting on the collaborative process in different ways. All three will be videotaped.

Only one test group will view the videotapes of themselves working in a group, and discuss what they have seen. The second will keep journals of the group process, which they will discuss with one another, but they will not view tapes. The third will only record their own perception of the group process in individual journals, without discussion.

Begoray wants to ascertain if the method that encourages the greatest reflection on their behaviour—watching the

videotapes and discussing them—improves the collaborative process.

The videotapes of all three groups will serve as an important observation tool in her research. Begoray became interested in the potential afforded by this medium when she conducted doctoral research into the collaborative work of business writers, whom she videotaped. She was amazed by the complexity of interaction those tapes revealed.

"Every time I, or someone working with me, watched the tapes, we would notice different things. There are all kinds of complexities in the process, but unless you have that visual and verbal data and are able to stop it, to rewind it and go over it, it's difficult to assess the process."

Once in the school, she will determine what kind of project is most appropriate in cooperation with the teacher. "One thing that we're concerned with as researchers is that we're helping to develop processes that classroom teachers will actually use. It's important to do the research in a cooperative and unobtrusive manner, rather than coming in and saying 'this is what you should be doing in the classroom.'"

When the research is completed, Begoray will begin exploring avenues of publishing her data. She hopes to make her research findings widely available on the Internet.

The Board of Regents approved funding for the "Working Together, Thinking Together" pilot project in January, and Begoray has applied for a grant from the Social Sciences and Humanities Research Council of Canada to complete the project. She plans to begin work at the high school in March, as soon as she receives approval from the school board.



*Deborah Begoray has initiated research aimed at improving the collaborative skills of high school students.*



## Innovative Computer Programs Enhance Language Learning

André Oberlé is doing anything but relax while on administrative leave. Oberlé, chair of the Department of Germanic Studies, spends hours a day at his computer, developing computer assisted language learning (CALL) programs.

These programs, designed for those learning German at the junior and high school levels, supplement and reinforce what students learn in the classroom. Called "Computerlex," they complement the British Broadcasting Corporation's popular "Lernexpress" series of videos and textbooks.

The computer programs allow students to learn about German culture and practice grammar through a variety of interactive pursuits. Each program contains graphics, and each comes with an on-line dictionary. Oberlé says working on the computer challenges students, and they are often unaware that they have spent hours repeating the same lesson in different forms.

"I believe a language can't really be taught—a language is learned," says Oberlé, who insists that the computer does not replace the teacher, but serves as another tool in the learning process.

Oberlé recently received funding from the provincial Department of Education and Training to assist in getting his programs into the schools. Indeed, 30 Manitoba schools already run his programs, as do many out-of-province schools and several universities.

Oberlé has also received support from the University, and considers his administrative leave to be an important grant that enables him to concentrate on his work.

In addition to designing programs, Oberlé holds workshops across Canada to instruct teachers on how to write their own programs, or how to choose the program that best suits their needs. A program must fit well into a course, and must be deployed at the appropriate time.

"Picking a good program is tricky," Oberlé asserts. "A lot of them out there are quite bad."

According to Oberlé, creating a good CALL program is a complicated task. For each question posed in the program, Oberlé must ensure the computer recognizes all the possible correct responses. And then he must draw on 25 years of

teaching experience to anticipate a myriad of incorrect answers—those misinterpretations common to students learning German. A "bad" program, according to Oberlé, will simply tell a student they have answered incorrectly, and will provide the right response, or no response at all. This prevents a student from fully understanding, and may lead to frustration. Oberlé's programs provide students with assistance—even hints—to help them understand and reach a correct response.

Students benefit from the individualized attention computers offer, and, as Oberlé notes, computers are more patient than people, and don't mind getting the wrong answer many times. That can make students less timid about taking chances with a language they are learning.

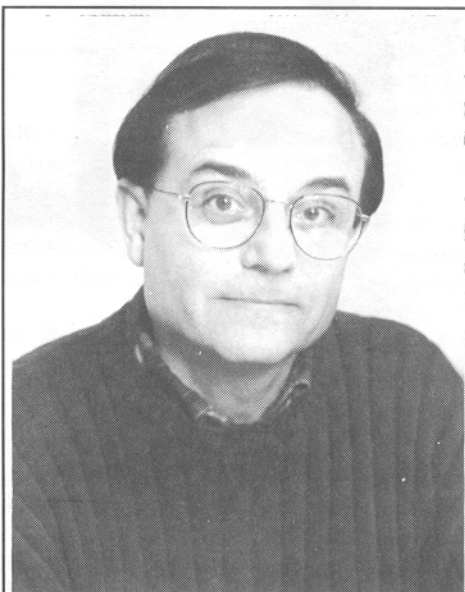
"When they start the program, they start to improve. If they use the programs for three years, their response time and concepts of grammar improve dramatically," notes Oberlé.

Oberlé is required to develop programs to run on the equipment already in schools. He works in both MacIntosh and IBM formats, and his programs are suitable for older machines.

Both the programs and Oberlé's help are available free of charge. He spends much of his time providing assistance to users of the program. His CALL programs also contain on-line tutorials, for the uninitiated and those unfamiliar with a certain machine.

Oberlé himself gets a lot of help. Through the Internet, he is in contact with people across the country who offer expertise in designing similar programs. In particular, Oberlé relies on the "genius" of Bill Gilby at the University of Calgary, who conceived and developed the CALL exercise generator (CALLGEN) programming necessary to run Oberlé's programs.

Oberlé believes programs like "Computerlex" can be utilized in many disciplines. He is adamant in his belief that computers are changing the way we teach and learn, and stresses: "We have to get into the twenty-first century—now."



*André Oberlé's computer programs are used in several of the province's schools.*

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## Gala Evening to Feature Readings by Esteemed Authors

In March, the Alumni Association will present **Alumni in Print**, a special evening of readings by graduates of The University of Winnipeg who have established themselves as important Canadian writers.

Award-winning authors Bill Richardson (class of '76), Margaret Sweatman ('74) and Sarah Klassen ('63), will read from their works, and answer questions from the audience. Musical accompaniment will complement some of the authors' readings, and a reception will follow. Publications by the authors will be available for purchase and for signing during the evening.

Richardson, a writer of humorous verse, received the Stephen Leacock Award for Humour in 1994 for his book *Bachelor Brothers' Bed and Breakfast*. Sweatman's first novel, *Fox*, won the 1991 McNally Robinson Manitoba Book of the Year Award. Recently, Sweatman worked with Glenn Buhr, whose musical talent brings her poetry to life on the soon-to-be-released CD *Broken Dreams*. Klassen's *Violence and Mercy* was also a finalist for the McNally

Robinson Award for the best Manitoba novel in 1992.

Lori Shoemaker, vice-president of the Alumni Association, says: "An event like this gives the association a chance to profile some of our outstanding alumni. And it's an excellent opportunity for students to meet and talk with graduates who have done exceptionally well in their fields."

The Alumni Association appreciates the support of the Canada Council, the University's Department of English and the University

Relations Department.

*Please join us in Eckhardt-Gramatté Hall on March 9 at 7 p.m. to enjoy this very special evening of entertainment. Tickets for Alumni in Print are \$5 for adults, \$3 for students and seniors. For information or to purchase tickets, call 786-9711. Tickets are also available from McNally Robinson Booksellers and at the University's Info Booth.*

## UWSA Election Results

Arlan Gates has been elected president of The University of Winnipeg Students' Association. The UWSA elections closed Feb. 9.

Other successful candidates were:

- Shannon Slater/Elizabeth Carlyle (co-vice-presidents, advocate)
- Kanga Kalisa (vice-president, student services)
- Clarissa Lagartera (community liaison)
- Aviva Goldberg/Preet Sandhu (science co-directors)
- Susan Kushneryk (arts director)
- Cory Webb/Anita Riedl (status of women co-directors)
- Yaw Amoah Gyampoh (promotions director)
- Amar Gupta (CFS liaison)
- Dan Leclair (education students director)
- Ricky Lutchmeesingh (international students director)
- Richard Hanson/Patrice Miniely (lesbian, gay and bi-sexual collective co-directors)
- Sean Melrose/Zhila Naghibzadeh (mature/part-time students co-directors)
- Preston Parsons (adaptive services director)
- Jonathon Syms (environmental ethics director)

Results are unofficial until ratified by the UWSA Board of Directors.

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*"Coming Events" is compiled by University Relations. Planning a campus event? Please let us know. Send the information (in writing) to Lois Cherney, University Relations, Room 4W15. Basic details about your event are required: what, when, where, sponsor, price of admission (if any) and the name of a contact person. Submissions must be received at least 12 working days before the event.*

MON., FEB. 27

- **Board of Regents** meets at 5:30 p.m. in Riddell Hall.  
 - **Music at Noon**—Composer/pianist Blakeman Welch performs in Eckhardt-Gramatté Hall from 12:30-1:20 p.m.

WED., MARCH 1

- **Music at Noon**—Jonas Carlson, cello, and Dorothy Beyer, piano, from Brandon University, will play in Eckhardt-Gramatté Hall from 12:30-1:20 p.m.  
 - Skywalk Lecture Series—Donald Bailey, Department of History, will lecture on **"Piety and Power in the 17th Century."** Did religion and politics complement or clash with one another in the time of Cardinal Richelieu?

THURS., MARCH 2

- Skywalk Concert Series—**CELLESTI!**, Winnipeg's new, innovative cello quartet, will perform works "From Handel to Gershwin."

FRI., MARCH 3

- **Music at Noon**—University of Winnipeg students will perform a recital, coordinated by guitarist David Gamble, in Eckhardt-Gramatté Hall from 12:30-1:20 p.m.



*Virtuosi Concerts presents the Penderecki String Quartet on Sat., March 11. See details, above.*

SAT., MARCH 4

- Collegiate students Eugenia Kirjner and Tatiana Roitman will perform a **special scholarship piano recital** in Eckhardt-Gramatté Hall at 7:30 p.m. Tickets are \$10 (\$5 for students) available at the door, or call 697-3850 or 339-5559. All proceeds will assist these brilliant musicians in their future studies.

MON., MARCH 6

- **Music at Noon** presents the Winnipeg String Quartet with WSO musicians performing: "From Rags to Riches," in Eckhardt-Gramatté Hall, 12:30-1:20 p.m.  
 - **"Crossing Borders: Tools and Methods of International Research,"** a symposium sponsored by the University's chair in German-Canadian Studies and the Department of History, will take place in the Faculty and Staff Club from 4-6 p.m. Admission is free; refreshments will be served. For information, contact Angelika Sauer at 786-9007.

WED., MARCH 8

- **Music at Noon** presents Marilyn Lerner, jazz pianist and composer, in a solo recital,

Eckhardt-Gramatté Hall, 12:30-1:20 p.m.

- Skywalk Lecture Series—Richard Staniforth, biology, will explain **"Manitoba's Wild Orchids: How They Trick Insects."** Explosive mechanisms and insect traps enhance orchids' prospects for successful pollination.

THURS., MARCH 9

- Skywalk Concert Series—**The Barley Mow Band**, Winnipeg's own Irish non-rovers, will warm you up and mow you "Down Home" with their folk songs, impish comedy and exuberant blarney-busking!

- **Understanding the Psychology of Victims and Harassers** is the first in a series of three sexual harassment workshops. The workshop runs from 9 a.m. - noon in Eckhardt-Gramatté Hall. Cost is \$25 to attend; \$15 for students/seniors. To attend all three workshops: \$60 (\$30 for students/seniors). For information/to register, call Naomi Levine: 786-9161.

- **Puritans Have Fun: Sex, Drinking, Dancing, Sports and Parties in Colonial America**—Bruce Daniels, history, looks at how the puritans pursued fun as part of Continuing Education's LINKS program: 7-9 p.m. in the Staff & Faculty Club (cash bar available). \$10 fee. To register, call 942-4211 seven days in advance.

- **Alumni in Print**—Award-winning alumni authors will read from their works in Eckhardt-Gramatté Hall, 7-9 p.m. Reception to follow. Tickets: \$5 (\$3 for students), available at McNally Robinson Booksellers, the Info Booth, or call University Relations at 786-9711.

FRI., MARCH 10

- **Music at Noon** presents **CELLESTI!** performing Handel, Gershwin, Joplin and the famous Pachelbel's Canon, in Eckhardt-Gramatté Hall, 12:30-1:20 p.m.

SAT., MARCH 11

- Virtuosi Concert Series—Canada's pre-eminent string quartet, the **Penderecki String Quartet**, will perform at 8 p.m. at Holy Trinity Church (Donald at Graham). Tickets are \$16 for adults, \$14 for seniors/students, \$10 for children, and are available by calling 786-9000. The concert is co-sponsored by the University and CBC Stereo.

MON., MARCH 13

- **Music at Noon** presents Jeffrey McFadden, virtuoso classical guitarist, in Eckhardt-Gramatté Hall from 12:30-1:20 p.m. This event is co-sponsored by the Winnipeg Classical Guitar Society.

WED., MARCH 15

- **Deadline for applications to attend Explorations '95.** Presented by the Faculty of Theology, these seminars provide an opportunity for study, discussion, and fellowship. Topics include "Perspectives on the Parables: Images of Jesus in his Contemporary Setting," and "The Enneagram and Spirituality." The registration fee is \$50; non-clergy spouses may register for \$25. For more information, call 786-9390.

## Skywalk Lecture and Concert Series

The Skywalk Series brings you lectures and concerts every Wednesday and Thursday, 12:15 to 12:45 p.m., at the Winnipeg Centennial Library (2nd floor Auditorium, off the Skywalk). See "Coming Events" for details.