TRENT UNIVERSITY

SHOWCASE

FALL 2014

FIFTY YEARS OF LEADING-EDGE RESEARCH AND TEACHING

BUILDING ON FIFTY YEARS OF RESEARCH EXCELLENCE

When Trent was founded in 1964, the seeds for excellence in innovative research and teaching were planted in the spirit of creating a world-class university.

As the University has evolved over fifty years, Trent has been engaged in cutting-edge research in pivotal areas like humanities and culture, the environment, and healthy and sustainable communities.

"Trent has always been a really fertile and open-minded place, where people are willing to experiment," said Dr. Neil Emery, vice-president of Research and International. "Without strict boundaries around disciplines, faculty members feel like they can do almost anything to succeed."

Fertile ground for research

As Trent celebrates its 50th anniversary throughout the 2014-15 academic year, the University's faculty, staff, students and alumni reflect on five decades of uniquely interactive learning. Often, it is the connection between research and teaching that takes place at Trent that makes it shine – an outstanding faculty publication record, and attracting top research grants in the sciences, social sciences and the humanities, all speak to fifty years of excellence.

Dr. Neil Emery, vice-president, Research and International, Trent University

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Engagement from the Peterborough community and academic leaders committed to research created an ideal place for both young and established faculty members to initiate new programs. The ingenuity of those researchers who were attracted to Trent has resulted in an interdisciplinary hub of knowledge, establishing facilities such as the Water Quality Centre, an international centre for aquatic science, and the Trent Centre for Aging and Society, which has received widespread acclaim for its integration of faculty from Sociology, Psychology, the Trent/Fleming School of Nursing, English Literature, Gender & Women's Studies, Geography and Canadian Studies. That expertise is also reflected in the quality of teaching and learning for Trent students.

"Research connections made by our faculty around the world lead to opportunities for undergraduate and graduate students to work in labs and research centres and undertake exchanges," Professor Emery said. "Students also benefit when faculty bring experiences of their global travels back into the classroom to address topical, urgent issues."

Applying research to critical issues in society

The interdisciplinary aspect of Trent's research and teaching model is a key factor in attracting star faculty members who will challenge the way their students think and learn, and contribute to global knowledge. Faculty members build broad and strong networks with colleagues across a multitude of fields, each person bringing a new strength.

"Students also benefit when faculty bring experiences of their global travels back into the classroom to address topical, urgent issues."

"In the sciences, we're analytically very strong, but we speak the language of social sciences and humanities as well, which allows us to have a two-way relationship between different disciplines," Prof. Emery said. "Faculty in the social sciences and humanities may learn what is possible from science and technology, and scientific faculty gain awareness of current issues in government relations, policy development, and international affairs."

Partnerships like these are helping Trent to develop further expertise on socially-relevant cross-disciplinary topics like global warming, poverty, Indigenous issues and aging demographics. "The adaptation of society to major political, social, economic and environmental change is a theme of research at Trent," Prof. Emery said. "These efforts will allow Trent to engage in the community and at a new level in Canadian research."

Looking to the future, the University's Strategic Research Plan for 2014-2018 will leverage Trent's existing strengths to expand its capacity for interdisciplinary research in order to reach new levels of excellence.

Speaking of the plan, Prof. Emery said, "We are building on our current strengths, including our active research centres, Canada Research Chairs, and many successful awards from the Canada Foundation for Innovation – those speak loudly to where our expertise exists currently and also to our emerging strengths."

With a distinctive research plan in place and a strong history of research excellence, Trent is poised to continue to make a name for itself throughout the next 50 years and beyond.

TRENT 50 UNIVERSITY 1964–2014

A Message from the President and Vice-Chancellor of Trent University

TODAY AND THE FUTURE: A REFLECTION UPON TRENT'S 50TH ANNIVERSARY

Trent's 50th anniversary provides us with an exciting opportunity to celebrate our collective accomplishments and prepare the way for fifty more years of success. Our past achievements underscore our reputation as a university which offers an impressive range of academically rigorous programs enhanced with all the benefits of high quality research. When we provide Trent students with the opportunity to learn from professors who are doing groundbreaking work in a myriad of fields across the globe, we provide them with the chance to learn as they actively participate in our attempt to change the world for the better.

When we look back on the past 50 years, we see that the world has changed – and post-secondary education along with it. Today, university teaching and research is expanding to incorporate alternative modes of communication and learning. This is a positive development but we should not forget that some things are the same. Innovation and forward thinking have always been the driving force for research. At Trent, I think that an institutional commitment to a spirit of change and innovation is the greatest asset we bring to the research table.

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In this issue of *Showcase*, you will find highlights of Trent's fifty-year history of challenging the way we think through research questions. We have included many examples of ways in which our faculty and students continue to break new ground in critical areas across the sciences, social sciences and humanities. I encourage you to engage with Trent as we celebrate our fifty-year legacy and look ahead to its resounding effects on our immediate communities and around the world in the coming years.

Thank you for joining us in celebrating Trent's legacy.

Leo Groarke, Ph.D.
President and Vice-Chancellor

1960s

IN THE BEGINNING, THERE WAS THE TURTLE

Professor emeritus Dr. David Lasenby can trace the origins of his career as an aquatic researcher back to one night as a Trent student aboard the TURTLE, a floating laboratory which cruised the Trent-Severn waterway in the 1960s as part of a fledgling university that had yet to make its mark.

"Imagine a houseboat with 'Trent University' on its side, floating around the Kawarthas, exposed to cottagers and tourists. It may have been helping to raise the profile of a small, new university," Professor Lasenby suggested.

The Trent University Research and Teaching Lab, christened as the TURTLE, was launched in 1965 through the work of Dr. Roy Edwards, the first chair of the Biology department. It was supported through a research grant from the National Research Council, another first for Trent. The houseboat provided researchers with a stable platform for sampling, and carried equipment so aquatic samples could be analyzed on site.

For a university barely one year into its existence, it was a novel idea.

At the time, Prof. Lasenby, a member of Trent's first class, was an undergraduate Biology student assisting with the aquatic research.

"I've always felt that hands-on fieldwork, getting your feet wet, was essential."

"One night, we were collecting samples on Stoney Lake and we pulled up a specimen we couldn't identify," he said. "Dr. Edwards recognized it as a freshwater shrimp. Later, as a Ph.D. student in Toronto, I remembered that discovery and based my thesis on a comparative study of freshwater shrimp in the Arctic and the Kawarthas."

Students boarded the TURTLE to collect and analyze aquatic samples in the 1960s.

An ideal platform for aquatic research

Like Prof. Lasenby, the TURTLE had a profound impact on all of the students who had the chance to learn from it (and on it). Several went on to pursue careers related to water biology, including Prof. Lasenby, who returned to Trent as a faculty member in 1971.

"I've always felt that hands-on fieldwork, getting your feet wet, was essential," said Prof. Lasenby, who credits his experience on the TURTLE for influencing his teaching style. "Students need this type of exposure to better understand and critically evaluate the numbers they are looking at in the laboratory and in the literature."

"Trent is one of the best places, anywhere, to teach and do research in freshwater ecology."

Prof. Lasenby sensed from the beginning that water was going to become an important area of research for Trent. "Trent is one of the best places, anywhere, to teach and do research in freshwater ecology," he said. "There is an enormous variety of water bodies nearby, in part because we sit on the edge of the Canadian Shield."

The people make the University

The introduction of the Watershed Ecosystems graduate program (now Environmental and Life Sciences) in 1976 was another milestone which helped to attract world-class faculty to teach at Trent.

"Over the years, we've brought together faculty who are good at what they do and are able to work collectively to achieve a common goal," said Dr. Chris Metcalfe, professor of Environmental and Resource Studies and chair of the Institute for Watershed Sciences. "They have been instrumental in attracting grant money that has helped us to develop world-class facilities." ●

MATTER OF COURSE

QUINTESSENTIAL CANADIAN STUDIES CLASS COVERS A LOT OF GROUND

"The land is not merely the stage on which the human drama is enacted; it's the leading player in the play," says Dr. John Wadland, describing the essence of "Canada: the Land," the iconic Trent course he created in 1972 and taught for 36 years.

Now in its 43rd year, "Canada: the Land" was Trent University's first interdisciplinary course, cross-listed between the Departments of Canadian Studies, Environmental & Resource Studies, Geography, and Indigenous Studies, and became the model for others that followed.

Prof. Wadland, who retired in 2008, attributes the course's longevity to its relevance and complexity, which students found engaging. He points out that the course never got stale, evolving to address changing issues related to the land question, citing the James Bay Cree hydroelectric conflict in the 1970s as an example.

Professor Ryan Bowie, who currently teaches the course, explains the variety of perspectives through which he and his students examine the function and idea of the land. "We look at the land through the widest interdisciplinary lens that we can take, through social science investigation,

Dr. John Wadland, professor emeritus, Canadian Studies, founded Trent's iconic "Canada: The Land" course in 1972.

1970s

TRENT'S MASS SPECTROMETRY INNOVATOR: A SCIENTIFIC LEGACY

Dr. Ray March has come a long way from his humble beginnings – not unlike Trent University. In 1965, Professor March took a chance by accepting a tenure-stream position at a newly-established Trent. Eighteen years later, his decision to join Trent and to pursue basic research resulted in the commercialization of a new, low-cost form of mass spectrometry technology known as quadrupole ion trap mass spectrometer.

Currently, Trent houses 16 mass spectrometers, supporting developments in the health sciences and the agriculture and food industries.

When combined with a gas chromatograph and a new desktop computer, and using a new method of mass-selective axial ejection of ions introduced by Finnigan Corporation, the user-friendly quadrupole Ion Trap Detector (ITD) instrument brought about a revolution in the field of mass spectrometry. Today, the 3D-quadrupole ion trap mass spectrometer is used in almost every well-equipped university and research facility the world over.

Building a legend

Prof. March's intense study of mass spectrometry began in 1972, during a year-long sabbatical in France, where he researched a new technique used to weigh the mass of ionized molecules. He became fascinated by the quadrupole ion trap, which had appeared in a patent by Wolfgang Paul (Nobelist, 1989), but was not available commercially, and its potential to replace larger, more labour-intensive equipment. He began a collaboration with fellow Leeds University undergraduate, Dr. John F.J. Todd at the University of Kent in Canterbury UK, which led to joint and individual research publications, student visits, seven books, and continues 40 years later.

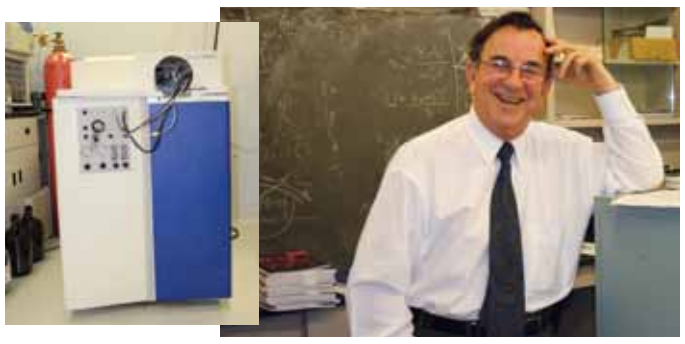
Upon his return to Trent, Prof. March decided to build his own quadrupole ion traps with his students and workshop colleagues, Wayne King and the late C.G.S. Stuart. In 1989, Professors March and Todd and Dr. Richard Hughes co-authored the groundbreaking *Quadrupole Storage Mass Spectrometry*, the culmination of 15 years of research and the first-ever publication devoted solely to the theory and practice of quadrupole ion trap devices, which led directly to the creation of mass spectrometer technology used now in cutting-edge research.

Trent: a place for the meeting of the minds

From his office adjacent to the world-class Water Quality Centre at Trent, Prof. March today reminisces about his career as an internationally-recognized chemist and educator. Joining Trent in its infancy in 1965 had been a leap of faith, but he was attracted by the one-year-old university's ambitious plans.

"I thought it might be worthwhile to be a part of the creation of a university," says Prof. March, who was originally interviewed by founding president Tom Symons.

Prof. March built his research program over the years, starting with the first spectrograph purchased for him by the University for $3,000. He supervised a small number of Masters students working on theses, and kept in touch with his former colleagues around the world, most notably his own Ph.D. supervisor, Dr. John Polanyi, who would be awarded the Nobel Prize in 1986. Now the University's state-of-the-art Water Quality Centre is home to 16 mass spectrometers, including two new ion-trapping instruments, supporting developments in the health sciences, environmental sciences, and the agriculture and food industries.



Dr. Ray March, a pioneer of Trent's Chemistry department, also pioneered a mass spectrometer technology now used in labs around the world.

Taking mass spectrometry out of this world

Over the course of his career, Prof. March's influence on the field of mass spectrometry has reached far beyond the labs at Trent. Most recently, to the far reaches of outer space. Ten years ago, a facsimile of the original quadrupole ion trap mass spectrometer constructed by Prof. March was placed on the Rosetta "Comet Chaser," which, on November 12, 2014, achieved its decades-long mission and landed successfully on the comet 67P/ Churyumov-Gerasimenko. The Lander is now using the quadrupole ion trap mass spectrometer to determine the chemical composition of the comet and isotope ratios for H, C, N and O. This information – never collected before – will expand our understanding of the universe and the creation of the earth.

Humbly speaking of the role he has played in this groundbreaking mission, Prof. March says: "It is all very exciting to have pioneered the construction and development of a powerful analytical instrument that has been included in the Rosetta project. I am grateful to my students who had faith to labour with me in pursuit of the unknown." ●

1980s

PRESERVING INDIGENOUS LANGUAGES – EMPOWERING A PEOPLE

Dr. Shirley Williams worked with Trent students to develop first-ever educational resources in the Nishinaabemwin language

When a series of suicides rocked her small community on Manitoulin Island, Dr. Shirley Williams '79 had an epiphany, leading her to realize what her life's work would be.

Professor Williams, now professor emeritus in Trent University's Indigenous Studies department, experienced first-hand the alienation of being cut off from her community and being forced to deny her language and culture, when she was placed in the residential school system as a ten-year-old girl. She never forgot her father's parting words to both "remember who she is" and to "remember her language," and has spent much of her career working to preserve and revitalize her mother tongue from the Wikwemikong First Nation.

"All these re-creative activities reflect the revitalization of Ojibway Nishinaabemwin thought and language, the rebirth of our cultural identity as a people. Putting these into practice is equivalent to regaining our voice, recovering ourselves, reclaiming our landscape, and re-imagining our place in the cosmos."

"My mother used to say: 'What are you going to tell the creator when you leave this world and answer him what have you done for your community?'" Prof. Williams said. "I thought, 'If I know my own language and culture, I can contribute.' Thereafter, everything led to language."

Incorporating the student voice

After completing a B.A. in Indigenous Studies at Trent University and a Native Language Instructors diploma from Lakehead University, she was hired in 1986 by Trent as an Ojibway language teacher. The first Indigenous person in Canada to achieve the rank of full professor based on her traditional knowledge, Prof. Williams continues to engage in ground-breaking research and development in the field of knowledge preservation.

"I started from scratch," she recalls. In keeping with her traditional learning, she turned to the students to develop her curriculum through collaboration. "The Nishinaabe do not say, 'This is what you must learn,'" she explains. "We ask: 'What is it you would like to learn?'"

Building on research she began in 1986, Prof. Williams created the Revitalization of the Nishinaabemwin Language Project to develop much-needed educational resources, including a dictionary, textbooks and an interactive language instruction program – all in Nishinaabemwin. Prof. Williams believes that written materials play an essential role in the revitalization of the language and, through it, the culture, particularly for those who lost their language through their residential school experiences.

Reflecting on over a quarter-century of work, Prof. Williams is proud to have been a part of preserving her language, and grateful that she never lost the language that has been so central to her life.

"All these re-creative activities reflect the revitalization of Ojibway Nishinaabemwin thought and language, the rebirth of our cultural identity as a people," she said. "Putting these into practice is equivalent to regaining our voice, recovering ourselves, reclaiming our landscape, and re-imagining our place in the cosmos." ●

through scientific understanding, and through different world-views, particularly Indigenous and European," he says. "In 1972, we were beginning to seriously reconsider our relationship with the land, and that has deepened since then as ecological crises become bigger and more difficult to wrestle with."

Describing the classroom as a shared community experience, Prof. Wadland says students can expect

"The land is not merely the stage on which the human drama is enacted; it's the leading player in the play"

a conversational environment featuring fascinating visitors, noting that celebrated author Margaret Laurence was a regular attendee.

Prof. Bowie says the course is helpful for students wishing to build a broad foundation for future study and work. He should know: as a Trent undergrad, he took the course under Prof. Wadland. "My experience in the course set me on the direction of research that I've taken since then," Prof. Bowie says. ●

CHALLENGE THE WAY YOU THINK

1990s BESTSELLING AUTHOR, HISTORIAN AND PROFESSOR FOUND HIS CAREER INSPIRATION AT TRENT

Dr. Tim Cook, one of Canada's foremost historians, wasn't sure he wanted to devote his life to the study of history – until he came to Trent.

With both parents as historians, Dr. Cook arrived at Trent in 1990 with an open mind about his undergraduate degree options. It was the faculty members he met in the History department whose passion for their subject and for teaching drew him in.

"Professors like Dr. Stuart Robson, Dr. John Syrett and Dr. John Jennings were so dynamic," Dr. Cook says. "The mentorship they offered, and the chance to learn from experts, was the draw for me."

"We want students to become good writers, to read widely and to be able to synthesize their thoughts. Those are skills that I didn't have when I came to Trent, but I did when I left."

The political and cultural situation of the early 1990s was rich with possibility for Dr. Cook as a budding scholar. "It was a really interesting time for Canadian history – it was after Meech Lake, things were falling apart," he says. "I thought I might become a constitutional historian. But then I took a class on the world wars with Stuart Robson – that put me on the trajectory that I'm on today."

Finding a home at the heart of the Canadian historical scene

After attending Royal Military College for a master's degree and pursuing his doctoral degree in military history, Dr. Cook has landed at the heart of the Canadian historical scene: working at the Canadian War Museum in Ottawa, where he has curated the First World War permanent gallery and other exhibitions since 2002. He also teaches at Carleton University, and has authored seven books, many of them award-winning, including *Warlords, The Madman and the Butcher, Shock Troops, At the Sharp End, Clio's Warriors*, and *No Place to Run*. In 2013, he received the Queen's Diamond Jubilee for his contributions to Canadian history and was awarded the Governor General's Award for History (formerly the Pierre Berton award). His newest book, *The Necessary War*, is the first volume of a two book set to explore Canada in the Second World War. The second volume, *Fight to the Finish*, will be published next year.

As Dr. Cook reflects on his accomplishments, he credits his education at Trent University for preparing him for graduate work and his outstanding career in his field. "The program gave me a very strong foundation for all the other things I've done in my life," he says.

Of the many skills he developed during his undergraduate degree, several have been key in his work. "The critical one, which I still hope is at the core of arts degrees, is being a good communicator. We want students to become good writers, to read widely and to be able to synthesize their thoughts," Dr. Cook says. "Those are skills that I didn't have when I came to Trent, but I did when I left."

Equally important is the ability to present research – that's where seminars come into play, he says. "The real advantages of Trent were those small intimate seminars. You've got to be able to defend your arguments and discuss them intelligently," he says. "We had professors dealing face-to-face with students in first or second year. We got to know them personally. That was a tremendous push for me to improve as a student."

Dr. Tim Cook discovered more than just a passion for history at Trent.

"At Trent, everyone finds their own community – you find groups of like-minded people and that does so much to enrich the educational experience."

Dr. Cook also has fond memories of his four years playing varsity rugby at Trent, where he built a strong camaraderie with his teammates, some of whom he is still in touch with 20 years later. "Those were other important skills that I developed outside of the classroom," he says. "At Trent, everyone finds their own community – you find groups of like-minded people and that does so much to enrich the educational experience." ●

2000s USING TECHNOLOGY TO TRACK THE EVOLUTION OF THE WRITTEN WORD

Graduate students in Trent University's Public Texts M.A. program, which was launched in 2007, are revolutionizing the way academics study and understand changing versions of the written word, with the help of technology.

Dr. Zailig Pollock, professor emeritus in English Literature at Trent, is working with his students to develop software that offers a new way of tracking the evolution of texts over time. In traditional editions, various versions of a text are compared to each other using specialized symbols and terminology to indicate the changes that the work went through to reach its final form. The new software aims to make the representation of this process more transparent and accessible.

Students have been actively involved in the development of the Digital Page Reader, with dozens serving as aides to Prof. Pollock on the project.

"The final annotated work is visually complex and often challenging for both scholars and people outside of academia to understand," said Professor Pollock. "The Digital Page Reader will make it easier to review different versions of one piece of writing at the same time, so that readers can spend more time focusing on the content of the text itself."

Making reading more active

The software program – named after P.K. Page, the celebrated poet and artist whose body of written work Prof. Pollock is currently editing – uses an intuitive visual overlay that allows the reader to take an active part in choosing which levels of information to review: individually, or multiple levels at once.

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Students have been actively involved in the development of the Digital Page Reader, with several serving as research assistants to Prof. Pollock on the project. This focus on collaboration is par for the course at Trent, where faculty give students the skills they need to blaze new trails through innovative research methods. Prof. Pollock has published papers jointly with his students, offering a rare opportunity for young scholars to build their own academic reputations. ●

The process of editing text will become much easier thanks to Dr. Zailig Pollock and Trent graduate students.

Trent University has been at the forefront of interrogating cultural change since the 1960s, and the Public Texts graduate studies program is no exception. Founded seven years ago, the program is focused on taking well-known concepts and analyzing how new developments in communication have turned them on their heads. Past students have had the unusual opportunity to intern with small publishers, arts organizations, and even individual authors, showcasing the versatility of the program.

WHAT'S THE REAL STORY ABOUT HOW HUMANS AND NEANDERTHALS CO-EXISTED?

Anthropologist Dr. Eugène Morin believes that modern humans didn't simply replace the Neanderthals – we may have actually mated with them. In a multi-author study in the prestigious journal *Nature*, Professor Morin contributed materials used to support the notion that Neanderthals and modern humans could have lived during the same time period, at least for long enough that the two groups would have engaged in complex cultural and genetic interactions.

How closely are we really related?

Collaborating with an international group of fellow archaeologists, Prof. Morin participated in a study that raises important implications for research into the cultural, technological and biological elements involved in the replacement of Neanderthals by modern humans.

"Interactions between distinct populations – even those as distinct as Neanderthals and early modern humans – are extremely complex and rarely result in simple and direct replacement of one group by another," said Prof. Morin.

Dr. Eugene Morin and his students dig to find the truth about our lineage as humans.

The paper provides a more refined timeline for the disappearance of the Neanderthal species from Western Europe than any previous research. The new data is consistent with his earlier research which suggested that Neanderthals experienced severe population decline as a consequence of extremely unfavourable climatic conditions, yet succeeded in maintaining genetic ties with other neighbouring populations, including the anatomically modern humans arriving from Africa.

This process could have permitted the diffusion of Neanderthal traits into the modern human gene pool. These findings provided support to the hypothesis that Neanderthals contributed, although minimally, to the emergence of modern humans.

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The benefits of interdisciplinary conversation

Since taking a position with Trent University's Department of Anthropology six years ago, Prof. Morin's research has benefited greatly from interdisciplinary conversations with colleagues in other scientific fields. He is the first faculty member at Trent to be conducting research in his field, and the help he received from many individuals throughout the University has been a key factor in developing the studies that led to his latest publication.

"I have very fruitful discussions with Trent biologists and people from the Ministry of Natural Resources office on campus," he said. "I learned a lot from them about herbivores, which were extensively exploited during the Paleolithic era." This information was key to Prof. Morin's assertion, published in 2008, that modern humans are related to early Neanderthals, and ultimately influential for his latest research.

For Prof. Morin, the publication of this paper is the culmination of many years of research into the disappearance of the Neanderthal species. Working on team projects of this kind across the globe provides many opportunities for the exchange of ideas and keeping up to date on the latest advances in the field, he said. "Pulling together all these data from a wide range of sites and regions is always a challenge, but the results are often quite productive."

The next step, according to Prof. Morin, will be to reconcile these findings with the DNA evidence, a task that will require much more work – but Prof. Morin is up for the challenge. ●

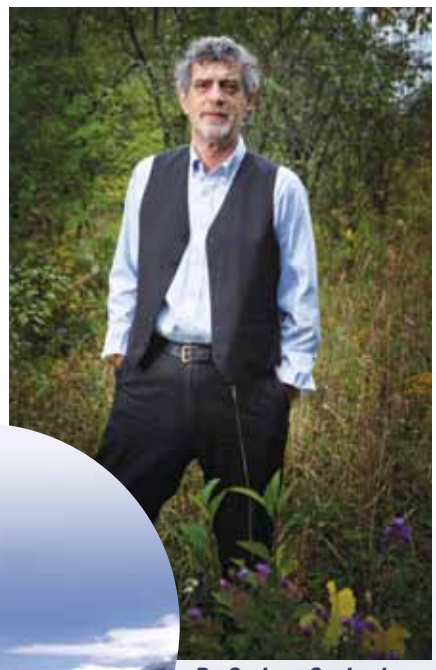
2010s

TRENT RESEARCHER SHINES LIGHT ON HUMAN CAUSE OF CLIMATE CHANGE

When it comes to climate change, there are almost as many theories and opinions as there are people to formulate them. But based on recent findings by Trent Geography professor Dr. Graham Cogley, the idea that humans should only share a small portion of the blame for climate change has been further discredited.

As part of an international team of scientists led by Dr. Ben Marzeion of the University of Innsbruck, Professor Cogley co-authored a study recently published in *Science* showing unambiguous evidence that human activities are having an increased impact on losses of glacier mass, a key symptom of climate change.

The team of scientists simulated glacier changes in Prof. Marzeion's computer model of glacier evolution, using the Randolph Glacier Inventory, a database of nearly all glaciers on earth that was developed with the help of Prof. Cogley.



Dr. Graham Cogley is shining a spotlight on the causes of climate change.

"Our finding is an independent nail in the coffin of the belief that climatic change is not mostly our fault," Prof. Cogley said. "People who still believe that are running out of places to hide."

In the paper, the team reports that about one-quarter of the global glacier mass loss from 1851 to 2010 is anthropogenic, or caused by humans. The fraction attributable to human activity has also increased steadily, reaching almost two-thirds of the overall loss between 1991 and 2010.

Prof. Cogley says glaciers have been shrinking since about the middle of the 19th century, when the Little Ice Age came to an end. Loss in glacier mass causes sea levels to rise, changes the seasonal availability of water resources, and increases hazards such as landslides and floods. Glaciers respond both to natural climatic influences, such as the changing output of radiation from the sun, and to human alteration of the climate. The extent of the human contribution has been unclear until now.

"Our finding is an independent nail in the coffin of the belief that climatic change is not mostly our fault. People who still believe that are running out of places to hide."

"We [found] unambiguous evidence of a growing human impact on glacier mass loss," Prof. Marzeion said. "Up to about 1950, glacier mass loss attributable to human activity is hardly noticeable, but the attributable percentage has increased steadily since then. We are very confident that it is now dominant, regardless of the fact that the glaciers would have lost some mass anyway." ●

NATIONAL LEADERSHIP IN RESEARCH EXCELLENCE

At Trent, eight faculty members hold Canada research chair positions with three more positions currently in recruitment, exemplifying the high level of research productivity and reputation of the University's professors. Maclean's ranked Trent as #1 in awards per full-time faculty, #1 in medical/science grants, and #5 in social science and humanities grants.* According to the Higher Education Strategy Associates' national survey, Trent has "by far the best publication record of any small-ish school in the country across all disciplines."

CURRENT CANADA RESEARCH CHAIRS:

Julian Aherne – Environmental Modelling
May Chazan – Feminist and Gender Studies
Céline Guéguen – Aquatic Sciences and Biogeochemistry
Dennis Murray – Integrative Wildlife Conservation
Bryan Palmer – Canadian Studies
Mehdi Sharifi – Sustainable Agriculture
Aaron Slepkov – Physics of Biomaterials
Paul Wilson – DNA Profiling, Forensics and Functional Genomics

CRCs IN RECUITMENT:

Indigenous Arts, Literatures and Performance
Aging, Health and Life-course in Rural and Non-urban Canada
Environmental Archaeology

*Primarily undergraduate category

2010s

TRENT PROFESSOR AND STUDENTS DISCOVER GENETIC SECRETS OF NEURODEGENERATIVE DISEASE

Professor Craig Brunetti, Environmental and Life Sciences Ph.D. student Andressa Lacerda, and undergraduate Biochemistry student Emily Hartjes discovered the genetic factors leading to the most common neurodegenerative disease in humans.

Unlocking the genetic code behind one of the most common neurodegenerative diseases known to humans was no cake walk, but with the guidance of her professor, Ph.D. student Andressa Lacerda has made a key contribution to future medical research. Along with Biology professor Dr. Craig Brunetti and undergraduate Biochemistry student Emily Hartjes, Ms. Lacerda discovered the genetic factors that result in Charcot Marie Tooth (CMT) disease.

Published in scientific journal *PLoS ONE*, Ms. Lacerda's research will lead to a better understanding of the disease, and provide clues for developing better diagnoses and treatments of CMT. The disease causes damage to the peripheral nerves of the arms and legs and eventually leads to muscle weakness and reduced mobility.

The research, undertaken by Ms. Lacerda with support from Dr. Brunetti and Ms. Hartjes, focuses on LITAF, a cellular gene that is used by the body to degrade and dispose of proteins. If proteins in the body aren't properly broken down, old protein fragments can accumulate and damage cells. The inability to break down proteins has been linked to a number of neurological disorders.

Until now, little in-depth research had been done on the LITAF gene. These new findings could have far-reaching effects on the diagnosis and treatment of Charcot Marie Tooth Disease, which affects one out of every 2,500 people.

These new findings could have far-reaching effects on the diagnosis and treatment of Charcot Marie Tooth Disease, which affects one out of every 2,500 people.

For example, Ms. Lacerda's work demonstrated that while some mutations in LITAF completely change the location of LITAF in the cell, other mutations result in only a partial change of LITAF. This may lead to different clinical outcomes for patients depending on the type of LITAF mutation that they carry. Future research could link different mutations in the LITAF gene with different types of CMT, and therefore, to develop new forms of therapy targeted to each type of mutation.

Undertaking graduate-level research with real and groundbreaking implications for medical treatments was a wonderful opportunity for Ms. Lacerda, who began her research on the LITAF gene in 2011.

"Trent is known for having an amazing Environmental and Life Sciences program, but people don't always realize that the University also has the capacity for this type of research. Being part of that and having my research showing that is amazing."

NEW BACHELOR OF SOCIAL WORK PROGRAM TAPS INTO EXPERIENTIAL LEARNING

Leading the new Social Work program in Durham, Dr. Tara La Rose will educate the next generation of social workers.

Over 200 students entered Trent's new Bachelor of Social Work (B.S.W.) program this fall at the University's campuses in Peterborough and Durham, starting their journey toward making a difference in local communities. Through the development of clinical knowledge, critical thinking skills, and the awareness of social justice issues, the next generation of social workers will answer the call of the local agencies that need them.

Dr. Tara La Rose joined Trent this fall to spearhead the program at the Durham campus. She brings a wealth of knowledge and experience in post-secondary education to her new role, including 12 years of direct social work practice in areas ranging from homelessness to domestic violence.

"Trent's commitment to community-based scholarship and experiential education, as well as the University's renowned International Development, Indigenous Studies and Environment Studies programs, all tap into a number of emerging trends in social work education and practice," Professor La Rose said. "This unique combination of resources suggests Trent has the capacity to deliver a B.S.W. program that will play a significant role in advancing the profession in a number of greatly needed areas."

"The new Bachelor of Social Work program is an excellent addition to Trent's wide-ranging program options and comes as a response to high demand for university-level education in this field," said Joe Muldoon, head of Trent University Oshawa. "The program will be especially successful in the Durham Region, one of Canada's most socially and economically diverse communities in close proximity to the largest metropolitan area in the country."

NEW EXPANDING ACADEMIC PROGRAMS MEET NEW DEMANDS

Bachelor of Social Work is one of several new programs to be launched at Trent this year. To meet the needs of incoming students and the demands of an increasingly diverse workforce, dynamic new programs have been added to the academic line-up at both the Peterborough and Durham campuses. Programs launched in 2014 include:

Human Resource Management, Postgraduate Certificate

Offered exclusively at Trent University Durham, Oshawa Campus, this new program, launched earlier in 2014, provides a university-level focus on human resource skills and encourages students to understand and question the evolving nature of how companies organize and lead people. *trentu.ca/hrmc*

Kinesiology, B.HSc.

Offered in partnership with the University of Ontario Institute of Technology (UOIT), the Kinesiology program provides students with the knowledge and skills needed to become a kinesiology practitioner, able to prescribe individualized exercise programs to improve or maintain the health, functional capacity and well-being of a range of healthy and clinical populations. *trentu.ca/kinesiology*

COMING IN 2015:

Communications and Critical Thinking B.A.*

Another exclusive program to Trent University Durham, this interdisciplinary program will provide students with the critical thinking, communication and problem-solving skills that are sought-after in employees within a world of rapid technological, cultural and social change. *trentu.ca/commstudies*

Water Science B.Sc.

Students will address contemporary water and aquatic challenges from multiple perspectives, gaining the skills needed to provide solutions for clean water, food, energy, recreation, climate regulation and waste assimilation. *trentu.ca/waterscience*

Masters of Educational Studies

The M.Ed. program will gear itself toward education professionals and those students who wish to pursue academic and leadership careers in medical or nursing education, environmental education, intersecting areas of psychology and education, and social work. *trentu.ca/education*

*pending Ministry approval

"RESEARCH ISN'T CONSUMMATED UNTIL THE RESULTS ARE TAUGHT."

T.H.B. SYMONS, FOUNDING PRESIDENT, TRENT UNIVERSITY

NAVIGATING THE MINEFIELDS OF SEXUAL HEALTH FOR YOUNG WOMEN

Dr. Michele McIntosh and nursing student Sarah Dykeman are conducting a study that hopes to get to the heart of a pressing and sometimes controversial subject: HPV or Gardisil vaccination.

In keeping with Trent's tradition of innovative research, Professor McIntosh, a faculty member at the Trent/Fleming School of Nursing, aims to better understand the knowledge girls bring to the vaccination decision and their participation in that decisioin.

Confusion about HPV, HIV and Gardasil

Studies show that many adolescent women are confused about HPV, with 15per cent believing incorrectly that HPV – the human papillomavirus – leads to AIDS. As many as 21 per cent of teens surveyed think the vaccine protects them from HIV and other sexually transmitted infections. This misinformation could lead teen girls to neglect the use of protection against STDs. Alarmingly, Public Health Canada reports that young adult females ages 16-24 have the highest incidence of HIV diagnosis in Canada.

According to Prof. McIntosh, this gap in information poses a serious health problem, as well as an ethical minefield faced by the front line nurses who administer the vaccine to young patients. Many adolescents may not have adequate knowledge of the risks, benefits or alternatives to the vaccine in order to be adequately informed.

Prof. McIntosh's study, entitled "A shot in the dark? The ethics of school based Gardasil vaccination programs," will incorporate Ms. Dykeman's thesis research, which focuses on gaining an in-depth understanding about the influences and information sources involved in young women's decision-making process regarding the Gardasil vaccine for HPV.

Nursing student Sarah Dykeman was presented with one of Trent's first-ever Health Professional Student Research Vouchers from CIHR.

Students learning to be agents of change

As a nursing student, Ms. Dykeman was initially drawn to the topic after she encountered the trend first-hand during her time working with adolescent girls at PARN, Peterborough's community AIDS resource network, which provides counselling and information resources on HIV/AIDS.

The issue inspired her to prepare an in-depth proposal to conduct her own research. As a result, Ms. Dykeman received one of Trent University's first-ever Health Professional Student Research Vouchers from the Canadian Institute of Health Research (CIHR) in April. Her involvement in this research study, alongside Prof. McIntosh, enables her to see how evidence is developed and how research is published and conducted.

"It's really about giving the teens the opportunity to have the knowledge and ensure they are engaged in the decision-making process in ways that are healthy for them."

Prof. McIntosh and Ms. Dykeman hope the study will be a catalyst for change.

"We can translate our findings into practical ways to improve the program for the girls and to enhance the ethical conduct of nurses who administer the vaccination programs in schools," said Prof. McIntosh. "It's really about giving the teens the opportunity to have the knowledge and ensure they are engaged in the decision-making process in ways that are good for them."

The Trent/Fleming School of Nursing is committed to advancing nursing practices and achieving social justice. "Nursing is sometimes seen as exclusively clinical," Prof. McIntosh said. "This particular project shows that nurses are also engaged in research with social justice aims. We are building on Trent's historic commitment to social justice by educating nurses to be agents for change." ●

OLDER WOMEN: ACTIVE, CONNECTED AND EMPOWERED

Challenging the common stereotype of older women as frail, disengaged, marginalized and apolitical, isn't easy, but Dr. May Chazan is willing to give it her all.

Professor Chazan is among a number of internationally-recognized researchers at Trent who are challenging myths about old age, including an interdisciplinary group of faculty at the new Trent Centre for Aging and Society. As a Canada research chair (CRC) in feminist and gender studies, and a professor in the Department of Gender and Women's Studies, she highlights the many important contributions older women are making in working for social change.

"The CRC position is an amazing opportunity to build a program of research and involve students in it, and Trent is a great place to do this," said Prof. Chazan. "There's a really terrific critical mass of feminist scholars here and an interest in aging."

Dr. May Chazan challenges stereotypes about older women.

CRC engages students in cutting edge research

Along with her students, Prof. Chazan's research explores networks of older women like the Raging Grannies and the Grandmothers Advocacy Network, and examines why and how they are organizing, with a specific interest in how they build solidarities across difference, both overseas and within Canada.

These studies are leading Prof. Chazan and her students deep into the community, where they conduct collaborative feminist research. Together, they document older women activists' life stories, conduct focus groups to better understand how these women build coalitions, and spend time at gatherings, meetings and protests.

"I really hope this work will bring visibility to the many important contributions older women are making in working for social change, and that it will bring new understandings to how we might go about building intergenerational solidarities and coalitions across difference."

Building solidarities across difference

"I really hope this work will bring visibility to the many important contributions older women are making in working for social change, and that it will bring new understandings to how we might go about building intergenerational solidarities and coalitions across difference," said Prof. Chazan.

Her past work is equally fascinating, exploring how older women are organizing in response to the massive HIV/AIDS epidemic in southern Africa and the very intricate and unexpected ways they have linked into a large Canadian movement of grandmothers, facilitated through the Stephen Lewis Foundation. This work will be published next spring in *The Grandmothers' Movement: Solidarity and Survival in the Time of AIDS*.

Prof. Chazan hopes to collaborate with colleagues at the Trent Centre for Aging and Society in cross-disciplinary studies that will further challenge the way we think about old age. As one of several Canada research chairholders at Trent, she joins some of the world's most accomplished and promising minds in research that could change the world. ●

RECOGNIZING FACULTY CONTRIBUTIONS TO RESEARCH

Trent researchers have been celebrated and honoured on the national and international stage since the University's inception in 1964. In 1986, the University decided that it was only fitting that we also begin to honour our best researchers internally as well, and created the Distinguished Research Award, the highest honour conferred by Trent for research and scholarly activity. For close to 30 years, this award has been conferred upon an outstanding Trent researcher annually in recognition of research excellence across the sciences, social sciences and humanities.

2013 – Dr. Ian Storey (Ancient History and Classics)
2012 – Dr. Don Mackay (Chemistry)
2011 – Dr. Jacqueline Solway (International Development Studies)
2010 – Dr. Bryan Palmer (Canadian Studies)
2009 – Dr. Douglas Evans (ERS)
2008 – Dr. Stephen Katz (Sociology)
2007 – Dr. Jim Struthers (Canadian Studies)
2006 – Dr. Chris Metcalfe (Environment/Resource Studies)
2005 – Dr. Barbara Marshall (Sociology)
2004 – Dr. Leonard Conolly (English Literature)
2003 – Dr. Peter Dillon (Environment/Resource Studies)
2002 – Dr. John Topic (Anthropology)
2001 – Dr. Joan Sangster (Women's Studies)
2000 – Dr. Carlyle Smith (Psychology)
1999 – Dr. Alena Heitlinger (Sociology)
1998 – Dr. Michael Peterman (English Literature)
1997 – Dr. Tom Hutchinson (ERS/Biology)
1996 – Dr. Robert Paehlke (Political Studies/ERS)
1995 – Dr. Doug McCalla (History)
1994 – Dr. Ray March (Chemistry)
1993 – Dr. Paul Healy (Anthropology)
1992 – Dr. John Burbidge (Philosophy)
1991 – Dr. Gordon Winocur (Psychology)
1990 – Dr. Joan Vastokas (Anthropology)
1989 – Dr. John Fekete (English Literature/Cultural Studies)
1988 – Dr. Keith Oldham (Chemistry)
1987 – Dr. David Kettler (Political Studies)
1986 – Dr. John Gilchrist (History)

Established in 1986, the Distinguished Research Award is given annually to a member of the Trent University faculty in recognition of outstanding achievement in research and scholarship.

BUILDING INDIGENOUS PARTNERSHIPS TO PROTECT CLEAN WATER IN CANADA'S NORTH

Trent celebrates the culimination of a five year partnership for cleaner water for Indigenous communities

For the past five years, Trent University researchers have been working on an innovative project designed to empower northern Indigenous communities to preserve their own access to clean, safe drinking water.

In 2009, the RBC Blue Water Project awarded $500,000 in funding to experts at Trent's Institute for Watershed Science and the Indigenous Environmental Studies program to develop the "Protecting Drinking Water in Indigenous Communities in Canada's North Program," with the support of the RBC Foundation and in partnership with Fleming College.

Supporting Indigenous Knowledge

The program aimed to enhance capacity within northern Indigenous communities to ensure that their natural sources of water are protected from threats that could degrade the quality and quantity of drinking water. Working in collaboration with Indigenous organizations, non-governmental organizations and other educational institutions, Trent experts assisted in offering capacity-building activities to local communities, aiming to increase awareness and enhance technical and lay expertise for multi-barrier approaches to the protection of drinking water.

"The unique aspect that Trent and our partners and collaborators bring to this project is the ability to ensure that our work will both respect Indigenous knowledge and be enhanced by it."

"The unique aspect that Trent and our partners and collaborators bring to this project is the ability to ensure that our work will both respect Indigenous knowledge and be enhanced by it," said Dr. Chris Metcalfe, director of Trent's Institute for Watershed Science. "The generous support of the RBC Foundation assisted in strengthening the capacity of northern Indigenous communities to protect sources of drinking water and to manage watersheds."

The experience gained and materials developed will serve as a template for similar capacity enhancement projects within other Indigenous communities in Canada and potentially internationally.

A GLIMPSE INTO THE LATEST FINDINGS AT TRENT

DeFacto

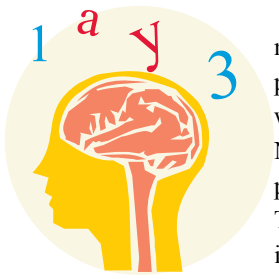
DR. FLY I PRESUME?

What's in a name? A lot, especially when you have a fly named after you. And if you are a researcher in the field of entomology, there may be no greater honour. Recently, Trent Biology professor Dr. David Beresford experienced this honour first-hand when a former student, Trevor Burt '08, discovered a new species of fly and named it after his former professor.

"Dr. Beresford was very influential in my training as an entomologist during my undergraduate degree, guiding my thesis work and several reading courses," Mr. Burt said. "He was also instrumental in my efforts to gain entry to a master's program at Carleton University."

After receiving his Bachelor of Science degree in Biology from Trent in 2012, Mr. Burt joined the Entomology program at Carleton and is now conducting research at the Canadian National Collection of Insects, Arachnids and Nematodes under Dr. Jeff Skevington and Dr. Jeff Dawson. Along with Dr. Skevington and Dr. Dawson, Mr. Burt published the discovery of the new species from the southern United States, Stylogaster beresfordi, in the scientific journal *The Canadian Entomologist* in July 2014.

FROM THE MOUTHS OF BABES



The key to the secrets of numbers and language may rest with a group of preschoolers. And, together with her project team, Dr. Nancie Im-Bolter, associate professor of Psychology at Trent University Durham, is taking it upon herself to find out more. Professor Im-Bolter says the results of a longitudinal study of three-year-olds, funded by a new Social Sciences and Humanities Research Council of Canada (SSHRC) Insight Grant and involving faculty and students from Trent, Ryerson and U of T, will likely challenge the way we think about early learning. Preschoolers will enter the study at 36 months of age and be evaluated every four months until they turn four, once at age five, and again at age six. They will be evaluated on tasks related to language, numeracy and executive function. Many of these tasks will feel like games for the children and include puppets, puzzles, toys and trinkets. The goal of the study is to identify the skills that are critical for language and math success, and to support improved educational assessment and intervention for children at risk for learning difficulties.

2+2 = SUCCESS

Just about every school-aged person has probably asked themselves: "Will I ever really need math in real life?" New studies are answering with a resounding "Yes!" and are showing that math is, in fact, the best early predictor of student success.

One Trent professor is taking this lesson to heart, making it her mission to help teachers better understand how children learn mathematics, not only preparing them to teach the subject, but also really enjoy it, and pass that enjoyment and success on to their students.

Dr. Cathy Bruce, a founding member of Trent's School of Education & Professional Learning, knows there is a gap in research around mathematics education in early childhood, but it's a gap she is keen to fill. Thanks to a recent grant from the Social Sciences and Humanities Research Council of Canada (SSHRC), which will allow her to conduct much-needed research into the development of children's spatial reasoning and its role in mathematics learning, achieving that goal is now closer than ever.

WE ARE WHAT WE EAT

Dr. Mehdi Sharifi is encouraging his students to get their hands dirty – literally and figuratively. Digging into the soil of Trent's groundbreaking Sustainable Agriculture Experimental Farm, Professor Sharifi and his students are taking learning to a whole new level with experiential education and hands-on research opportunities. With funding provided by the Natural Sciences and Engineering Research Council of Canada (NSERC), Prof. Sharifi and his students are growing two varieties of quinoa on one acre of the farm, a 33-acre living laboratory located right on Trent's Symons Campus. Quinoa is a relatively new crop in Ontario and is celebrated for its high nutritional value and for being gluten free. Prof. Sharifi, the Canada research chair in sustainable agriculture and a professor in Trent's new Sustainable Agriculture and Food Systems program, hopes the project will create more sustainable ways of growing quinoa as a means to produce organic food for local cafes and to teach his students to think differently about the food we eat. "Most conventional agriculture educational programs focus on larger-scale food production, but fail to address the crucial role of small-scale diversified farming in the world's food system. The social, political and environmental sustainability of our food system needs to be highlighted," he said.

Historical photos courtesy of Trent University Archives

TRENT 50 UNIVERSITY 1964–2014

Trent University is celebrating our milestone 50th anniversary in 2014/15.
Learn more about anniversary events and initiatives at **trentu.ca/fifty**

CHALLENGE THE WAY YOU THINK

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