



Newsletter

CONGRATULATIONS, STV GRADUATES!

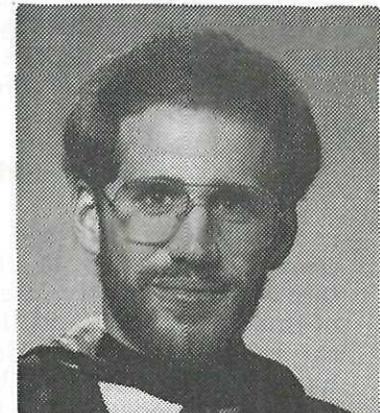
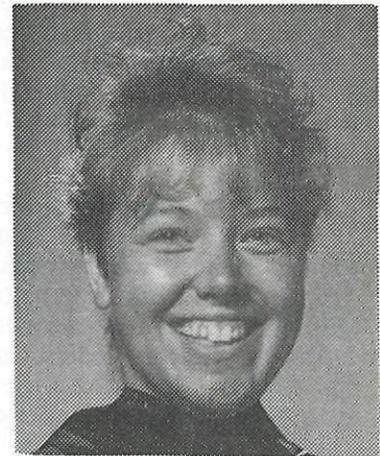
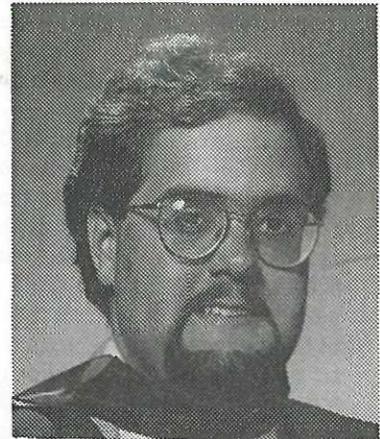
At convocation ceremonies in May, five students representing four UW faculties became the first graduates of the STV Option.

STV congratulates MARK ANDERSON, Systems Design; DURRELL BOWMAN, Music; SCOTT BRIDGMAN, Economics; LORI HANSON, Environment and Resource Studies; and PATTI VOTARY, Computer Science.

It's clear that the Option is attracting students from a variety of disciplines. This encouraging fact parallels the interdisciplinary nature of the Program itself, which draws on instructors, approaches and materials from various fields.

In addition to the three required STV courses, the grads completed STV-approved electives, concentrating on such diverse themes as 'Music and Technology' and 'Impact Assessment.'

For more information on STV courses or the Option, contact the CSTV office at UW ext. 6215.



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STV grads (from top):
DURRELL BOWMAN, PATTI
VOTARY, MARK ANDERSON

STS: RE-INVENTING THE UNIVERSITY

By Rustum Roy

STS [Science, Technology and Society] today is diffusing ever more widely into the mainstream of American academic life. But it is also, in a few places, penetrating more deeply into the intellectual life of the waning years of the 20th century. The perspective I wish to present in the following is that STS is the vanguard of the "counter development" forces opposing the century-long atomization, by specialization, of the University.

STS advocates breadth over ever-increasing depth; it is sharply at odds with the quaint notion that ever narrower specialization is essential for real scholarship and understanding. STS focuses on the structure of relationships among disciplines, events, worldviews more than it seeks to provide more knowledge about each. It is very interested in science, more so in technology, but mostly in how each interacts with the other and with society. STS approaches science and technology from the "human reference point," the societal end, but is therefore no less either appreciative or critical of them.

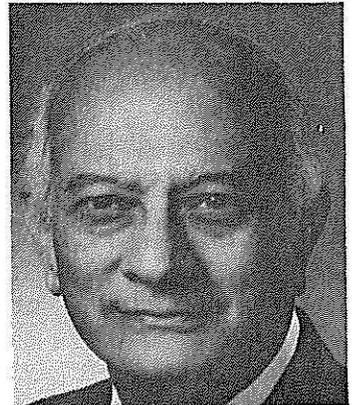
In the jargon of today, STS can accurately be described as holistic and right brain, when compared to the typical left-brain specialized discipline. But the STS movement is infused by a grander vision. Within academia, this is nothing less than re-inventing the University. In the world at large the largest goal of the STS "movement" is nothing less than moving society towards a new cultural synthesis of the best of its own traditions with the best of the influences of technology and science.

Focus on unities

Clark Kerr long ago described the transmogrification of the University into the Multi-versity. But the accuracy of this description and the impact that the reality behind the description has had on higher education has never been fully acknowledged. The fact is that the

centripetal forces of "unification" of knowledge which were once at the heart of the institution called the Uni-versity have been routed. The victorious centrifugal forces in the contemporary research university are: increasingly narrow disciplinary specialization; the absurd continuously-running research funding racket which distracts our best minds; the explosion of relative ignorance (often mistitled "the explosion of knowledge"); the continued whining by the most affluent (the scientists) about obsolete equipment (last year's model) when they haven't had a day to think or reflect all year; and the institutional fundamentalism which has academics in thrall as surely as the Ayatollah controls his minions.

RUSTUM ROY, Director of the STS Program at The Pennsylvania State University, serves as President of the Board of Directors of NASTS, chair of the Program Committee for the Technological Literacy Conference and Editor-in-Chief of the Bulletin of Science, Technology and Society. This article is reprinted from the Bulletin 8:3 (1988), pp. 253-4.



The multi-versity survives--indeed William Bennett [former US Secretary of Education] is certainly accurate in saying it thrives--financially. And that, of course, is reason enough to resist any action to pay serious attention to at least one of its principal functions--the unifying function. Discovering and proclaiming great unities should be the University's most important function in culture. What other institution in society could possibly be appropriate to unite the grand traditions of humankind handed down from one generation to the next with the latest knowledge, insights, deep truths and indeed problems and challenges which confront contemporary humans?

—(Cont'd on p. 8.)

CANADIAN STUDENT PUGWASH RELEASES SURVEY DATA

Canadian Student Pugwash has released the results of a national survey on student attitudes to science and technology, and its final report predictably includes some positives and negatives.

The document is called "Report on the attitudes and trends of first-year university students toward science and technology in society," and it's based on a survey of about 3000 students at 23 Canadian universities, including UW, conducted last fall.

The survey was carried out by the national student organization and commissioned by the federal Ministry of State for Science and Technology. It was designed to provide the Ministry's planned public awareness campaign with information and recommendations for "themes, messages and activities targeted specifically to students."

Under the leadership of UW Pugwash coordinator HU MACDONALD, 102 students on this campus completed the survey questionnaire. This number puts UW in roughly the same league as Toronto, Western, UBC and McGill. The University of Guelph had 152 respondents, while McMaster topped the list with 421 (12.8% of the total across Canada).

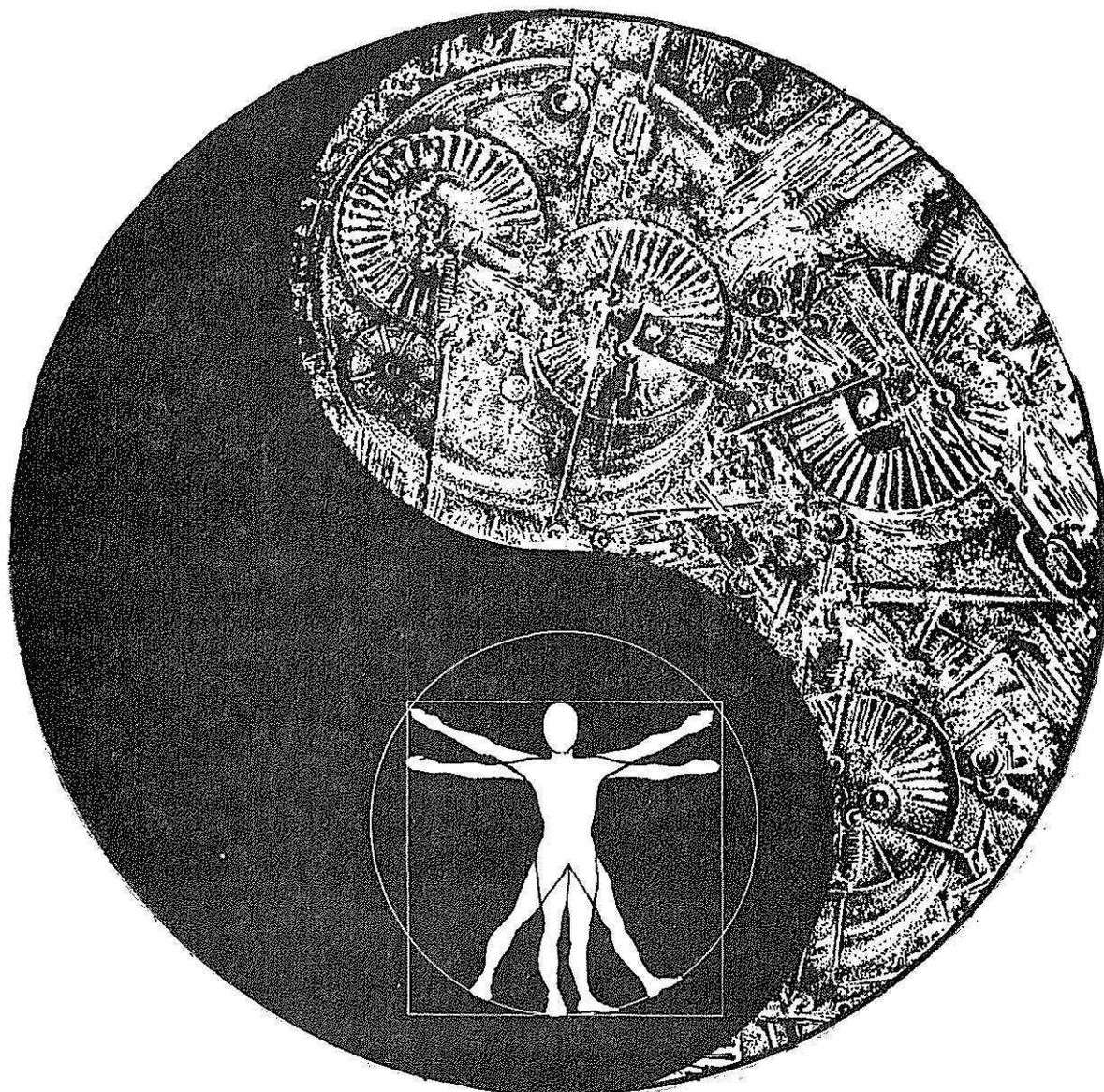
"On the general knowledge questions," says the Report somewhat ominously, "it would appear that the

respondents are not well-informed about science and society." But negatives generally give way to positives as the "Highlights" chapter continues--see page 7 for a short summary.

But the writers urge caution about the age cohort effort revealed in the survey. This effect "suggests that the determining factor in shaping (the respondents') opinions has been the particular period or 'slice' of experience that each respondent passed through on their way to university." The report attributes these students' "cultural homogeneity" partly to the "oppressive influence" of TV on this generation (recent studies indicate that youths 15 - 19 watch an average of seven hours a day).

So, any effective public awareness campaign will have to take these and other considerations into account, including the survey-based observation that "a detailed campaign which presumed a deep interest in science may not be successful." Male-female perceptions are important too because of "the gender gap in terms of interest."

The complete document is available for perusal in the CSTV office. Comments are invited and can be routed to the national Pugwash office either through CSTV or directly by contacting Canadian Student Pugwash, 902-151 Slater, Ottawa K1P 5H3--phone (613) 234-3622.



WORLD-SCALE CONFERENCE ON ETHICS AND TECHNOLOGY AT GUELPH THIS FALL

A substantial and wide-ranging conference called "Ethical choices in the age of pervasive technology" is scheduled for 25 - 29 October at the University of Guelph.

The event is billed in promotional literature as "A world conference to

address issues of critical global importance to scientists, philosophers, physicians, theologians, economists, veterinarians, lawyers, educators, researchers and social commentators...decision-makers in business, industry, agriculture, labour and government...who confront the



challenges and choices of the technological age."

Organizers have identified a number of objectives, including these: "to increase understanding of the worldwide impact of new technologies and to provide a context for analysis and discussion"; "to assess, in the light of history, the current and future global impact of technologies"; "to set forth the ethical agenda for the use of technologies that will create a humane and sustainable future"; and "to extend discussion and communicate conference findings around the world--including those with knowledge in specialized fields--people with the will to take up the challenge."

"The choices that we face are more important and more urgent than any we or any other generation has yet encountered," says conference chair Henry Wiseman (U Guelph, Political Studies).

These choices require "our intelligence, imagination, energy and commitment." "And the stakes are high," Wiseman adds, "destruction on a scale not yet realized or unprecedented opportunities for peace and prosperity--everywhere."

Speakers slated to appear include historian of technology William McNeill (U Chicago); Paul Durbin (U Delaware Centre for Science and Culture); Geraldine Kenney-Wallace (Science Council of Canada); and noted economist John Kenneth Galbraith.

The conference will consist of five plenary sessions plus numerous concurrent workshops. The plenaries will address "the fundamental question" of the "convergence or divergence" of the two roads now on the horizon--one leading to more technological innovation and industrial growth, and other to a "more humane appreciation of life and ecology."

Panelists for three of the plenary sessions include Shirley Carr (Canadian Labour Congress); Georges Erasmus (National chief, Assembly of

First Nations); Ursula Franklin (U of Toronto--see CSTV Newsletter 13); and several others. On hand to give an associated lecture will be Dr. James Lovelock, who will discuss the "Gaia" hypothesis.

The workshops--more than a dozen will be offered--will explore issues and produce recommendations for such areas as agriculture and food; arts-media-culture; communications and computers; international development; education; energy; environment; health; industry and labour; and research administration.

"The choices are urgent, and they require our intelligence, imagination, energy and commitment," says Conference Chair Henry Wiseman.

Registration fees fall into three categories, and the respective rates (before 1 October) are: General public (\$225); Educators, clergy, seniors (\$160); Students (\$60). After 1 October, fees rise by \$20 across the board.

The conference brochure is a very complete document, listing topics and speakers for the various sessions, outlining the full range of activities (including social events), and providing other details. You can borrow a copy from the CSTV office--call UW ext. 6215. Or you may wish to get a copy from the people at Guelph--contact:

**Ethical Choices in the Age of
Pervasive Technology
Division of Continuing Education
Room 160, Johnston Hall
University of Guelph
Guelph, ON N1G 2W1
(519) 824-4120, ext. 3956 OR
(519) 824-4747, ext. 3957
FAX: (519) 767-0758**

STV TA PRAISES VALUES EMPHASIS IN COURSE

Students are responding "extraordinarily well" to STV this spring, reports NORINE VERBERG, one of two TAs assisting instructor Tim Topper with the course.

Verberg, a PhD candidate in Sociology at UW, says the class is marked by full attendance each week and by noticeable enthusiasm on the part of students. Much of the credit, she explains, goes to Topper, who has the knack of keeping students involved, not only by asking provocative questions but also by using examples and illustrations that students can readily identify with. (A reference to TV's Star Trek in a recent class, for example, revealed a number of Trekkies in the audience and gave them a chance to show off their arcane knowledge.)

Like Verberg, STV 100 students appreciate having an opportunity to bring their own deep concerns about technology and society right into a UW course--and to have their opinions and interests taken seriously. Verberg's MA thesis (in Sociology at UW) is indicative of her own areas of concern: it was on The Working Centre in downtown Kitchener, an organization dedicated to redressing some of the ills occasioned by job loss and unemployment.

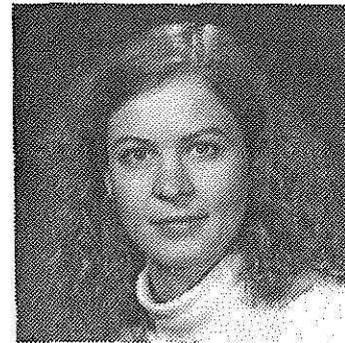
Verberg has been careful so far not to give students too much direction on their projects. Instead, she wants to give them enough scope to gain the confidence they need. Later on, she expects to become more involved in their work, suggesting how they might shape their approaches and keep their work on track.

Along with co-TA Cathy Ryan, Verberg will soon be looking at the "media notebooks" students are now preparing. The two TAs maintain regular office hours, mark assignments submitted by the 60-plus students in the class, and serve as resource persons in each session.

The students are obviously enjoying a useful educational experience, and so is Verberg. "I'm learning pretty much what I wanted to learn," she says, and she expects to gain "a lot of insights" both from Topper and the students. She's especially pleased that the course provides such an explicit focus on "values," something not often possible in other courses.

**NORINE
VERBERG:**

*"Values focus"
and "people
resources"*



And STV 100 connects well with Verberg's current research, which centres on the status of the family in contemporary society. "The family is the most underrated institution in society today," she contends, "and it's an 'STV-problem' too." Verberg sees the introduction of technology into the sphere of the family as producing many significant changes, so that the family now is mainly an "emotional" unit rather than a "functional" one. She'll pursue the many "interesting questions" this situation poses as she enters the second year of her program this fall.

When asked what her "fondest wish" for STV is, Verberg replied quickly: "STV needs to encourage the University to acknowledge and support it." Then she added, "People resources--like Tim Topper, who'll soon be leaving--are the strengths of the program," commenting that adequate funding for STV staff is clearly a necessity.

**PUGWASH REPORT: HIGHLIGHTS
FROM SURVEY--see story, p. 3.**

- Eighty-four percent of the respondents think science makes the world a better place to live, and 88% believe it improves the quality of life. Fifty-five percent do not believe science poses a threat to world peace.
- Ninety-one percent feel that university courses should address the role of science in society, but 57% don't think current courses are doing so.
- Fifty-four percent are "deeply concerned about the role of science in society" and 83% say they need to become more aware of this role.
- Ninety-four percent believe both men and women make good scientists, but only 54% say opportunities for the sexes are equal.
- Even university students get most of their science information from TV, not from their own--or anybody else's--university.



NASTS

CSTV has purchased a video of highlights from the 1989 Technological Literacy Conference of the US-based National Association for Science, Technology and Society (NASTS).

Titled "The \$64 Billion Question," the VHS-format tape centres on research and development policies and agendas in the US. Well-known STS activist RUSTUM ROY of Penn State's STS Program (see article in this Newsletter) conducts interviews with spokesmen of varying shades of opinion, including Roger Shinn, author of Forced Options; Steven Goldman of Lehigh University; Alvin Trivelpiece of the Oak Ridge Laboratories; and the only science Ph.D. in the US Congress, Rep. Dan Ritter of Pennsylvania.

To request more details or to borrow the tape for classroom use, call the CSTV office at UW ext. 6215.

THE DAY THE UNIVERSE CHANGED

This spring CSTV is co-sponsoring campus screenings of a 10-part video series, "The Day the Universe Changed," produced by the BBC's James Burke. The 1986 production has been running in Engineering Lecture room 101 on Thursdays during the noonhour, with about 65 people attending each session.

Organizer of the screenings is Dr. CARL THOMPSON of Civil Engineering, who also arranged the many showings of Burke's earlier "Connections" series on campus in past years.

"The Day the Universe Changed" traces the development of Western thought through "major transformations over the centuries," taking viewers to the "rooms and ruins where history has veered in new directions."

Host-writer James Burke's intention is to show how we have become the "high-tech statistically-modelled computer-oriented people we are today."

Co-sponsors this term are the UW Architecture Students' Society and Engineering Society A.

The series concludes on Thursday, 13 July at 11:30 a.m. For a complete outline, call the CSTV office at UW ext. 6215.

(Cont'd from p. 2.)

And in a culture where the incredibly seductive and powerful forces of technology and science literally define what is characteristic and unique about our own culture, the unifying of Western values with the meanings of science and technology must surely be the focal point of the intellectual *raison d'etre* of the modern university.

How sad that the mind of Allan Bloom was, in his well-received book [The Closing of the American Mind, 1987], so closed to "half" of the modern intellectual ferment. How revealing of the intellectual-spiritual fragmentation of modern culture that one who champions, with my whole-hearted support, much greater emphasis on the substance of western tradition and religion, should fail to see that his very neglect of science and technology dooms the unity of his own approach. How ineffectual his case, when he is unable to bring his protest to a focus in recommended changes which involve and incorporate the worlds of science and technology.

Fusion of ideas

Yet strangely enough, unknown to the critics and unremarked by observers of the university world, the seeds of this very synthesis we seek are already sprouting, not in the unapproachable, refined air of the research universities alone, but throughout the educational establishment. I refer to the "movement" (no other word seems appropriate) which has come together under the title Science, Technology and Society. I believe it can be asserted accurately that no other field has more rapidly established itself within the American academic world as "STS."

Probably nearly 2000 colleges teach a course or two which, by this or any other name, deal with STS. Nearly a hundred official "programs" (or departments) of some kind exist on as

many campuses. Thousands of secondary school teachers see STS as the essential "math and science" needed by every citizen, not just the 5% of them who may, one day, use it professionally.

STS on a major campus is typically a group of faculty drawn from the widest spectrum of disciplines, determined to engage in the dialogue which is central to the University, and to assure that the students are exposed not only to the Great Books and their ideas, but to the possible connection between the Symposium and Special Relativity, and the contact between the Bible (as the religious guideline Bloom would have it) and bioethics.

General education, presumably, is the place in the curriculum where unification could be done. The spate of general education reforms is testimony to the universal awareness that, instead, on most campuses general education remains a pork barrel for distribution of large enrollment "service" courses.

Realistic scenario

For the first time, in STS, a set of integrative principles has emerged which forms an intellectual core for much of general education decisively different from the "course distribution" requirements of a Chinese dinner. It is the genuine fusion of ideas, knowledge and values which counters the fissioning of knowledge over the last century. Moreover, this integrative style also helps, by contagion, to render more porous the walls between the higher reaches of the disciplines.

It is perhaps not an unreasonable projection to see the development of integrative general education with STS at its core as the emergence--finally--of the University within the multi-versity it can no longer supplant. In my view the only realistic scenario by which we can re-invent the University--integrated, interdisciplinary, general--alongside the other units of the multi-versity--differentiating, disciplinary and specialized--is through the now maturing STS movement.

ROOM FOR LEARNING--ON BOTH SIDES, SAYS TA

"It all started with a high school trip to Colombia," explains STV 100 TA CATHY RYAN, a little mysteriously, when she's asked about her travels to the many places listed on her CV--Mexico, Finland, western and eastern Europe, Morocco, Greenland, to name only a few.

Ryan, who's working with TA Norine Verberg and instructor Tim Topper on the course this spring, says her travels combine personal and professional interests. Since the Colombia experience--quite a contrast to Bramalea, Ontario, she admits--her visits to other countries have been directed to gaining "a more global understanding." The focus in Mexico, though, was a bit tighter; there she was conducting research for her UW master's thesis on groundwater contamination. More recently she's spent time in Spain, Portugal and Morocco.

Now a Ph.D. student in hydrogeology, a developing area within UW's Earth Sciences department (a Centre for Groundwater Research was established last year), Ryan sees this area having "quite an overlap" with both environmental studies and STV, particularly on "the effect that technology is having" and "the values side."

Another point of connection she sees is the issue of appropriate technology for the third world, where she expects to be working in future. This issue will be the subject of a lecture she'll be giving soon in the course.

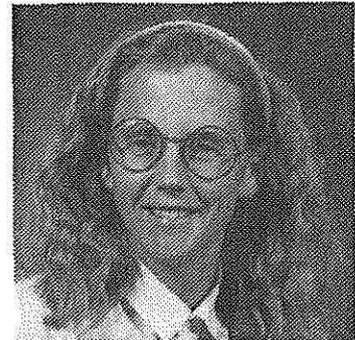
Ryan agrees with colleague Norine Verberg that STV 100's explicit attention to values is a definite plus. Although her perspective differs from that of Verberg, who's a sociologist, she too recognizes the opportunity such attention provides. Ryan notes that STV issues don't produce the kind of "right and wrong" answers more commonly found in science courses. "There's room for learning on both sides--the TAs' and the students'."

Like Verberg, Ryan praises instructor Tim Topper for eliciting "active feedback" from the class. And she offers this piece of additional, unexpected information: STV course organizers don't actually spend all their time with their noses to the grindstone! She and Topper and Verberg regularly conduct their planning sessions over dinner, and together they also maintain the long-established Waterloo tradition of "going-to-the-Grad-House-after-class."

Ryan affirms what all STV instructors have customarily said about their course objectives. She wants students "to get a good idea of what their values are now" and "to learn how to express their opinions rationally." "I hope they will learn how to actively question their own values and those of the society around them," she says.

**CATHY
RYAN:**

*Expressing
and
questioning
opinions*



So, should every UW student take an STV course? "Yes, especially science students," replies Ryan, who feels that a course like STV 100 should be required of them all. "Why not tailor an STV course to their needs?" she asks.

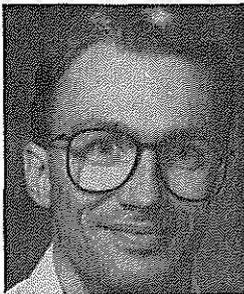
Ryan has just started her Ph.D. research and will base it all in Canada, despite her "world traveller" status. She'll be examining geochemical processes, seeking to find ways that the impact of septic systems on groundwater contamination can be minimized. Her work is part of a collaborative project involving several UW graduate students and professors.

GED MCLEAN HEADS WEST TO NEW CHALLENGES

STV instructor GED MCLEAN received his Ph.D. from UW in May and has accepted a tenure-track position with the Department of Mechanical Engineering at the University of Victoria. Ged, Celia and Bronwyn left Waterloo at the end of June.

At U Vic, says McLean, he'll be continuing his work on image-processing for telerobotics and telepresence, teaching undergraduate courses on society and the engineer and, among other things, developing project courses for U Vic engineering students (along the line of UW's System Design workshops).

"I look forward to getting involved in STV issues [at U Vic]," McLean says. He expects to encounter interesting challenges arising from BC's current state of transition as the province tries to move from a resource-based economy to a management and service-based one.



GED MCLEAN:

High hopes for STV at UVic -- and at UW

Regarding Waterloo, where he's been located for more than 12 years, McLean expresses concern at "the increasingly marginalized profile of STV," and he hopes ways will be found to "attract and retain faculty for the program."

The U Vic mechanical engineering department is relatively new and growing rapidly. McLean was the fifth person hired, and the department now comprises 11 members. His office address is Department of Mechanical Engineering, University of Victoria, PO Box 1700, Victoria, BC V8W 2Y2 and his home address is 4077 Ebony Terrace, Victoria, BC V8N 3Z2.

CONGRATULATIONS, GED!--Editor

WINNER AT BORDEAUX

Rensselaer Polytechnic political scientist LANGDON WINNER has a key role in the Fifth Biennial Conference of the Society for Philosophy and Technology that's meeting in Bordeaux, France as we go to press. Winner, who has given special lectures at UW in March '89 (see Newsletters 12, 13) and March '86 (see Newsletter 4), has been asked to send us a brief note on the conference, which has as its theme "Democracy and technology." Look for his comments in the next edition.

*** STOP PRESS NEWS ***

NEW DIRECTOR NAMED FOR CSTV

Dr. GEORGE ATKINSON, longtime chemistry professor at UW and a founding member of the CSTV Advisory Board, has agreed to serve as the Centre's Director after Dr. Russel Legge steps down. Atkinson's term officially begins on 1 September.

Look for more on the new helmsman in the next Newsletter.

NEWSLETTER PRODUCTION

Steve Jones, Kathy Sharpe

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UW Central Photographic

Photo of Rustum Roy courtesy
Penn State University

