April 1999

Cosmonotes

Avril 1999

The Newsletter of the Canadian Alumni of the International Space University

Le Bulletin des Anciens Etudiants Canadiens de l'Université Internationale de l'Espace

President's Message

It is with great pleasure that we bring to you this issue of the Cosmonotes. It's a great opportunity to catch up with old friends and to find out what's going on with CAISU.

Since the last issue of Cosmonotes, we have a few groups of people to welcome to the CAISU family. Please join me in welcoming our newest alumni, the SSP 1998 students, who had a fun and productive summer in Cleveland:

- Marlène Grenon, PQ
- Denise Campbell,ON
- Troy McConaghy, SASK
- Céline Tremblay, PQ
- Jonathan Knaul, ON
- Isabelle Tremblay, PQ
- Maryam Nikbakht-Sangari, BC
- Claude Boullevraye de Pasillé, PQ
- Søren Peik, ON
- Robert Tarzwell, MB
- Wade Larson, PQ

Welcome also to our new MSS3 (1997-1998) alumni:

- Rachel Zimmerman
- Patrick Assouad
- Paul Bédard
- Eric Doré
- Deana Smith

and to the present MSS4 class:

- Claude Rousseau
- Simone Garneau
- Vaios Lappas
- Martha Milkeraitis
- Andrew Ray

Last but not least, welcome to the newly selected SSP '99 gang:

- Eric Choi, SED Systems/CSA, QB
- Angelina Guzzo, McGill U., QB
- Alwin Cunje, McMaster U., ON
- Arynharan Sinnarajah, U. Toronto, ON
- Nishi Rawat, Queen's U., ON
- Eric Lanoix, McGill U., QB
- Laurence Vigeant-Langlois, MIT, QB
- Gordon Coutts, Waterloo/COM DEV, ON
- Nicholas Svensson, COM DEV, ON
- Ethel Poiré, CSA, QB
- Josée Robert, Queens U., ON

Your summer in Thailand will be unforgettable, I can promise you that.

The fall of 1998 was tremendous with a very successful promotional tour by the 1998 SSP students who visited a number of universities across the country. A record number of application forms were requested for the 1999 session, and I'm sure the "Road Show" had a lot to do with it. The fall careers conference was held in conjunction with the CASI conference in Ottawa in October. Young people were able to ask alumni about space careers in a panel-style workshop. Attendance by alumni and by aspiring space professionals was very high. It was a great success. Congratulations to the organisers of the Road show and of the Careers Workshop.

CAISU Board of Directors - 1999

President	Alain Berinstain (91, MSS1)
VP1/Québec Director 1	Brian Rishikof (90)
VP2/Québec Director 2	Jonathan Knaul (98)
Secretary	Mathias Wuhr (96)
Treasurer	Caroline Goulet (97)
Director CFISU	Denis Bourque (92)
Director Membership	Chantal Lamontagne (95)
Dir. Ontario	Sébastien Drouin (94)
Director NSEW	Rob Tarzwell (98)
Public Relations Director	Cory Hallam (97)

It is a privilege for me to work with this amazing team of people on the Board of CAISU, and we have big plans for the year, probably the most ambitious plans that CAISU has ever had. The two big activities for the year that are being planned are the Space Generation Forum and the post-summer session promotional activities. The Space Generation Forum is a very prestigious event, and we plan to showcase Canadian youth and create a strong Team Canada to show the world. See the article about the SGF elsewhere in this issue. I'd like to thank the 1998 CAISU Board of Directors for setting up many of the projects that we are executing this year. Much of what we do this year is thanks to their vision.

As you will see when you read on, it is clear that our organisation is maturing, many of our senior alumni hold prominent positions in the space sector. CAISU can become anything we want it to be, the only limit is what we as individuals can put into it. We suffer the same obstacles as most volunteer organisations, but I can see that as we become a stronger force, reaching our goals as an organisation willl become easier. We have a past to be proud of, a great present, and an amazing future. I'm proud to be involved.

Thanks to everyone who has submitted update information and thanks to those who worked on getting this issue together (especially Chantal!). Don't hesitate to contact any of us on the Board.

Alain Berinstain
1999 CAISU President

Letter from the Editor

Tada!

Here is the long-awaited, fresh-off-the-photocopier issue of Cosmonotes! Our CAISU newsletter hasn't been published in well over a year, so this issue is extra, extra long to make up for lost time and to get us all back in the swing of things. Thank you to everyone who submitted articles and personal updates - this newsletter is YOUR newsletter and can't exist without your contributions. The response has been phenomenal, with the odd badgering and nudging made by this editor taken in

good cheer. I've managed to receive or create an astounding 72 updates and to fill up an incredible 22 pages!!

Apart from many alumni updates from all years, this issue of Cosmonotes includes what your busy 1998-99 CAISU Board of Directors has been up to and our plans for the coming months, such as Canadian participation at the Space Generation Forum in Vienna. Articles stemming from the 1998 summer session in Cleveland have been included, along with the post-session Road Show and CAISU Space Careers Canada 98 conference. Preliminary details of the upcoming 8th alumni weekend in Thailand accompany descriptions of the 1999 summer session design projects. We've managed to include biographies from some of the Canadians headed to Thailand this summer, and even an unprecedented article from one of these future alumni, currently president of SEDS Canada. Alumni have contributed greatly to this issue with articles on two Young Graduate Trainees, one SAGA out west, one very busy MSS3 student, Canada's first microsatellite, an MSS3 internship, environmental physiology at Dalhousie, news from MSS4, and even a trip to the Antarctic! Two of our sister alumni organizations have also chosen to write articles for our newsletter.

This issue also includes the long-awaited CAISU Contacts List. One of the CAISU Board of Director's goals this year was to publish a new Contacts List in time to meet the Cosmonotes mailout. This meant many, many emails and telephone inquiries from January to March. Of course, since I am both Editor of Cosmonotes and Membership Director, deadlines have been flexible! ☺

I'd like to thank Alain for the photocopying, assembling and envelope stuffing after I handed the baton over, and the Canadian Space Agency for donating the use of a photocopier. Apart from having to use Word, my only problem with this issue...is trying to top it next issue! This is my first time as Editor of the Cosmonotes, and I hope you enjoy reading this issue. I'd love to hear your feedback, either on the caisu-alumni@conveyor.com email list, or to me personally at clamont@utias.utoronto.ca. Again, this is YOUR newsletter and I'd like to encourage all members to submit articles or updates about social events, additions to the family, conferences attended, job promotions, degrees conferred and your ISU experiences for the next issue of Cosmonotes.

Chantal Lamontagne
1999 CAISU Membership Director
Editor, Cosmonotes

Report on CFISU Board of Directors Meeting

by Denis Bourque (SSP 92, CAISU Director for CFISU)

On behalf of CAISU BOD, I attended the CFISU BOD meeting which took place on Friday, 12 February, in Ottawa. This was my first participation to a meeting of the CFISU Board, and I have to say that I joined in a very positive context: the 1998 Alumni Association BOD did a tremendous job fulfilling our mandate. You will see from Ron Freedman's article that the number of requests for ISU application forms in Canada last year reached a level never attained before.

The 1999 Fall BOD Meeting was very important for CAISU and its future activities, since the new CAISU BOD unanimously decided to take its role one step further. In addition to its traditional role of Space, ISU, CFISU and CAISU promotion, the new BOD would like to augment contacts with CAISU members and supporters, to centralize and improve its operations, to improve the synergy of its BOD, and to position itself on the international scene.

As you will read from other Directors reports, a series of new projects and initiatives will be undertaken during the current year. Among these initiatives, we hope to proceed with a major update of our members database, and to augment the use of WEB technologies to communicate with them. The Board also wants to play a key role in the Space Generation Forum (SGF) which will take place in Europe next Summer in the context of UNISPACE III. Obviously, we will continue the traditional promotion job of ISU through the Road show, our speaker's bureau and our WEBsite.

My report to CFISU went as follows:

I presented the 1999 BOD insisting on the high level of enthusiasm of the new Board, and which brings a great representation of almost all SSP and MSS years. I then reviewed the 1998 achievements and financial results (which were underlined as very positive). Following was the presentation of 1999 goals from which the planned activities felt under 4 categories: Operations, Promotion, Contact with members and Positioning. I told them, that instead of just presenting the activities that would fit in the traditionally allocated budget ($10,000/yr) we preferred to present everything we wanted to achieve, and they could judge by themselves what was of value among those.

Hence, three budget options were presented with associated activities: Option 1: $20,020, Option 2: $14,500 and Option 3: $10,000. After a very positive and energetic discussion, it was voted by the CFISU BOD that CAISU budget for 1999 would be established according to the Option 2: an envelope of $14,500. Thanks to the level of confidence demonstrated by the Board members, CAISU is on its way to another year of great achievements.

If you are interested to obtain additional information about the Board meeting, or if you would like me to communicate any specific message to the next CFISU Board meeting, please do not hesitate to contact me.

CFISU Sends Twelfth Delegation to SSP

by Ron Freedman (The Impact Group)

CFISU'S Student Selection Committee met in February to select the 1999 SSP scholarship winners. From a total of 700+ applications distributed to students by AUCC (great promotion work CAISU!) we received 47 qualified applications. The Committee selected 8 scholarship recipients and another 4 alternates. As no qualified SSHRC grant recipient came forward, we are

holding secondary competition for students who would normally be eligible for SSHRC support.

Generous scholarship support is expected from the Canadian Space Agency, COM DEV International, MRC, NSERC, CRESTech, ESA, and SSHRC.

COM DEV International, CFISU's official Industry Sponsor will be donating two scholarships; one for a University of Waterloo student and one for a COM DEV employee. COM DEV will also be the site of the annual student briefing.

Current plans are for the 1999 student dinner to be held in Cambridge, Ontario the evening of Tuesday 22 June. All CAISU members are invited to attend. (Stay tuned to the CAISU web site for details or call The Impact Group at 416 481-7070 ext. 31 in early June.)

COMDEV joins as sponsor of CFISU!

CFISU is proud to announce new corporate sponsorship of two summer session students from **COMDEV**. Comdev will sponsor two students per year for the summer session, as well as provide CFISU with an operating budget.

This is an exciting new step in the fundraising activities of CFISU. In addition to sponsoring students, Comdev will host the student send-off, providing students with a firsthand look at their company.

Space Generation Forum

by Alain Berinstain (SSP 91, MSS1, CAISU President)

What's all this talk about the Space Generation Forum?

On the occasion of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III), the United Nations has agreed that an international youth forum for university students, graduate students and young professionals should be organized. The Office for Outer Space Affairs, as the executive secretariat for UNISPACE III has requested the alumni of the International Space University, which has observer status within the United Nations Committee on the Peaceful Uses of Outer Space, organize this Forum. The event, to be called the Space Generation Forum (SGF), will be held as part of the UNISPACE III Conference in Vienna, Austria, from 19-30 July 1999.

Each country is responsible for selecting its delegates to attend, with a maximum of 5 official delegates per country. CAISU has proposed to CSA, and CSA has accepted, that CAISU manage the activity of advertising, recruiting, selecting, and preparing the Canadian delegates for the forum.

The CAISU Board not only plans to carry out the delegate selection, but we plan to raise the funds necessary to pay for the travel of the official delegates to the event, after having first met with them as a group to train them as a strong and knowledgeable team before they go. The fund raising activities are going well.

If you are available in July and you are interested in being cosidered as a delegate for this very prestigious and rare event, please apply directly through the SGF web page (http://www.un.or.at/OOSA/SGF/). All Canadian applications will then be forwarded to the CAISU Board. CAISU Board members are not eligible to be considered as official delegates but all other CAISU members are encouraged to apply!

In addition, the Canadian Space Agency is interested in getting a group of young people (ages 12-15) involved, and CAISU will be participating in this activity as well. The Canadian delegates will act as "mentors" to these young people and a lot of interaction will occur to help stimulate some younger youths in the field of space. All these people will form a large Youth Team Canada to be sent to Vienna.

Also, several CAISU Board members and other members of CAISU are participating in the organisation of the event. If you would just like to help out from the planning side of things, please contact us (the CAISU Board, caisubod@conveyor.com). There is a lot of information about the SGF at web site at their http://www.un.or.at/OOSA/SGF/.

Alumni Scholarship Fund

by Brian Rishikof (SSP 90, CAISU Vice President 1/Québec Director 1)

It's here! After much talk, and a very impressive ad hoc effort last year to help send a Brazilian student, Renato Basile, to the SSP, the Alumni Scholarship Fund has arrived.

Based on an endorsement at a meeting of alumni at the 1998 Alumni Weekend, the fund has been established. It will provide the opportunity for students who possess the desired qualities and embody the ISU spirit, but who do not have access to the necessary financial support, to attend. Most of the information in this article was gleaned from e-mail postings by the two alumni members who were instrumental in bringing this idea to fruition (Eric Tilenius 90, Mark Matossian 88), and from a letter that was recently sent to the ISU community via ISU Headquarters.

One of the basic goals of the Alumni Scholarship Fund is to make it a truly international project, involving as many alumni and community members as possible. It has been emphasized that the number of people who choose to donate is just as significant as the amount raised. Equally important are the desire to strengthen and grow the ISU community and to ensure that deserving students are provided with an opportunity to attend.

In this, its first year, it is being undertaken as a "pathfinder" effort. This will allow the kinks to be worked out for subsequent years while capitalizing on the momentum gained so far, and providing tangible support in time for the start of the 1999 sessions.

In Canada and the US, alumni will receive (or will already have received) a letter inviting them to give through the established foundations (CFISU and the USFISU respectively) which qualifies contributions as tax-deductible based on residency. Elsewhere, the concept of donations is somewhat different, and those community members are being solicited separately to give directly to

ISU. Contributors may target their gift to the SSP, the MSS or both.

The current groundrules for the scholarship are to award funding to students who have been accepted to ISU through its normal selection process and who can best contribute to the ISU session and the broader ISU community. The awarding of funds will be based on both financial need and merit.

The plan is for a Scholarship Committee to be formed in order to direct the funds and choose scholarship recipients. This will ensure the Fund's successful implementation. It has been proposed that the Scholarship Committee would be comprised of representatives from alumni organizations, the ISU Board and HQ, and major donors. A group of volunteer coordinators will also be formed to coordinate the fundraising campaign.

Some discussion has taken place regarding the establishment of an endowment using some percentage of the proceeds so that the Fund can perpetuate itself. This has not been decided (to this reporter's knowledge) and will surely be a point to be resolved by the Scholarship Committee. Other issues to be resolved include such items as officially naming the Fund, dealing with payment methods and currency conversion.

In parallel to the Alumni Scholarship effort, the CAISU Board had been considering the possible establishment of a Canadian Alumni Scholarship fund. The resolution of this effort was still pending when the Alumni Scholarship effort crystallized. So after some quick communication between the CAISU Board members, ISU HQ, and the Fund progenitors prior to the global mailing, the CAISU Board elected to endorse the project.

On a purely personal and editorial note, I plan to support both the Alumni Scholarship fund and CFISU this year. Since Canadian alumni have so often been leaders in the ISU community, I am confident we can lead in the drive to make this new endeavour a success. Look for the telltale, nondescript, brown paper envelope in your mailboxes . . .

Membership News

by Chantal Lamontagne (SSP 95, CAISU Membership Director)

Our numbers are growing! Eleven more students are bound for Thailand this summer – we welcome them to the CAISU family. As of the most current count, 145 Canadians are now (or will be soon) alumni of ISU: 133 SSP students, and 14 MSS students (2 students were keen and particpated in both SSP and MSS).

Canadians in Thailand

Canada will once again be very well represented at this year's summer session in Thailand. Isabelle Tremblay (SSP 98) and Patrick Sullivan (SSP 93) will be teaching assistants to the eleven Canadian students accepted to the program, with Li-Te Cheng (SSP 96) and Sébastien Drouin (Staff 94-96) taking charge of the computer lab and library. David Kendall will be replacing Lucy this summer as Program Director, and Vern Singhroy will be one of the three co-chairs for the Disaster Management in Southeast Asia design project. In addition, two RMC Cadets, Jameel Janjua and Pierre Chouinard, will be helping out with audio visuals and the library. We wish them all good luck in Thailand!

Contacts List

The list is here! The list is here! The new and improved CAISU Contacts List (including 1999 students!!) has been included with this issue of the Cosmonotes.

Most of you should have gotten an email or a phonecall from me since January asking you to update your contact information. If I didn't talk to you or email you personally, I might have then talked to your spouse, your parents, your siblings, or your friendly answering machines to confirm or update your addresses. More than 90% of alumni had moved or changed some contact information, so this was indeed a worthwhile effort. Unfortunately, a few lost souls still remain and they are named in the "Lost in Space" section. Please take a look at your own entry in the list to see if it is correct and complete, and let me know of any changes or additions – we would especially like updated telephone numbers and email addresses as both have been crucial in relocating many alumni.

It took quite a lot of effort to track all of our alumni, who had scattered across Canada and several continents since the last massive membership location drive. Special thanks go to Chris Sallaberger (SSP 88) for having attended every ISU year and keeping such good records, and to Eric Doré (MSS3) waaaaaay over there at ISU central in Strasbourg for divulging many database secrets. As the years go by, and more Canadians become ISU alumni, it becomes more difficult to track everyone's movements - the very nature of ISU participants makes us mobile. If you relocate or change employment, please notify CAISU of the changes - contact the 1999 Membership Director at:

Chantal Lamontagne
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Canada, M3H 5T6
Tel: (416) 667-7701
Fax: (416) 667-7799
Email: clamont@utias.utoronto.ca

Don't worry, the membership list hasn't been passed on to evil telemarketers (though I have had some interesting offers) – it has been distributed to CAISU members (Canadian alumni, all Canadian staffers, and other ISU alumni living in Canada), the Board of Directors of CFISU, and ISU headquarters. We ask that you also please respect the confidentiality of this list – we would never distribute it to outside organisations without first consulting the CAISU membership.

Email Distribution List

We are also in the process of revamping our alumni email distribution list, caisu-alumni@conveyor.com. Although it has existed for a few years now, traffic has been light (unlike ISU-Talk and ISU-News) and many email addresses are now obsolete. Shortly after you receive this issue of the Cosmonotes, we will be adding all email addresses to the list. Unfortunately, we cannot individually ask

every CAISU member if he or she wishes to be placed on the list - please let me know if you prefer not to be placed on the distribution list and your name will be removed. For those with multiple email addresses, we will choose the home email address unless notified otherwise.

If you wish to contact other alumni, please direct your email to caisu-alumni@conveyor.com – it's that simple. We're trying to organise a few alumni activities, and this is a great way for all of us to stay in contact between each issue of Cosmonotes. The CAISU Board of Directors can also be contacted directly through caisubod@conveyor.com.

In the near future, we will try to reestablish the regional chapters of CAISU to more easily promote social gatherings. CAISU has set aside limited funding for two AGAs (Area Gathering of Alumnis). Plans are currently afoot for a TOGA (TOronto Gathering of Alumni) and a MOGA or QUAGA (Montréal or Québec Area Gathering of Alumni). Stay tuned for more details!

Lost in Space Alumni

After an exhaustive search, the following alumni still remain "lost in space", with no current contact information.

Kathy McCuaig (SSP '89)
Jesko Von Windheim (SSP '89)
Pierre Beaudry (SSP '90)
Céline Lévesque (SSP '91)
René Landry, Jr. (SSP '94)
Peter Lee (MSS2)

If you have any information (clues, hints, rumours…) on their whereabouts, please contact Chantal at clamont@utias.utoronto.ca so we can quickly get them back in touch with the rest of CAISU.

Revamped *www.caisu.ca* Web Site

Thanks to enthusiasm from Li-Te Cheng, Mark Dejmek, Adam Mizera and John Criswick, and helped by The Internet Conveyor, CAISU is proud to announce that we have increased our web site server capabilities so that we can place more information on the web.

Eventually, we hope this web site will help spread the word about ISU alumni, as well as provide valuable information for young space enthusiasts. To start, you will be able to find information on previous years' design projects, the outline of the CAISU conference, the current board of directors, our governing by-laws and more!

Please get in touch with one of the board members if you can help with the web site or would like to contribute information for young space enthusiasts. Hopefully, the web site will be as dynamic as ISU itself - constantly changing with updated information!

Collaboration with CASI

As many of you know, the Canadian Astronautics and Space Institute (CASI) has been involved and supportive of ISU for many years. CASI donates the conference space to CAISU for the biennial CAISU student space conference in October. Also, Ian Ross, CASI president, is a member of the Canadian Foundation for ISU board of directors.

CASI would like CAISU members to all consider membership with CASI as another key way to keep in touch with Canadian contributions to space research and activities. You can check out the CASI web page at: **www.casi.ca**

The Canadian Cultural Night at SSP '98 and Canada Day Celebrations

by Jonathan Knaul (SSP 98, CAISU VP2/Québec Director 2)

The tradition of the canoe was maintained this year as in all years. After some sweet talking with members of the Department of Civil Engineering at the Cleveland State University (CSU), a concrete canoe was procured. Indeed it was a little heavy to portage through the halls of CSU, even for four strapping Canadian outdoorsmen...so we dropped it. A little glue, and some beer to the guy who lent the canoe to us seemed to fix the missing chunk in the bow – it was only after we returned it that we learned that this very canoe is used by the Civil Engineering Department in an annual boat race. Oops!

Playing the roles of Bob and Doug MacKenzie, Dr. Bob and myself led the ISU through a show with appearances from famous people "who you may not have realized were Canadian". Our special guests included Céline Dion (Céline Tremblay), Pamela Anderson (Denise Campbell), Captain Kirk (Wade Larson), Jacques Villeneuve (Claude Boullevraye de Passillé), and Shania Twain (Marlène Grenon). Special effects, lights, and sound were handled by Maryam Nikbakht-Sangari, Søren Peik, Troy McConaghy, and Isabelle Tremblay. The highlight of the show was playing, "the Beer Hunter", although the Russians didn't find it very funny for some reason.

It is ironic that the Americans had earlier done a cultural presentation that centered around the popular game show, "Wheel of Fortune", hosted by another well know Canadian – but they forgot to mention that.

The Canadian led cultural evening culminated with...beer. There was no lack of ale as we had earlier received a donation of several cans of Molson Dry, and two kegs of Labatt Blue. For both our Canada Day celebrations and the cultural night, we had so much beer that we could not "give-away the stuff". Even as we approached August, we still had one keg of beer left. Søren Peik spent one entire party forcing cups of beer upon people so that it wouldn't go to waste.

Our Canada Day celebrations, in addition to beer, saw original table mats listing Canadian facts (such as boasts about the fastest man in the world, and being first on the Moon since the footpads of the LEM were produced in Canada) authored by Wade Larson, lots of Canadian pins and flags, and oodles of maple syrup squares prepared by Denise and Maryam.

The Canadians would like to thank the CFISU (the Impact Group) and the ISU for providing us with funding for both events, Denise's mom for providing maple syrup, the Royal Military College for providing toques, and to my mom for donating Canadian t-shirts, flags, and pins.

1998 Design Projects

by Troy McConaghy (SSP 98)

The two design projects from the 1998 Summer Session Program investigated space hazards and microgravity. Each project comprises over 500 pages of text, so this summary is necessarily cursory.

The "Hazards to Spaceflight" design project examined "the features of the space environment, both natural and of human origin, that may endanger spaceflight, both with and without human crews. The hazards addressed [included] debris, meteoroids, and natural radiation. In addition, microgravity, isolation, and confinement [were] included as factors that will affect human crews… [The study did] not address hazards at planetary surfaces, hazards to Earth from collisions with asteroids, comets or spacecraft, radiation from nuclear powered spacecraft, or the hazards from spurious equipment failures or human errors. Also, [the study did] not address hazards for which engineering solutions already exist, namely the hazard posed by vacuum, thermal extremes, atomic oxygen, and ultraviolet radiation." The effort required to narrow the scope to that level was amazing! To give some idea of the content, the titles of the core chapters were "Radiation Hazards", "Meteoroids and Debris", "Hazards to Crewed Spaceflight", "Policy and Law Issues", and "Implications and Applications". Each section made several recommendations, some of which were completely original (as far as we could tell).

Denise, Jonathan, Marlène, Søren, and I were the Canadian students involved with the "Hazards to Spaceflight" design project. Other Canadians involved included Ram Jakhu (faculty), Johanne Heald (teaching assistant), Doug Hamilton, David Kendall, and Lucy Stojak. (I know I'm leaving someone out here - sorry!).

The other design project was titled "µagic: Moving Aside Gravity's Influences and Constraints", or just "Magic"[1]. The objectives that guided their efforts were "One, to explore how the microgravity environment, in the near term and beyond, can be used to advance science, generate commerce, and improve the welfare of humanity; and two, to present innovative solutions to the technological, programmatic, economic, policy and legal challenges of using microgravity". The report covers a *lot* of different experiments and applications, identifies current trends and drivers, and considers new concepts to provide microgravity. The new concepts were evaluated, the long-term perspective was outlined (including how "space" could fit into education), and conclusions were drawn. They reached two main conclusions:

1. "…the commercial potential and near-term scientific benefits of microgravity have been exaggerated and oversold."
2. "…the long term benefits of microgravity for humankind could be considerable."

Céline, Claude, Isabelle, Maryam, Rob, and Wade were the Canadian students involved with the "Magic" design project. Other Canadians involved included David Kendall (guest lecturer), Alain Berinstain, Mark Dejmek, and Doug Hamilton. Also, the computer support provided by Li-Te Cheng and Jean-Francois Latreille was invaluable to both design projects.

[1] The "µ" in the title is meant to signify "micro", as in microgravity. Incidentally, the project was initially named High Orbital Microgravity Environment (HOME). As I recall, associating the name "magic" with the project didn't please everyone, but it stuck.

Note: Quoted material taken from corresponding design project report.

Road Show 1998

by Mark Dejmek (SSP 97)

Hello CAISU World! This year's CAISU Road Show Schedule was just as hectic as last year's and was organized by the Class of SSP 98 two months after completing the Cleveland experience. A PowerPoint presentation was prepared and uploaded to our website prior to the Vancouver presentation for seminar distribution purposes. Seminar stops included not only locations across Ontario and Québec, but also Manitoba and Vancouver, along with a complement of information being sent to Saskatchewan.

- Vancouver (UBC) - 25 attendees
- Winnipeg (UofM) - 50
- Cambridge (COM DEV) - 10
- Waterloo (UofW) - 20
- Hamilton (McMaster) - 25
- Toronto (UofT) - 25
- Kingston (Queens) - 27
- Kingston (RMC) - 30
- Montréal (EPM & McGill) - 11
- Ottawa (UofO & Carleton) - ?

After having presented in Winnipeg and Vancouver, the "physical" tour started from Pearson International Airport in a Budget Rental Van rented through the Canadian Armed Forces. Conforming specifically with CF Special Forces requirements (high security, lightweight armour; high-speed mobile telecommunication equipment; and a nuclear power generator for no required refueling), the group left for an immediate Cambridge presentation followed by one at Waterloo before enjoying dinner at Chateau Marco. Moving on to Toronto the next morning, the class completed the Conference Handbook before preparing for both evening presentations. After having used the vehicle's turbo boost abilities to evasively maneuver around an accident on the 403 for the Hamilton presentation (thank God for the backup plan), the group was reunited in Toronto for the evening with other Torontonian alumni and spent the night in Kingston at Fort Knaul. Having had lunch at RMC the next day followed by the afternoon presentation there, we then moved on to Queens, after which the group retired for a wonderful BBQ dinner with Jon's "special friend" before driving to the magical Larson & Tremblay Hotels in

Canadian students at ISU '98 (left to right): Søren Peik, Wade Larson, Céline Tremblay, Denise Campbell, Isabelle Tremblay, Claude Boullevraye de Passillé, Marlène Grenon, Maryam Nikbakht-Sangari, Rob Tarzwell, Troy McConaghy, Jonathan Knaul

Montréal. Our Montréal presentation was conducted in French at EPM, after which we packed up and moved on to Ottawa for final Conference preparations. The Road Show officially concluded there with presentations throughout Conference Day at the Radisson Hotel for those residing in the Nation's Capital.

At each Road Show stop, an Ariane-502 poster was presented to the local organizing group as thanks for their time and continued support. These were courtesy of the European Space Agency. The SSP 98 class would like to thank each one of the organizations for having locally mobilized the appropriate individuals and groups, making the presentation at each location a success. Finally, we thank CFISU for their continued financial support. A l'année prochaine!

Searching for Amish

The end of the Friday SSP final exam (which everyone passed!) was followed by a Toga party, organized by Canada=s own Jonathan Knaul. Miraculously, everyone, including all of the Asian ISU attendees, arrived at the party clad in a sheet. After a mere 2-3 hours of sleep - Dr. Bob (Canada) and his band had none (sleep that is, not sheets) - everyone boarded the bus to begin the trek through Amish country. Unfortunately, due to some misdirections, no Amish people were ever seen. But the students did get to see a portion of an outdoor play about the famed Native American, Tecumseh, who established temporary peace with the White Man.

By 1:00 am, the students were finally delivered to the Southern Ohio University for the night. By 1:30 am they=d found the local pub, and by 2:30 am they=d been kicked out. And that=s when the head shavings began... Søren Peik from Canada was paid $30 (American!) to shave off his beard, and one of the Brits received a lofty $100 to let his head be shaved. (This reminds us of another student from the UK, Alan Pritchard (1995) who sponsored his attendance at ISU by shaving his head.)

Sunday was a free day to the delight of many. Students enjoyed some golfing, rock climbing, and hiking on the beautiful SOU campus. That night, everyone kept their hair...everywhere.

Monday saw the students board the bus very, very early in the morning for another unsuccessful search for Amish people before returning to campus. Although no Amish were ever seen during SSP 98, several reports world wide have since been received that have included sightings of Mennonites in Southern Ontario, Orthodox Jews in New York City, and one Amish sighting at the JFK International Airport.

1998 CAISU conference "Space Careers Canada 98...Young Leaders Reaching for the Future"

by Mark Dejmek (SSP '97)

One of the primary goals of the 1998 CAISU Board of Directors was to outline, decide, organize, and operate the 1998 Biennial CAISU National Space Conference. This year, CAISU members and other guests came together from Canada, the US, and Europe, to participate in three activities: our Annual General Meeting, our Workshop for the UN's Space Generation Forum, and the conference itself.

In March, the Board formed a conference committee and put them to work. As with every year our conference is held, numerous avenues must be pursued to ensure the event's success and that's definitely the recipe we followed. The Canadian brainstorming team was cohesive, despite the distance (Hong Kong, Paris, Ottawa, Montreal, Cleveland, and St. John's) and imposed time constraints. One of the first decisions we made was the conference theme: *Space Careers Canada 98: Young Leaders Reaching for the Future*.

During SSP 98, Conference activity intensified by establishing the CAISU webpage (our primary source of information) and by conducting various exciting planning meetings with Ottawa, Montréal, ISU HQ, and the CAISU 98 class members. After meeting with CFISU's President upon returning from Cleveland, planning stages culminated in September when Air Canada decided to offer great prices for air travel. It was after purchasing 15 tickets for CAISU members and other speakers that the Board realized: (a) it was going to happen, and (b) now we're RESPONSIBLE. From there on in, the conference committee members were saturated with all the standard issues: advertising across the Nation, interfacing with CASI and guest speakers, communications, web site updates, invitations, finances, sponsorships, conference day agenda, speaker cancellations, and the list goes on.

Results from our advertising included many requests for CAISU members to speak to various groups across Canada, in addition to organizations expressing their disappointment that their city wasn't on the Road Show list. During the CAISU Road Show, held the week prior to the Conference, we ensured that the highlights of the conference were advertised through insertion of key slides and posters into the Canadian Summer Session Experience presentation. We were also grateful and indebted to each one of the organizations that mobilized themselves in advertising the Conference (local posters, linking webpages, and email distribution on various Canada-wide lists).

The AGM was held the day prior to the conference and gave the 1998 Board the opportunity to communicate the year's activities to its members. After a very enjoyable dining experience in Ottawa's downtown district, we reconvened for the SGF Workshop. Presentations from Vienna and SGF organizational members began the evening. This brought everyone up to speed on the current status of affairs. In advancing the structure, timeline, and selection of the SGF, not only did we brainstorm effectively but also, in true CAISU fashion, identified three areas requiring subgroup attention, broke off into splinter groups to attack the issues, returned with results, and presented them to all participants. It was a wonderful and fulfilling experience, particularly when noting the impact on the UN's SGF structure and agenda.

During the conference, the CAISU 98 members presented ISU's two most recent Design Projects: *Moving Aside Gravity's Influence and Constraints (MAGIC)* and *Hazards to Spaceflight*. CAISU 97 members were also on site to present the SSP 97 DPs: *Technology Transfer: Bridging Space and Society* and *International Strategies for the Exploration and Development of Mars*. Interspersed between these presentations were Career Information Sessions: young Canadians speaking about *how they got to the job they have now* and *what advice they have for others who aspire to work in the same environment*. Information booths full of program and company propaganda complemented these career sessions for conference attendees throughout the day. We were quite pleased to have two companies head hunting. Perhaps the highlight of the day was Mike McKay's talk on his experience with CSA and a subsequent panel discussion/Q&A session with Mike, Doug (Hami) Hamilton, and Brian Rishikof.

For conference attendee participation, although the morning sessions needed more than 120 chairs with people standing at the back of the room (ASTRO98 conference participants?), CASI registration staff recorded the following numbers: 70 registered attendees, 24 speakers, 11 1998 CAISU students, 4 1998 SSP ISU staff, for a total of 109.

Throughout the day, CAISU had video and audio recorders that taped our activities. Still images from the conference and complete audio files were uploaded every hour to our webpage for Tele-education purposes. They remain there for you to view if you didn't have the opportunity to join us. Videotapes of the day's events were taken for future CAISU Public Relations and Promotion Activities (including Road Show Presentations!), short clips of which should find their way to our website soon!

It is always very enjoyable when a group comes together to achieve the goals on their organization's wish list. It is *most* enjoyable when that organization is called CAISU. This is definitely the sentiment we felt at the end of the day as we left with the *Dare to Dream* philosophy ringing true. The 1998 Board wishes to thank all of you for having accepted your organization's invitation to attend the weekend activities. Any success of these events stems directly

from your effort, dedication, and decision to participate. The 1998 conference organizing committee looks forward to any opportunity for us to get together to achieve CAISU's goals and objectives over the year that some call 1999.

Message from the 1999 Chairman of ISU Academic Council

Greetings to all of the Canadian ISU alumni, faculty and staff from David Kendall.

I continue to work at the Canadian Space Agency in Ottawa and am currently the acting Chief Scientist in the Space Science Program looking after the Solar-Terrestrial Relations, Atmospheric Studies, Space Astronomy and Space Exploration areas that we support as part of the overall program. It's abusy life as we prepare for the launch of experiments this year on the NASA AM-1 platform (MOPITT), the NASA FUSE telescope (FES), and the Swedish Odin satellite (OSIRIS). We are also working on some balloon experiments (BAM and MANTRA), a sounding rocket payload (GEODESIC), a microsatellite mission (MOST) and a new Canadian small satellite program (ACE) as well as a number of new initiatives for the next five years. If you are at all curious as to what some of these acronyms mean, please visit our web site at http://www.science.sp-agency.ca or drop me a line.

My "second job" revolves around the International Space University. I am currently the Chairman of the ISU Academic Council and have been asked to take on the position of Program Director for this year's Summer Session Program in Thailand since Lucy is unable to fully participate by virtue of the birth of her baby, Laura. I hope that some of you will be able to visit SSP'99, however, if you are in Ottawa or plan to visit in the near future, please do give me a shout (dave.kendall@space.gc.ca; tel. (613) 990 0790) since it would be great for me and my wife Toni to meet you again and hear how your lives are unfolding.

Best wishes,

David J.W. Kendall, Acting Director
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Brief summary of a year in Strasbourg, Antarctica, Moscow…

by Judith Lapierre (SSP 95)

Hello everyone,

I was in Strasbourg, ISU campus for a year (October 1997 - October 1998). It was an incredible experience for me even though at times I found it difficult being away from my «very understanding» husband, Stéphane. I have received a scholarship from the French government through its Châteaubriand program that allowed me to go to ISU to do research on space psychosociology. I wanted to gain experience in this field and learn from the experts at other agencies (NASA, Russian, European...). During my time at ISU, I have prepared 3 research protocols. One of them included a study on the experience of isolation and confinement in Antarctica. I was extremely lucky to have met people from the French polar institute and from the Terres Australes et Antarctiques francaises who made it possible for me to go the French base, Dumont D'urville, Terre Adelie. We left from Hobart, Tasmania on the Astrolabe, a 60 meter, almost ice-breaker. On the austral ocean for 6 days, I have been sick most of the time (and not for any reason; they call this area the cinquantièmes hurlants!). A fantastic voyage that has left me with incredible images of beauty and serenity. Once there, I thought I'd feel much better but felt the reverse effects of sea sickness, could not walk straight and would wake up at night hanging on tightly to my bed… Spent 12 days on the base, interviewing those who work there during summers and also the winterers. For space analogy, the experience of winterers is more valid as more stress, boredom and emotional problems related to darkness are frequent. Also, the social interaction of these 12-20 winterers stuck on the ice continent without much external contacts is crucial to work performance and well-being. This experience has been the highlight of my whole research experience. I was able to travel also around Tasmania and Australia after this with many French escorts as the Astrolabe brought back 45 individuals on the way back; most of them were returning home after 15 months in Antarctica. Unfortunately, there has been a tragedy this year on the base, three friends who had been working for 10 years in Antarctica have died this last month on a helicopter crash on the base. Needless to say this had a great impact on the mission, team spirit and work performance.

During the year, I also spent some time in Houston with Dr. Joanna Wood who does this type of research also. In the fall, I visited IBMP, the State Research Center of Moscow for biomedical problems and had a very fruitful exchange with Dr. Vadim Gushin. I presented a proposal there and it was accepted. I will do a study on psychosocial adaptation to confinement in a simulator of the International Space Station in Moscow. The international project is called SFINCCS and its goal is to study a team of scientists working in a confined area. It starts this summer with an international team of 8 people and I will also participate as a subject in the study for the second part, another 110 days, starting in November 1999. This would have been impossible without some very much appreciated support from the Canadian Space Agency that recently has confirmed its support for my participation as a subject. This will allow me to collect much fascinating data for my research program on space psychosociology and it is a unique way to spend the starting of the year 2000… (PLEASE e-mail to me ok? lapierre_judith@hotmail.com). Finally, the last protocol has also been accepted in France for a long term project in Antarctica that implies the construction of a French-Italian base near the south pole. Issues of confinement and stress will be more

relevant to space than in any other area of Antarctica as phases of construction of the base are evolving and with the first wintering experience planned for winter 2000.

Ce fut une année inoubliable à plusieurs points de vue! Pas toujours évident d'être si peu souvent chez soi. Je suis rentrée en Octobre et je travaille actuellement en promotion de la santé avec le Service de santé de la région d'Ottawa-Carleton jusqu'à ce que la recherche commence à Moscou. Je rencontrerai toute l'équipe du 7 au 14 avril, j'aurai plus de détails à ce moment pour ceux que cela intéressent… Puis en juin, je dois passer ma soutenance de Ph.D. enfin…!

Au plaisir de vous lire et d'avoir de vos nouvelles prochainement,

Judith Lapierre :)

We have a SAGA too!

by Laura childerson (SSP 91)

What may be the very first ever S.A.G.A. (Seattle Area Gathering of Alumni) was held Saturday, March 27th with great success. Mark and Renee (ISU '89+), and Avia (ISU '22 or so) Matossian were kind enough to host all of us at their lovely home near Redmond, WA. Present from Seattle were Deborah Factor Lepore (ISU '89) and her husband Domenic, and Dilip Chowdhury (ISU '89). Present from Vancouver were Larry Reeves (MSS 2), Andrew Ray (current MSS), and Laura Childerson (ISU '91). There were a few people such as Amy Gerson who had planned to attend but could not be present because they were celebrating a successful launch, which is certainly an acceptable reason!

We stuffed ourselves on homemade pizza, pasta, and salad, with homemade desserts to boot, topped off by a multicultural mélange of Canadian and Japanese beer (Sapporo, bringing back memories of buying cans of Sapporo of all sizes, from 2 litre cans down to shot glass size if it was after 11 pm, out of vending machines on the streets of Kitakyushu!), and Canadian and French wine. Our hosts were kind enough to put up the Vancouver out-of-towners for the night, and as a business traveller hardened to being on the road, it was wonderful to find chocolates on my pillow when I went to sleep and even more wonderful to wake up to the smell of breakfast cooking, which was totally unexpected since it was ridiculously early in the morning, but it was certainly greatly appreciated!

The discussions were the highlight for me though - having been in the software industry for a few years it was wonderful to be talking about things like the inclination of a satellite. The talk was quite lively too, carrying on into the late night hours, even though a lot of us had never met each other before. Not surprising though, since that's a huge part of what ISU is about!

In the next month or two the Vancouver area alumni are going to be planning a trip to Victoria to meet up with alumni on Vancouver Island, and if anyone else is in town from wherever they may be they are more than welcome to join us. (Please just help us think of an acronym other than VAGA or VIAGA for Victoria area gathering of alumni, both of which sound way too close to - well, you know...:-)) Right then. Details on the actual dates of the trip will follow...

Did You Know That…

CAISU, as a non-governmental non-profit organisation, is eligible to apply for many Announcements of Opportunity (AO) or Requests for Proposal (RFP) put out by the Canadian Space Agency or by Public Works and Government Services Canada.

SEDS-Canada

by Aynharan Sinnarajah (SSP 99, SEDS-Canada 1999 President)

Hello everyone,

I am excited to be contributing this article to the new and revamped Cosmonotes newsletter as president of SEDS-Canada.

SEDS-Canada is planning various activities this year. The 4th annual Multimedia Competition will again be run this year. It is for students in Grades 6-9 and the deadline will be around this November. Topics are being planned as I write this. Watch our web site at www.seds.ca in the next 2 months for the topics and for details on how to get involved. The SEDS Canada Millenium Scholarship is still available for this year. The deadline has been extended to May 15. All members are invited to apply. Details are available at our web site. Other activities that we are involved with include the Marsville program, and creating a database of space degrees and careers that are offered by the various educational institutes.

An exciting development that is gathering interest in the last month is an idea for an International SEDS Conference. I have been in discussion with the various SEDS organizations around the world. Right now, the plan is to hold it in 2000 in Florida, preferably in the summer. The aim of the conference is to bring together students, organizations, and dignitaries, who are involved in the field of space, from all over the world. There will be talks, seminars and tours of the important space buildings in Florida, including the Kennedy Space Centre. If there are any questions regarding it or you would like to get involved in it, email us at seds@seds.ca

If any of you have questions about any of these activities or would like to get involved with SEDS-Canada, don't hesitate to email us at seds@seds.ca

Aynharan Sinnarajah
President, SEDS-Canada

MOST – Canada's First Space Telescope and Microsatellite

by Chantal Lamontagne (SSP 95, CAISU Membership Director)

During the fall of 1997, I had the pleasure of being part of the ground-floor Phase A design team for MOST (Microvariability and Oscillation of Stars), Canada's first microsatellite and first space telescope. My involvement stemmed from a new Microsatellite Design Project Course offered at the University of Toronto Institute for

Aerospace Studies (UTIAS). The course, whose primary objective was to involve graduate students in the design of a real microsatellite, was part of a larger project organized by UTIAS and Dynacon Enterprises Limited to complete a space science mission for the Canadian Space Agency/Space Science Branch (CSA/SSB). UTIAS had just recently won a Phase A contract to perform a feasibility study for an astronomy microsat mission through its proposal submitted to the Space Science Program of the Canadian Space Agency in response to an announcement of opportunity for small payloads in the fields of solar-terrestrial relations, atmospheric research, and space astronomy.

The MOST mission was to gather long-term photometry data from a select group of stars, with a scientific payload provided by the principal investigator, Dr. Jaymie Matthews, of the Department of Physics and Astronomy at UBC, with support from the Center for Research in Engineering Science and Technology (CRESTech). The Phase A design was based almost entirely on the students' contributions from the Microsat Course – each student enrolled in the course was placed in charge of a subsystem. My task was to design the entire structural subsystem for the microsatellite bus.

Without divulging any detailed design secrets (all students were sworn to secrecy during the preliminary design phase since it was indeed a competition!), the MOST structure is loosely based on the microsatellites built by the University of Surrey – a stack of modular electronics trays, each containing some element of bus functional hardware, held together by long bolts. The payload, housed within its own enclosure, would be attached to the sides of these trays, with the aperture opposite to that of the payload attachment fitting (which clamps the satellite to the launch vehicle via a Marmon clamp type of arrangement), and the five other sides of the microsatellite covered by solar panels. The entire microsatellite would weigh less than 50 kg, and be less than 25" by 25" by 10" in size. The structural concept was developed specifically to match the volume available for secondary payloads on a Boeing Delta II launch vehicle since it was hoped (and still is) that MOST could take advantage of the upcoming launch of Radarsat II on a Delta II rocket in 2001 to "piggy-back" a ride to orbit.

Not having had any real spacecraft design experience beforehand, this course provided me with some valuable insight into the inner workings of designing a spacecraft subsystem, and of overall satellite design. I learned how to deal with major aerospace suppliers and manufacturers, many of them outside of Canada. I learned how to interface with launch vehicle requirements and other subsystem requirements - antennas which kept moving locations proved to be a constant source of frustration, as well as a side-mounting payload attachment fitting. I learned the ups and downs of changing requirements, which made all my FEM models go out the window. I learned about the different types of space structures, components and designs and how to structurally configure and package a satellite bus for maximum efficiency depending on the launch vehicle. I researched structural and thermal loading environments, and the testing requirements for these on a Delta II. I researched material candidates for the spacecraft structure and thermal control, and submitted requests for quotes on a composite material assembly for solar array substrates. I also received a crash course in thermal control and heat transfer mechanisms for a 3-axis stabilized spacecraft thanks to ISU-TALK!!! And I can finally tell you exactly what MLI is too!

Dynacon was awarded the prime contract in July 98, and Canada's first space-based telescope received final federal approval August 6 1998. Dynacon and UTIAS have now associated with AMSAT International, gaining their worldwide expertise in microsatellite design. Three full-time staff members are now working on MOST at the Space Flight Laboratory at UTIAS, leading teams of students through two terms of the microsatellite course this year in designing a microsat computer simulator, the radios for MOST, and thermal analyses. If you would like more information on the MOST project, please contact Dr. Robert E. Zee, Manager, Space Flight Laboratory, UTIAS, rez@sdr.utias.utoronto.ca.

Canadian Embassy in ISU

by Vaios Lappas (MSS4, 98-99)

Good day! This is the ISU MSS-4 Canadian contingent. First let us present ourselves:

We are…

Simone Garneau, graduated in Geological Engineering (Honours, B.Sc.,'98) from Queen's University in Kingston, Ontario and is doing her placement at JPL in Planetary Geology.

Claude Rousseau, graduated in physics and astrophysics from the University of Calgary in 1989 and since then has worked in government organizations in Ottawa (Industry Department, House of Commons) and in Montréal at the Canadian Space Agency (CSA) before starting the MSS. He is doing his placement with a Remote Sensing firm in the Strasbourg area.

Martha Milkeraitis, graduated in Biochemistry (Honours, B.Sc.,'98) from McMaster University in Hamilton, Ontario and is doing her placement at Johnson Space Center in Life Sciences.

Vaios Lappas, graduated in Aerospace Engineering (1998) from Ryerson Polytechnic University, Toronto and is doing his placement at Goddard Space Flight Center working with the Deep Space 5 spacecraft team.

Andrew Ray, graduated in Astrophysics (Honours, B.Sc.,'98) from Saint Mary's University in Halifax, Nova Scotia and is doing his placement in Vancouver, BC with Radarsat International.

The Beginning of MSS

The program, which is divided in five modules from September 1998 to July 1999, is in its fourth year, thus our class

nickname: MSS-4. The year's class is the largest since the beginning of the program with 39 students from 24 countries. We were very well hosted by ISU when we got here and they really did a great job at making us feel right at home in beautiful Alsace, on the shores of the Rhine. The first week back in September, we had a tour of Strasbourg by boat, a scavenger hunt, a reception hosted by the municipality of the city of Strasbourg, an Alsatian cultural night (with delicious tarte flambée), and some of us went to take a tour of the Kronenbourg brewery. We were also introduced to the ISU philosophy, the MSS curriculum, the placement, the Faculty and each other, as well as with the staff. We met with our Academic Advisor, a Faculty member that helps us with our individual project during the fourth module. We also spoke by teleconference to Peter Diamandis and Rob Richards, two of the ISU Founders, about the fascinating beginnings of the University.

The activities were well organized and we dove right into the subject matter in the first week. The first module (September to mid-October) featured a lot of material from many disciplines technical and non-technical. The first two modules, through core lectures, workshops, group assignments, visits, discussions, and guest lectures brings everybody up to the same level of understanding about space activities. (We particularly enjoyed the remote sensing data interpretation workshop with Prof. Scott Madry, which was followed by a field trip to Mont St. Odile, in the nearby Vosges mountains.)

In module 2 (Mid-October to Mid-December), we went a little deeper in the comprehensive courses, workshops, assignments, etc., all while starting to work on the literature review for our Team Project, which is on the utilization of the International Space Station (ISS). For that purpose, the whole MSS-4 class and some Faculty members took a long bus-ride to attend a three-day event, "The 2nd International Symposium on the Utilisation of the ISS" held at the European Space Agency's ESTEC facilities in Noordwik, Netherlands. This gave us a unique opportunity to meet the people in the field, visit the testing and integration laboratories of ESA, and visit Amsterdam. We were also hosted to a party at the house of Thorsten Siwitza, President of the European Alumni Association.

It was a really good and timely conference that helped the MSS-4 class comprehend the enormous undertaking that the ISS represents. This was key to drafting our literature review. This review was a unique undertaking as we had to analyze and write, in one document, about all the aspects of the ISS from the current available literature. Overall, it is in this module that we realized that the MSS program allowed us to integrate all aspects of space activities in a comprehensive and multidisciplinary fashion.

We also had the chance to get together one more time for the ISU Christmas party, where some of the brightest talents in the class demonstrated their incomparable, intercultural imitations of the Faculty members. This put us in a really good mood for the Team Project Literature Review presentation and the two 4-hour exams that closed module 2.

The next module (January to Mid-February) offered more in-depth knowledge of space activities through core and specialized lectures, workshops, assignments, and practical exercises. The class participated in the satellite purchase contract negotiation game, organized by Prof. David Tudge. This very intense team exercise consisted in negotiating the purchase of a telecommunications satellite with two potential manufacturers. We also had a remote sensing business workshop, set up by Dr. Vern Singhroy, in which student teams had to write and present a business proposal to solve a particular environmental problem. The Team Project was not forgotten as the class organized itself to manage and coordinate the work of 39 students from different cultural backgrounds in completing the Literature Review so it could be peer-reviewed for publication. It will be presented by the MSS-4 class at the ISU Annual Symposium, at the end of May 1999 in Strasbourg. Then, to make sure we understood everything before we got to our placement in the next module, we still had to write two 4-hour exams. Brutal!

The Canadian contingent also had a roaring success during one of the cultural nights, a social event meant to present our countries and culture. Much about our country came as a total surprise to our fellow classmates. Of course, hockey and the Great White North were prominent aspects of our presentation.

During module 4 (Mid-February to Mid-May), we are continuing the Team Project, and doing a professional placement in a government, business, or university setting while working on an individual project on a topic of interest.

The MSS, so far, has not gone without a hitch. There have been unacceptable delays in the ISU core textbook delivery, and we are still reading a draft version. We got our computers late, the module 3 was plagued by class schedule changes, lecture cancellations, and a planned professional visit to ESA's European Space Operations Centre in Darmstadt, Germany never took place. A few members of the Faculty left the ISU and were not replaced, which meant that some of us did not have an Academic Advisor for a while. The MSS also suffers from a "Europeanisation phenomenon", which tends to bias the lectures about international space towards activities taking place on this continent. There is an evident deficit of guest lecturers from Asia, Africa and North America. The format and quality of the lectures tends to be uneven, the repetition of sub-topics from one lecture to another happened on too many occasions, and very few lecturers use new technologies (tele-education, multimedia, video, etc.) besides the perennial slides. The students' accommodation were also problematic and unsatisfactory for many. The weather, although balmy for Canadian standards, tends to be humid for much of the winter months. The new campus, scheduled for completion in 2001 is being funded by the city of Strasbourg, the region of Alsace, and the French Education Ministry in fulfillment of their pledge to get the ISU Central Campus here. The outside of the building is, to

put it mildly, bland, and not really "Space-like". However, students attended a special briefing given by the architects about the ISU Campus concept. Much to our surprise, we found the architects very responsive to the requirements of ISU and the inside concept is quite "luminous" and appealing. The classrooms will be modern, and the lab areas well-designed. Our concerns about the functionality of the Campus for future MSS were well taken into consideration.

The MSS-4 has so far been a very enriching experience. We have a lot of opportunities to interact with top-notch people in the space business. The ISU allowed us to know more about ourselves and other cultures. And last but not least, the ISU network really works...when you make it work. If you don't get anything out of the MSS, you still walk away with an international network of friends that is bound to have a profound and lasting effect on space activities, well into the 21st Century.

Editor's Note: Suparna Madhu, MSS4 student from India, is currently on placement at CSA in St-Hubert.

Busy, Busy Rachel!

Greetings, fellow CAISUers!

I can't believe it has been over six months since I graduated from the MSS program at ISU. I miss all my friends from Strasbourg, and I don't know what I would do without e-mail.

Here are some of my highlights from the past few months: making many new friends at the CAISU conference in Ottawa in October '98; appearing on "Pamela Wallin", discussing the subject of Canadian women inventors. (I'm still optimistic that CBC Newsworld will soon produce a show about Canadians at ISU and/or Canada's role in space. I'll be sure to keep CAISU posted if the CBC contacts me again); volunteering in a local elementary school, teaching grade one and two students about space (see *Kids and Space* article in this issue); guest speaking for the London, Ontario chapter of the Canadian Association of Girls in Science on the subject of space; consulting for the London Regional Children's Museum to help them redesign their Space Gallery; tutoring high school students in science and math, and using space examples to keep the students excited about science; and presenting a paper at the CSUN "Technology and Persons with Disabilities" conference in Los Angeles on March 18 '99, having a mini ISU reunion with Ted and Carlos from MSS-3, and meeting Simone, Ozgur, and Edoardo from MSS-4 while in California.

I now have good news! I will be working for Calian Technology Services at the Canadian Space Agency starting April 12. I will be the Space Vision Systems Engineer for the Mobile Servicing System of the International Space Station. Thanks to all the CAISU folks who were helping me try to find a space job, with special thanks to Brian Rishikof. Hopefully by the next issue of Cosmonotes, I'll be able to report on how my new job is going

Best wishes to all of you. I'll keep you posted of my new co-ordinates soon. I look forward to meeting more of you over the coming years. If you're ever in Montréal give me a call and we'll get together.

Rachel Zimmerman, MSS3 (97-98)

zimmerman@mss.isunet.edu

European Space Agency Young Graduate Trainee Program

by Matt Bullock (SSP 95) and Johanne Heald (SSP 96)

For any recent university graduate who wants to get their feet wet in The Netherlands, the European Space Agency's Young Graduate Trainee (YGT) program may be your diving pad. The YGT program involves a one-year contract at the European Space Agency, which provides year-round exposure to the North Sea and the European way of life. The contract can be pursued at any of ESA's locations: the technology research centre, ESTEC, in the Netherlands, the remote sensing centre, ESRIN, in Italy, the mission operations centre, ESOC, in Germany, and, of course, ESA Headquarters, in Paris.

Two Canadian ISU alumni, Johanne Heald and Matt Bullock, were among the twenty YGTs that began their training period in April 1997 at ESTEC. (too many acronyms!) Generally, YGTs are selected for projects that cover a wide domain of space-related technological development. At ESTEC, YGTs are involved in projects in their particular area of expertise, but are also given time to explore other forms of training. Short training courses in space systems are arranged every year, and there are opportunities to participate in a hands-on way to missions such as TEAMSAT, a smallsat that was launched in 1997 on an Ariane V. For the linguistically brave, classes are available in Dutch, as well as various other European languages. Don't worry, though – the official ESA languages are the Canadian standard, English and French.

At ESTEC, Johanne worked in spacecraft guidance, and the deployment of constellations of satellites. Her newly-honed navigation skills were not only handy for space applications, but were tremendously useful on weekend trips to other European countries. Meanwhile, Matt's work involved developing a new technique in the field of life support systems for future space vehicles and stations. He also took advantage of his new life support skills by living in a floating houseboat on one of the Dutch canals.

Most Canadians don't know about the career opportunities at the European Space Agency. Although Canada is not a part of Europe, it is an 'associate' state of ESA. As a result, approximately 20 Canadians are working at the agency as full-time staff members. If you'd like to apply to be a Young Graduate Trainee, contact any ESA centre personnel department for an application form (reminiscent of ISU Summer Session applications). Application deadlines are March 31st and Sept. 30th, since YGT positions are offered twice a year. (If your application is selected, you get a free flight to Europe for the interview!)

Johanne and Matthew not only recommend the YGT program but also

the Dutch way of life, including 'stationary' cycling (the winds are very strong), tulip cultivating, and collecting those really neat Grolsch beer bottles. For more information on the European Space Agency, see their web site at http://www.esrin.esa.it/.

MSS Internship in Spacecraft Engineering

by Louis-Paul Bédard (MSS3)

Editor's Note: This is Louis-Paul's placement report abstract.

This report describes an internship in Spacecraft Engineering set in the course framework of the Master's of Space Studies Diploma of the International Space University. The object of this internship was to get practical experience on flight and engineering hardware of the International Space Station. A significant part (JEM, CAM and HTV) of the latter is being designed, built and integrated in Japan. The JEM is the Space Station feature whose design has remained the most constant during the lengthy and controversial Space Station Design Process. The Space Station is a rather sizable and unique piece of flight hardware. Its singularity makes it therefore a worthwhile subject of investigation. The internship took place from 23/2/98 to 15/5/98 at the NASDA Tsukuba Space Center in Japan. This period was especially interesting since it took place during the NASDA JEM CDR #2, as well as some of the subsystem tests of flight hardware conducted by Mitsubishi Heavy Industries and the other contractors. Some of the most critical tests performed during the period mentioned herein were structural, electromagnetic and network-related. The report summarizes some of the tests executed and/or witnessed during that interval. Comments on the significance of the results obtained are given.

Environmental Physiology at Dalhousie University

by Stephen Cheung (SSP 94)

Hi Everyone,

It is hard to believe, but I am almost nearing the end of my first year here at Dalhousie University in Halifax. After completing my Ph.D. and a seven-month post-doctoral visit to the University of Aberdeen in Scotland in 1998, I moved to Dalhousie as an Assistant Professor in the School of Health & Human Performance (Department of Kinesiology). Though it is not a hotbed of space research (yet), I have found that I am constantly drawing upon what I have learned through ISU. One of the courses that I am teaching is a problem-based learning course where the students are guided by faculty and tutorial leaders while working through two major problems to come up with their own unique solutions. Sounds familiar? I am also finding that the multi-disciplinary approach of ISU has helped to prepare me for interacting with my faculty colleagues. Besides Kinesiology, our School also encompasses the Departments of Health Education and Leisure Studies. It has been quite an interesting experience merging my quantitative background in physiology with colleagues who have a more qualitative approach to human health research.

It has been quite a chaotic first year here so far. It is amazing how long it takes to prepare good lectures! I am starting to get more settled in the teaching aspect, and have spent the past several months laying the foundations for some interesting research. As the crew from '94 and '95 will recall, my past research has been on hypothermia in underwater divers, and on individuals wearing heavy protective clothing while exercising in hot environments. I am intending to continue research in this area of environmental physiology and ergonomics. Two Kinesiology colleagues and I are building a research program to investigate the effects of environmental stressors (cold air or water, heat, altitude, underwater, space) and orientation/posture (e.g., being upright versus inverted) on physiology, information processing, and manual performance. We are especially interested in determining the sources of error in job performance, and in developing training or work environments which minimize those potential errors and accidents

Nova Scotia is a terrific place to instigate this research. We have a strong economic and cultural emphasis towards the Atlantic, especially with the Navy, the fisheries, and the development of offshore petroleum at Sable Island and Hibernia. Therefore, there is strong industrial support for both basic and applied research in this area. The primary partner we have established collaborations with so far is Sable Offshore Energy Inc., the huge consortium that is developing natural gas off the Nova Scotian coast over the next 25 years. We are also developing proposals to National Defence and to a variety of marine-based industries here in Nova Scotia.

To initiate this research program, I have just submitted a grant for research infrastructure to the Canada Foundation for Innovation (CFI), established in the 1997 federal budget. For those of us who have become discouraged with Canada's commitment to research and development, the CFI is terrific and refreshing news. It is specifically intended to assist new university faculty, as applicants must apply within their first twelve months of appointment. In addition, the CFI stresses and assists in fostering university links with the community, as twenty percent of the requested funding must be obtained through external sources (in my case, through the Sable consortium). This makes it much easier for me to approach companies for support, knowing that they only need to contribute a portion and can leverage the remainder from CFI. I should hear the results of the competition by the next Cosmonotes, so wish me luck in the meantime!

Kids and Space

Editor's Note: The following excerpt was taken from the ISU-TALK discussion list on January 26 1999. It was so inspirational, we thought to include it here, CAISU.

In response to Jim Burke's message about the importance of space education outreach and science and society:

I agree that public outreach about space is vital to the future of science, technology, and space exploration. I'm still searching for a job in the space sector, but in the meantime, I'm doing a lot of volunteer work related to science and space. This week alone provides several examples of my dedication to this endeavour:

Tomorrow evening, I will be attending the official kick-off of the countdown to Canada-Wide Science Fair 2000, to be held in London, Ontario (my hometown). I have been on the CWSF-2000 committee since London won the bid to host the fair three years ago. Canadian astronaut Bjarni Tryggvason is honourary chair of the CWSF-2000 committee.

I am making plans to give a presentation about space to the Canadian Association of Girls in Science in mid-February, to encourage young women to keep up their studies in high school science classes.

In mid-March, I will be in Los Angeles for the California State University Northridge Center on Disabilities' "Technology and Persons with Disabilities" conference, where I will be presenting the work I did during my Professional Placement at NASA Ames Research Center as part of my Master of Space Studies with ISU. (For my ISU internship at NASA Ames, I helped draft a Space Act Agreement to encourage NASA scientists and engineers to design and build custom assistive technology for disabled people in their communities.)

But best of all, for the past month I have been going to my old elementary school and teaching the grade one and two students about space. They love my visits as much as I do. The students are all very eager, and already know quite a bit about space. The questions they ask keep me on my toes. (They range from "do astronauts eat pizza on the Space Shuttle?" to "why don't Saturn's rings fall off?) They build space vehicles in their arts and crafts class, and write stories about taking trips to their favourite planets.

I try to keep them up-to-date on current space events (they were very disappointed when they learned that some astronomers are thinking about taking away Pluto's planetary status) and try to put things in contexts they can relate to. I show them pictures of Canadian astronauts and tell them that they can all be astronauts, too, some day. When one little girl asked me if women could be astronauts, I showed her a book called "Women in Space". Kids need all the role models they can get.

The kids have learned to anticipate my arrival on days when the class is studying space. Every time I go into the classroom, I wear a different space or science-related shirt. I bring in new space books and magazines each day, on topics ranging from comets to space camp to the solar system to astronaut training to lunar time-keeping.

The students now know where each country's launch site is, and why. They can tell you who put the footsteps on the moon, and when, and why they're still there. They can tell you the differences between Ariane 5 and the Space Shuttle. They know what we use satellites for. They can tell you that Venus is hot and Mars is cold, and why. They know why astronauts need to wear space suits during EVAs, and why they train in a big swimming pool. They know about solar panels, and remote sensing, and the Mars Pathfinder. They know that they are half as old as the MIR space station, and that when their parents were their age, people walked on the moon, but they haven't gone back there for a long time. They know that scientists have found ice on the moon and Mars. They know that it takes about 250 Earth years for Pluto to orbit the sun, and why we see different phases of the moon. They know that it takes 8 minutes for light to get from the sun to the Earth. They know that Jupiter has a big red spot, and that the spot is a storm. They know how many moons each of the planets have, and that we're looking for life on other planets. They know it takes four days to fly to the moon and a year to get to Mars. They know that the Space Shuttle takes an hour and a half to orbit the Earth, and what kind of experiments the astronauts do in space. They even know which countries are involved in building the International Space Station.

Not bad for six- and seven-year-olds :-)

The students and I had fun making a "snowlar system" on the playground at recess last week. (We were going to make a snow sculpture of the space shuttle, but the snow wasn't very good for packing, so instead we made models of the planets, spaced out at a distance across the whole schoolyard. We joked about the irony of making the sun out of snow, and how if it were real it would melt itself.)

One of the teachers said that the parents of the students in her class call her up and ask what has made their kids come home so excited about space. I'm glad to know that I'm part of the reason. I think every kid needs role models to challenge and inspire them and to stretch their minds and imaginations. Maybe these kids will grow up to be astronauts someday, and maybe they won't - that's up to them. All I can do is give them the tools and the confidence to put them on the right track, and answer any questions they have along the way.

I hope that other ISUers, both students and faculty, will be able to share what they've learned at ISU with the students in their local schools. Together, we can educate the whole planet about what's out there beyond the atmosphere, and why it means so much to us.

Ad Astra,
Rachel Zimmerman
zimmerman@mss.isunet.edu

Quoi de neuf au Programme des Sciences en Microgravité!

par Catherine Casgrain (SSP 89)

Bonjour à tous. Comme vous le savez peut-être, je travaille depuis plus de 5 ans à l'Agence spatiale canadienne. Depuis un an, je travaille comme gestionnaire de projets pour le groupe

des Sciences en Microgravité. Un petit groupe très dynamique qui contient d'ailleurs un membre éminent de CAISU soit son président Alain (Al Baby). Nous partageons même un bureau.

Ce petit groupe bouillonnant d'idées prépare avec beaucoup de motivation l'ère de l'utilisation de la station spatiale. Comme vous le savez sans doute, le Canada aura des droits d'utilisation de la station spatiale en échange de sa contribution. En effet, le Canada fournit le Système d'entretien mobile (MSS) qui se veut un système de bras robotisé perfectionné (SSRMS) sur plate-forme mobile (MBS) et d'un manipulateur agile (SPDM) ressemblant à deux doigts de la main pour effectuer l'assemblage et l'entretient de la station. Il permettra de faire de multiples tâches allant du déplacement de grandes charges jusqu'à la manipulation de petits outils pour effectuer des opérations précises et délicates. Selon la cédule actuelle, le SSRMS sera lancé lors du vol 6A en juillet 2000, le MBS en mars 2001 avec la mission UF2 et le SPDM en mai 2003 avec la mission UF4.

Donc, le Canada aura droit d'utiliser 2.3% des ressources de la station. Pour notre groupe cela signifie l'utilisation de 2 rack-année pour effectuer des expériences en microgravité. Le projet sur lequel je travaille est celui de la future fournaise qui permettra d'effectuer des expériences sur les matériaux en apesanteur. Notre programme a une longue expérience dans ce domaine principalement grâce à une collaboration avec la NASA et les Russes de 1996 à 1998. En effet, des chercheurs canadiens ont pu fabriquer des matériaux en apesanteur à l'aide d'une fournaise appelée QUELD II montée sur une plate-forme d'isolation des vibrations (MIM), tous deux installées dans un casier sur la station Mir. Plus de 200 échantillons ont pu être traités durant ces missions.

Donc aujourd'hui, nous nous attaquons à la prochaine génération, c'est-à-dire une fournaise à tâches multiples de la grosseur d'un casier simple, qui pourra répondre aux besoins de chercheurs oeuvrant dans différents secteurs tels la croissance de monocristaux de matériaux semi-conducteurs, la conception de verres, de céramiques, l'étude de la diffusion, des phénomènes de ségrégation. Dans le but de minimiser l'intervention des astronautes qui seront particulièrement occupés, la fournaise pourra être opérée à distance à partir de St-Hubert en passant par la station au sol de Marshall. Elle sera aussi robotisée en ce sens que plusieurs échantillons seront chargés en une étape et c'est à l'aide d'un système robotisé que ceux-ci seront l'un après l'autre traités dans la fournaise.

En terme de cédule, nous pourrons profiter de notre droit d'utilisation de la station environ vers la fin de 2002 et nous profiterons des années qui viennent pour concevoir et fabriquer la fournaise qui servira les intérêts d'un maximum de chercheurs.

Dans cette optique, nous avons d'abord fait un sondage auprès de notre communauté scientifique pour connaître leurs attentes face à une nouvelle génération de fournaise. Les résultats ont été compilés et utilisés pour définir les requis pour une étude de faisabilité. Les résultats de ces études seront utilisés pour définir les systèmes de la fournaise lors d'un appel d'offre pour la conception finale et la construction de la fournaise canadienne pour la station spatiale. Bref, ce projet de charge utile canadienne est celui qui sera lancé le premier. Suivra une charge utile pour la croissance de cristaux de protéines et une autre pour l'étude des fluides. Histoire à suivre…

United States Alumni Organization (IUSAO)

by Lin Hartung Chambers (SSP 89 USA, IUSAO President)

The International Space University United States Alumni Organization (IUSAO) was founded in September 1989. The organization is founded exclusively for charitable and educational purposes to advance the interest and promote the welfare of the International Space University (ISU) and its alumni. Members include all US alumni of ISU and any other alumni residing in the US. Specific objectives are to promote social, professional and academic linkages between ISU alumni, in particular those residing in the United States of America, and to support the ISU's goal of academic excellence.

IUSAO is currently trying to obtain web space outside the ISU web server, to allow a more dynamic site with faster access in the US. Watch for this announcement in the next few months at:
www.isunet.edu/Community/alumni.html

In the meantime, contact the organization through its president, Lin Hartung Chambers (SSP '89) at <hlcham@home.com>. Our main project for the next year is to implement recent bylaws changes (not yet on-line) which we hope will make this organization much more open and dynamic. I will be happy to hear from any Canadian alumni living in the US about how we can better serve all alumni.

European Alumni Association (EAA)

by Thorsten Siwitza (SSP 97 GER, EAA President)

The EAA is the organized voice of European Alumni. It exists to help alumni maintain contacts and friendships made during the summer sessions and the master's programme. Membership of the EAA is free and has always been automatic to all ISU students from European countries and those from other regions living or working in Europe for a period of greater than 3 months. "Europe" is deliberately defined very loosely, and since early 1995 this has been extended to include all those alumni not previously members of other alumni associations, (South America, Africa, Asia, Australasia, etc.). Currently, the EAA has more than 500 members from 40 countries. All members receive a newsletter, "Space Talk" free of charge. The next issue is planned for May. We are considering giving all Alumni access to the Newsletter by placing it on the web. Members who choose to pay the optional membership fee of 10 Euro (about $10) are deemed to be "active

members" with the right to vote at official meetings of the EAA. The funds are used to support Alumni meetings, such as for example the SSP Alumni Conference.

The EAA Executive Committee is an elected body having 14 members: President, Secretary, Treasurer, Publicity and 10 Networkers. The Networkers are regional contact points, each covering one or more countries. The main aim of this system is to improve communication between the EAA and its members. There is also a Board of Advisors, consisting of one alumni from each SSP and MSS year, whose responsibility is to advise on any major decision that must be taken and on the general direction and structure of the EAA.

The Annual General Meeting (AGM) of the EAA is usually held around March, as part of a ski week in the Italian Alps. This event has steadily grown with some 70 people attending every year and is open to all ISU alumni, not just those of the EAA. In addition there are also several regular, more or less informal, regional gatherings of alumni, such as those in The Netherlands and United Kingdom.

The Newsletter is still mailed to all members of the EAA free of charge, through an arrangement with ESA. One of the main aims of "Space Talk" is to help alumni keep in touch with each other. To this end, an EAA Directory has been published giving phone, fax, E-mail and address information for all EAA alumni. Updates to this Directory are published in "Space Talk." Alumni whose contact information changes are urged to inform the EAA. All information updates we receive are shared with ISU. "Space Talk" also serves as a forum for discussion and announcements, carrying alumni articles, the latest news about alumni activities, changes of address and the latest news about ISU. The alumni articles may be on any topic including social activities and work-oriented, semi-technical articles. All alumni are welcome and encouraged to write articles, whenever they wish, on whatever subject they wish.

For further information on EAA, please contact:

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SSP 1999 Thailand

The 1999 International Space University Summer Session Program will take place at the Suranee University of Technology (SUT), Nakhon Ratchaisma (Khorat), Thailand, between June 26th and September 4th, 1999.

8th Alumni weekend in Thailand

The 8th ISU Alumni Weekend Festival 1999 at Khorat, Thailand is scheduled to run July 29th to August 2nd, 1999. The local organizing committee has planned quite an eventful weekend, and has even been giving Thai language lessons to get everyone geared up for the summer session and their visit to Thailand!

The most current schedule for the busy alumni weekend includes alumni conference registration, an ISU Asia alumni organization meeting, and a welcome party on July 29th (Arrival Day). On July 30th, there is the Alumni Conference and a keynote speaker (on the topic of Space related business in Southeast Asia), followed by the Poster Session. On July 31st (Saturday) there will be alumni participation in the design projects, the promotion of space activities, a football match, and the quintessential Masquerade Ball. On August 1st, there is an organized field trip to the city of Pattaya by air-conditionned bus, with an overnight stay and return the next day to Khorat.

As you can see, the local Thai organizing committee has been quite busy! They would be more than pleased to answer all of your questions regarding the 8th alumni weekend in Thailand. Please refer to their website, http://www.isunet.edu/Academic/SSP/SSP.CURRENT/1999/CPM/Visit/Alumni.html, for more details, or address questions directly to the following email, ISU_Alumni_Weekend99 <ISUAlu99@ccs.sut.ac.th>.

Design Projects 1999

by Brian Rishikof (SSP 90, CAISU Vice President 1/Québec Director 1)

In keeping with the tradition of most ISU summer sessions, two separate design projects will be undertaken. The first deals with the exploitation of space resources to address a problem that is critically important to the host-site population, but with global applicability: predicting and preparing for natural disasters. The project emphasizes the near-term and the practical, and may yield results of immediate consequence. The second project looks at a more visionary problem: human exploration beyond Low Earth Orbit. This topic will allow the students to look past this era of space stations to the possibilities of visitation and permanent presence on other worlds. And following the most fundamental of ISU tenets, both projects will be international, inclusive, and multi-disciplinary.

The paragraphs below have been shamelessly plagiarized from the ISU web site, but be sure to check out the following links for more details regarding each design project:

http://www.isunet.edu/Academic/SSP/SSP.CURRENT/1999/DP.Disaster.html

http://www.isunet.edu/Academic/SSP/SSP.CURRENT/1999/DP.Lunar.html

Disaster Management in Southeast Asia

Students will first focus on the needs and resources of the countries of Southeast Asia for reducing the damaging effects of natural disasters. Based on the experience of these countries, the team will review the existing needs and focus on those which can be met using space technologies, i.e. those for which the observation from space shall either be unique or shall contribute substantial advantages over other data collecting techniques. Which countries and regions are most affected? What capabilities does Southeast Asia

possess for gathering and analyzing information? Working with experts from the region, the project will then craft potential solutions for responding to the threats of natural disasters. This project will especially examine the role of space, air, and ground-based technologies in predicting the creation and development of major natural disasters, and in providing advanced warning to affected populations of Southeast Asia. It will also explore the potential for these technologies to assist response teams in providing relief in the aftermath of natural disasters.

Strategies for Human Exploration Away from Earth

A student team will explore and advocate options for human spaceflight beyond low Earth orbit. The team will determine possible ways to energize and execute precursor activities and will arrive at findings intended to aid program decisions. A key aspect of the project will be to develop strategies for engaging needed public support, not only in the nations presently pursuing human spaceflight, but also in regions heretofore excluded from participation.

Given this general goal of sending humans on voyages beyond the realm of low-Earth orbiting space stations, several main pathways are available. Should people settle the Moon and, by living there over a period of time, develop public acceptance of the idea that humanity's place is not just on Earth but also in the cosmos? Or would such a development cause unnecessary delays on the road to farther ventures such as exploiting asteroid resources or exploring Mars? Or should a free-flying space station be established high in the outer parts of Earth's gravity well, when other exploitations could later proceed? These choices involve many subtle and complex trade-offs, not just in engineering and management but also in the realm of public interest, international politics and policy.

Update on ISU Alumni

Is your name missing from this column? Send in your updates to Chantal at clamont@utias.utoronto.ca

SSP 1988 Cambridge

Peter Diedrich (SSP 88) After a long and torturous search, Peter was located in Montréal. He is now Vice-President of Corporate Strategy for BCE/Bell Canada.

Kriistina McConville (SSP 88) and her husband Kevin had a baby girl, Annaliisa Linda McConville on October 2, 1997. She is really delightful. Kriistina works for AlliedSignal Aerospace Canada. Her responsibility is Space Station electronic controls and sensor design and manufacture for the US modules, JEM and Columbus.

Constance Robinson (SSP 88) and her husband David now have two future ISU students. Linden Olivia Robinson was born on July 20, 1998. A wonderful sister for Eleanor. Constance also recently moved to Charlottetown, PEI.

Kimberly Strong (SSP 88) was hired as an Assistant Professor in atmospheric physics at the University of Toronto in October 1996. She is involved in a number of space-related projects, including the Odin and SCISAT-1 satellites and the MANTRA balloon campaign. The latter may be of interest - it is the balloon that made the international press last August/September when it unintentionally drifted from Saskatchewan to Finland! There are lots of photos and information on the web site http://www.atmosp.physics.utoronto.ca/MANTRA/home.html

Erik Viirre (SSP 88) is an assistant professor at the School of Medicine at the University of California, San Diego. He is working on some NASA grants for low gravity and virtual reality applications, and has been doing a little work with Peter Diamandis on the X Prize. Erik also gives a lecture every year for Larry Kuznets in his Mars Mission design course at UC Berkeley! Erik and his wife Mary Ann had a daughter, Rosanna, last August. A future ILIO inhabitant!

SSP 1989 Strasbourg

Shane Munro (SSP 89) is in private practice in ophthalmology in Ottawa, Ontario. He is married to Camille and has three children, Evan (5), Amy (3) and Anna (1).

David Tse (SSP 89) is an assistant professor in the Department of Electrical Engineering and Computer Sciences at the University of California at Berkeley. His research interests include wireless communications and high-speed networks.

SSP 1990 Toronto

Alain Côté (SSP 90) et Julie Benoit sont fiers d'annoncer l'arrivée d'Antoine B. Côté (24 mai 1998). Nous sommes à la veille de pouvoir dire: " Un petit pas pour l'homme, mais un grand pas pour ... Antoine!"

Jim Orlando (SSP 90) is now Director of Corporate Development for Nortel Networks in Santa Clara, California.

Otis Marechaux (SSP 90) and his wife, Toni (USA 90) are now living in Washington, D.C.

Michel Pelletier (SSP 90) I am currently working for Bombardier Aerospace on the CL-327 unmanned air vehicle (also known as the flying peanut) as a guidance and software specialist. I finished my Ph.D. (in robotics) in 1994 and I am now married with two children: Judith (5) and Dominic (2).

Brian Rishikof (SSP 90, CAISU Vice President 1/Québec Director 1) is honoured to be part of this year's CAISU Board, playing the role of vice-president, and looking forward to working with a great bunch of people. He is very excited to be back in Houston participating in the International Space Station (ISS) project in a truly international, multi-disciplinary role, after spending three years in the (almost) equally exciting realm of commercial space. At the Johnson Space Center, Brian works with David Strack (92) and a bunch of ISU hopefuls, addressing technical issues dealing with space vehicles from the US, Russia, Europe and Japan that will operate in the vicinity of the ISS. In his other life, Brian recently completed a MSc in Physics at the University of Houston and is enjoying flying, playing piano, and learning Russian (or is it Spanish?).

SSP 1991 Toulouse

Alain Berinstain (SSP 91, MSS1, CAISU President) In my final year of graduate school at the University of Ottawa I decided to go experience the MSS in Strasbourg. I took a leave of absence (all experiments were done, only the thesis to write) and went to Strasbourg in the fall of 1995. By the fall of 1996 I was back at Ottawa U and I submitted my thesis that Christmas. I started my present job as a project

manager in the Space Science Program at CSA in March 1997, and since then I have worked on several missions (science, payload development, and mission operations) and it's a lot of fun. I presently handle most of our projects in the field of space protein crystallisation, getting ready for ISS. For fun, I still do a lot of gliding and I recently got my private pilot license.

Laura Childerson (SSP 91) has been out of touch with the Canadian Alumni Association pretty much ever since Toronto lost the ISU permanent campus bid, but she is finally over it now :-) and would like to rejoin the ISU community. Laura has spent the last two years with J.D. Edwards, an Enterprise software company headquartered in Denver, CO. Selling software, she says, is not, perhaps, as exciting as working in the space industry, but alas it seems to be slightly more lucrative. Laura is a senior presales consultant for manufacturing and distribution, which means she goes in to a prospective client's site, tours the factory and warehouse, and then demonstrates how the software will solve their business problems by streamlining production, keeping closer control of inventory, and so forth. According to her, seeing marshmallows being made was pretty interesting but touring the beer factories was more fun! Gene Kranz and Jim Lovell spoke at her company's annual sales meeting in November, which was supposed to inspire them to sell more software but instead made Laura wish she was back working in the space industry! "I really do miss it sometimes." Luckily Laura managed to make it to Houston last April for the Neurolab flight though, so she isn't suffering from complete withdrawal. If any of you are ever out on the west coast, don't hesitate to look her up.

Rod Elford (SSP 91) has finally tied the knot. He was married to his lovely wife Susan last summer in St. John's, Newfoundland. They recently completed a cross-continent road trip and are now residing in Calgary, Alberta. Currently, he is working as a family and urgent care physician in Calgary and as a telehealth consultant. He is also Director of Digital Telehealth Inc., a company that specializes in designing, implementing and evaluating telehealth networks for health consultations conducted at a distance. His new email address is relford@cadvision.com

Michel LeBlanc (SSP 91) now works for the Naval Research Laboratory in Washington, D.C.

Keith McEwen (SSP 91) is now working for Bank One in Delaware.

SSP 1992 Kitakyushu

Denis Bourque (SSP 92) Je suis toujours à l'Agence spatiale canadienne (ASC) de Saint-Hubert où j'occupe un poste de gestionnaire aux Relations internationales. Je suis, entre autres, responsable des relations de l'ASC avec les organisations spatiales de la région Asie-Pacifique. Je me suis récemment joint à la dynamique équipe de direction de CAISU en tant que Directeur CFISU et je suis bien content d'être de nouveau impliqué dans ISU. Toujours passionné de hockey, je tente de bloquer les lancers de mes collègues de l'Agence spatiale lors de nos traditionnels et amicaux matches du jeudi soir.

François Dufour (SSP 92) Hello everybody, especially those of '92. I'm still far away from the cold and frozen land of Canada, and it appears to last for a while because I moved to a new job 15 months ago. After a few years as a Ph.D. student, and then as a post-doc researcher, I have been offered an interesting job at CNES and I chose to leave the laboratory I worked for. As I am the first non-european, and of course Canadian (anyone else interested to enjoy the "soleil toulousain"?), to be hired by CNES the process has been a little long and bumpy, but everything went well finally. As usual, I'm working on satellite constellations and we are not in lack of work with all those constellation projects that flourish continually. Anyway, I still have some time to drink a beer if you come to Toulouse!

Douglas Hamilton (SSP 92) Future Dean of ISU born on January 28th! Doug (ISU 92,96,97,98) and Kathy Hamilton proudly announce the birth of their son Ross Wilson Hamilton (9 lb. 1 oz., 4200 grams) on January 28th, 3:37 PM, at Memorial Hospital, Houston Texas. Mother and son are fine, however the father is under heavy sedation. Send university scholarships in lieu of flowers. Doug was also recently in Russia, from Nov 30 to Dec 18 1998, supporting medical operations for NASA.

Marius Paraschivoiu (SSP 92) has just moved to Toronto. He is a professor in the Department of Mechanical and Industrial Engineering at the University of Toronto.

Kamiel Rezkallah (SSP 92) is a Professor in the Mechanical Engineering Department at the University of Saskatchewan. He is also Director of the Microgravity Research Group, and has been spearheading efforts to establish a Canadian Microgravity Facility.

Mauricio Siciliano (SSP 92) I have, for the last three years, been sharing my life between Indianapolis and Montréal. In Indianapolis, I have an imaging and information system integration company and a translation company. We are converting paper into electronic file for Thomson Consumer Electronics (the French company). And business is great. My family is still in Montréal (we refuse to leave Canada). Back home I have done consulting work, mainly for the International Civil Aviation Organization, and I simply enjoy my family and friends.

Afzal Suleman (SSP 92) is now an Associate Professor in the Department of Mechanical Engineering at the University of Victoria. His research interests are fluid-structure interaction problems in air and sub-sea vehicles, and dynamics and control of large space structures.

Suzanne Talon (SSP 92) obtained her PhD September 23 1997 from l'université Paris VII. She started a post-doc in the Physics Department at the University of Montréal in December 1997. She is now mother to Eloise, born June 2 1998.

SSP 1993 Huntsville

Nyka Alexander (SSP 93) has just recently relocated to Toronto.

Rémi Cabanac (SSP 93) has surprisingly (his words, Ed.) successfully defended his PhD thesis in Astrophysics in August 1998 at Université Laval. The title of his thesis was “Astronomy with Liquid Mirror Telescopes". In October of 1998, he moved to Paris for a 2-year post-doc at the Institut d'Astrophysique where he works in the field of galaxy evolution and large scale structure of the universe. On July 26, 1997, Rémi married Cécile – she is French, and restores ancient furniture for a living, making it very handy when they want to buy antiques! Rémi and Cécile have a 9-month-old baby girl, Aude "the bulldozer", who perfectly understands the concept of stochasticity and brownian movement.

Ron Dicke (SSP 93) Personal life? Yeah, right. Professional: I left Newbridge in '96, started my own ASIC Design company. I have been doing contract ASIC designs for

several years now and will shortly be joining an Internet start-up company which will hopefully be bought out for several 100 million, or go public for several billion so I can retire on a beach in Australia next year and have a personal life. :) Currently living in Ottawa at no fixed address. If anyone wishes to contact me please use email (rdicke@yahoo.com).

Peter McGuire (SSP 93) First I'd like to say hello to everyone from the edge of the world also known as Newfoundland. I have recently completed my PhD (finally) and am now in a Post Doc position at C-CORE in St. John's, studying/working in the field of image analysis. I have been lucky enough to find a place where I can be involved in high tech projects related to space technology and at the same time be surrounded by incredible untouched wilderness. Of course the down side is that I actually have to work regular hours, but surprisingly it's not that bad! Good luck to all and I hope to see some of my old friends in the future.

Nick Van Stralen (SSP 93) and his wife Thérèse are happy to announce the birth of their second son, Noah, who will be celebrating his first birthday March 17th. Their eldest son, Neale, will be 3 years young in May.

SSP 1994 Barcelona

Yifang Ban (SSP 94) is working at the Department of Physical Geography at Stockholm University. She is currently at home on maternity leave – congratulations!

Kim Barker (SSP 94) is now an MD type of doctor, completing her first year of family medicine residency at McMaster University. She married Marc Rougier October 24th, and they now both reside in Oakville.

Catherine Beaudry (SSP 94) finally submitted her thesis at the beginning of January. She is now rediscovering life!!! Evenings and weekends are now guilt-free.

Claudie (Durand) Bortolus (SSP 94) has been living in France since January 95, and married Andrea Bortolus (SSP 94 Italy) in September 1996. She is not currently working in the space business, which is probably one of the reasons why she lost track of CAISU!! After 4 years at Médecins du Monde (an international humanitarian organisation) where she worked as representative to the UN and the European Commission doing lobbying essentially, she is now working with Paolo Toeschi, Mayor of Arles, a city in the south of France. She has been working as the Mayor's chief of cabinet since November 1998.

Stephen Cheung (SSP 94) has had a whirlwind year. He married Dr. Deborah Hoffele in a castle in Scotland last July (attended by Eric Epstein ('94, '95) and Vivian Welch ('95)). He then flew back to Hamilton just long enough to pack his bags, then drove out to Halifax with his bikes and pets in tow (we think he forgot he's now married, as he left Debbie behind in Hamilton!). He is now an Assistant Professor in Kinesiology at Dalhousie University. Stephen and Debbie have just bought a house next to the ocean along one of their favourite cycling routes, and are looking forward to hosting ISU lobster bake reunions!

Sébastien Drouin (94-96, 99, CAISU Ontario Director) Captain Sébastien Drouin moved to Kingston (Ontario) in the summer of 1998. He is pursuing an M.Eng/Ph.D in electrical engineering at the Royal Military College/Queen's University and will start teaching in the same department in the fall.

Eric Epstein (SSP 94) has recenly left the areospace business and is now very busy working as an independent computer consultant. He still creates those fabulous Canadian ISU t-shirt designs!

SSP 1995 Stockholm

Matthew Bullock (SSP 95) is now living in Paris, France, and working for a consulting service.

Tony Hong (SSP 95) has completed his PhD at UTIAS. Tony and his wife just bought themselves a house in Toronto.

Chantal Lamontagne (SSP 95, CAISU Membership Director) is continuing her PhD studies at UTIAS on hypervelocity impacts on composites. Chantal has no free time whatsoever between her research, updating the alumni Contacts List, creating the Cosmonotes, and planning a long-distance wedding. She is engaged to be married to Harold Seaborn in September 1999.

Judith Lapierre (SSP 95) Please see Judith's article in this issue.

Derek Plansky (SSP 95) Derek and his wife Barbara joyfully announce the birth of their son Alexander Gerald Legge Plansky on February 10, 1998.

Isabelle Plante (SSP 95) After working for Lockheed Martin for 2 years, Isabelle is now designing cellular telephone technologies for Ericsson Canada in Montreal.

Vivian Welch (SSP 95) has been busy in Ottawa working on several osteoporosis and arthritis publications.

SSP 1996 Vienna

Marc Abela (SSP 96) I have just moved to my new apartment in Tokyo. Cleaned my motorbike, new wheels on my roller blades, life is good and I can't quite ask for more. I am now working for a company called Informix and I spend most of my day time doing stuff that resembles programming. Most of my night time is spent discovering the other side of Tokyo... Even though I don't get to travel as much as I used to, I try to find the time to take weekends off and visit new sites or places close by in Asia. I am really having a ball here in Japan and I can't quite tell how long I'll be around... I should be around Thailand for the upcoming SSP... Hope to see you all out there!

Shawn Arseneau (96-98) I've started my masters in electrical engineering at McGill in the fall of 1998 in the area of computer vision. My research focuses on action recognition of a user in order to interface with the computer, instead of the archaic keyboard and mouse. Hopefully this summer I'll be able to create a demo where a user can play a flight simulator on a screen, and control the plane's motion by waving their arms.

Christopher Paul Barrington-Leigh (SSP 96) I expect to finish my PhD in Applied Physics on "fast photometric imaging of high-altitude (40-100 km) optical flashes above thunderstorms" at the end of 1999. This summer from July 12-30 I will be at Goddard SFC in Greenbelt, Maryland at the "high-performance computing in space and atmospheric science summer school." I still climb or xc ski whenever I can, and this spring I will be competing with the Stanford Cycling team.

Li-Te Cheng (SSP 96) is in the midst of finishing up his Ph.D. on augmented reality for wearable computers at Memorial Uniersity of Newfoundland. Paradoxically, he will also be working in the CRC in Thailand for SSP 99.

Kevin Forkheim (SSP 96) is currently completing his first year of his Radiology recidency at U of BC. He will soon be

moving from Victoria to Vancouver to complete the rest of his training. In Nov. 1998, Kevin teamed up with Eran Schenker (ISU '96, Israel) to perform a follow-up osteoporosis study on John Glenn's STS-95 mission. Kevin has also kept busy doing numerous educational talks on Space Medicine in Victoria. He was also recently featured on Vicki Gabreau's show and several radio shows speaking about Medical Problems in Space.

Johanne Heald (SSP 96) This past year, Johanne finished her contract at the European Space Agency, had a great time TA-ing at the SSP in Cleveland, and is now enjoying close proximity to the ski slopes in Boulder, Colorado. She has started her Ph.D. at the University of Colorado in structural control of space telescopes, and plans to stay in one place for at least three years - well, two and a half years anyway!

Allen Jones (SSP 96) Dr Allen Jones recently showed signs of life on the conveyor.. "Can anyone hear me? Am I connected? Can the genie of the conveyor grant my request? My requested is to be connected."

Daniel Rey (SSP 96) The very biggest and greatest news was my happy wedding to Isabelle on Oct. 17th, a beautiful autumn day. We married in a small church in a small town where Isa grew up, next to a small river and a small hill. I know it all sounds very small but it was great! About 100 relatives and friends celebrated with us. I wanted to invite you all, but my banker refused to give me permission. Other highlights of the year were the Canadian Alumni for ISU (CAISU) workshop that Matt helped organise, where I got to spend time with a lot of ISU friends from our and other years. I wish I could make it to more reunions...

Lara Srivastava (SSP 96) has just accepted a job opportunity in England.

Mathias Wuhr (SSP 96, CAISU Secretary) has been at Telesat Canada for the past 2 years, working as a satellite engineer. In May, Telesat will become the proud new "official" owner of a direct broadcast satellite called NIMIQ (Inuit word for "force that binds or unites"). NIMIQ is a Lockheed Martin A2100Ax spacecraft that will be launched from the Baikonor Cosmodrome on board a Proton rocket. The satellite will serve ExpressVu in their direct-to-home television business. Matt will be one of three engineers tasked with overseeing the day-to-day health and operation of NIMIQ (so you now know who to blame if you lose your TV signal). :-)

SSP 1997 Houston

Leslie Buckley (SSP 97) is currently living in Boston but will be returning to Canada as of July 1st.

Mark Dejmek (SSP 97) is now at l'Ecole Polytechnique in France.

Caroline Goulet (SSP 97, CAISU Treasurer) After one year in Iowa City, Caroline is currently living in Hong Kong where she is an Assitant Professor in the Physiotherapy Program of the Hong Kong Polytechnic University. She remains involved with ISU as the treasurer of the Canadian Alumni Association.

SSP 1998 Cleveland

Troy McConaghy (SSP 98) has been travelling quite a lot lately. From September to December, he was at Cornell University. In December, he traveled to Hawaii. From January to April, he will be at the University of Toronto, and from May to August, he will be in Kingston. Phew!

SSP 1999 Thailand

Eric Choi (SSP 99) was born in Hong Kong, grew up in Toronto, and currently lives in Montréal. He holds a master's degree from the University of Toronto Institute for Aerospace Studies and currently works as a flight dynamics analyst on the Radarsat mission at the Canadian Space Agency. Besides his aerospace career, he is also a science fiction writer whose work has been published in several magazines and anthologies. He was also a former editor of the CANADIAN SPACE GAZETTE (http://www.geocities.com/CapeCanaveral/Launchpad/2099/gazette.html), the publication of the Canadian Space Society. His other interests include travel and international cinema.

Alvin Cunge (SSP 99) I completed a Bachelor of Science degree in Applied Mathematics and Chemistry in 1995. As an undergraduate, I was elected to the University Senate and served as President of the York Chemistry Club. I helped to organize a "Chemical Magic Show" which was a great success because it was a lot of fun and exposed people to chemistry in a positive and friendly manner. I received the Murray G. Ross award for outstanding academic achievement and contribution to undergraduate student life and was awarded the Faculty of Pure and Applied Science Gold Medal for high academic excellence (1995). As a graduate student, I received the Natural Science and Engineering Research Council (NSERC) award from 1995 to 1999, to complete a doctoral dissertation on "Catalysis in the Gas Phase". I will complete my Ph.D. in the fall of 1999.

Angelina Guzzo (SSP 99) I was born in Montréal, Canada. I have also lived in Ottawa, Toronto and Boston. I graduated from McGill University in 1994 with my Ph.D. in microbiology and went to the Massachusetts Institute of Technology to pursue a postdoctoral fellowship for 3 years in protein biochemistry. I am currently in my second year of medical school at McGill. My research has been published in several journals and I have presented at international science conferences. In addition I have taught several undergraduate courses. My extracurricular interests include martial arts, hockey, hiking and rollerblading.

Eric Lanoix (SSP 99) just completed his masters degree in Mechanical Engineering at McGill University in Montréal, Canada. His thesis focused on the long term dynamics of tethered spacecraft in LEO. His other areas of interest include orbital mechanics and planetary exploration. Eric has also worked for two years at the Canadian Space Agency (CSA) within the Astronaut Program and the Space Systems Division. During his time at the CSA, Eric worked on the Space Vision System (SVS) project and participated in the survey of the "Zarya" and Service Modules of the ISS in Moscow. Eric's hobbies include jogging, dancing Argentine Tango, and photography.

Ethel Poiré (SSP 99) My name is Ethel Poiré. I am physicist and I have completed a Masters degree in Engineering Physics and two years as a Ph.D. candidate at École Polytechnique de Montréal. During my graduate studies, I have gained experience in plasma processes and techniques used in surface analysis and characterization. I am working at the Canadian Space Agency as a materials scientist. My interests are the effects of space environment on materials and coatings, especially thermal control systems. I am sort of addicted to space. I like space related model kits and collectibles. My favorite hobbies are reading, going to the movies, flying and

practicing sports. I enjoy aerobics, cycling and playing squash and badminton. I play the piano and the trumpet. I speak French and English. I am also learning Spanish, Russian and German.

Nishi Rawat (SSP 99) is currently pursuing a Medical Degree at Queen's University. She recently completed a Bachelor's degree in Biochemistry at Mcgill University. Last summer, Nishi worked as a Research Assistant at the Institute of Medicine and Space Physiology (MEDES) in Toulouse, France. She has also worked as a summer RA in the Neurosciences and Motor Control Lab at the JSC and at the Biotechnology Research Institute in Montréal. Nishi was a Hugh Brock Scholarship and Canada Science and Engineering Scholarship recipient at Mcgill University. She was also a member of Mcgill University's Varsity Women's basketball team. As a Mcgill student-athlete, she earned consecutive honours as a Royal Bank Academic All-Canadian and Principal's Student-Athlete Academic Honour Roll recipient. Nishi is bilingual and is a native of Ottawa, Ontario. She also enjoys running, cycling and reading science fiction.

Josée Robert (SSP 99) Josée was born in Moonbeam, a very small town in northern Ontario. She attended Ecole secondaire Cité des Jeunes in Kapuskasing, ON. Very adventurous and energetic, Josée chose the challenging life of joining the military and graduated from Royal Military College of Canada with a Chemical and Materials Engineering degree. Shortly after graduation, she left the military and joined a small company where she worked on two projects from the Canadian Space Agency which consisted of researching the potential of piezoelectric ceramics on smart structures for space applications. Currently, she is studying the diffusion of liquid metals in microgravity for a Master's degree at Queen's University. Josée also loves to run, fly and jump out of planes!

Aynharan Sinnarajah (SSP 99) Presently, I am enrolled in the second year of medical school at the University of Toronto. I have completed a three-year Bachelor of Science degree with a major in Biological Sciences and a minor in Economics at the University of Toronto. Presently, I am the President of SEDS-Canada ('99) and I regularly volunteer with the Heritage Toronto. Past activities include cancer research at the Ontario Cancer Institute, Princess Margaret Hospital (summers of '96, 97), research with sea lampreys at the University of Toronto ('95), and Guide at the International Mathematics Olympiad ('95). Achievements and awards include Canada Scholarship ('94-'97), University of Toronto Scholar ('94-'97), Governor General's Award (top high school graduating student, '94), Canadian Gold Medallist in the Descartes Mathematics Contest ('94), National Finalist in the Chemistry Olympiad ('94) and Metro Toronto Gold Medallist in the Canada Chess Challenge ('93). During my leisure time, I play squash, tennis and volleyball.

Laurence Vigeant-Langlois (SSP 99) Born and raised in the beautiful Québec province, I discovered the art and science of flying as a teenager. This led me to pursue interests for both piloting and engineering. After completing a bachelor in mechanical engineering at McGill University, I entered a master of science program in aeronautics and astronautics at MIT. On the operational side, I teach soaring, tow gliders and train for becoming a professional pilot. With aspirations for contributing to improving aviation and aerospace safety issues, my analytical and operational interests meet in research and development of systems at the human-machine interface level. On the extra-curricular side, I enjoy various outdoor activities and have strong interests for travels. I look forward to participating in the multi-disciplinary and international ISU program for both professional and personal growth.

MSS-1 1995-96

Alain Berinstain (MSS1, SSP 91, CAISU President) Please see Alain's update under SSP 91.

MSS-2 1996-97

Peter Lee (MSS2) is currently in the M.D./Ph.D. programme at Brown University.

Larry Reeves (MSS2) I'm coming up onto one year of having been a member of the Radarsat-2 team. It's been exciting, fun, and of course, very demanding, with a dash of stressful thrown in for good measure. The project is progressing well, having recently passed our various Preliminary Design Reviews. My role on the team has been both technical and business-related, a good interdisciplinary combination! I've analysed some orbit mechanics and orbit maintenance issues, launch vehicles (sorry, I can't tell you anything more than what you've read in the newspapers), and also have been looking a ways of promoting and developing future commercial applications of Radarsat-2 data. I gave a Radarsat-2 Mission Overview presentation at the CASI/CAISU conference in Ottawa last October, and enjoyed meeting other CAISU folks. Recently I met a few Seattle-area alums too. Starting April 5, I will be hosting Andrew Ray, an MSS student from Halifax, for part of his research placement portion of the programme, and am looking forward to him being here. Best wishes to all you other alums out there. Bye for now!

MSS-3 1997-98

Eric Doré (MSS3) is currently the Student and Alumni Coordinator for ISU at its central campus in Strasbroug.

Charladean (Deana) Smith (MSS3) is now living in Houston, Texas.

Rachel Zimmerman (MSS3) Please see article in this issue for Rachel's update.

MSS-4 1998-99

The MSS-4 students are currently on placement. Please see their article in this issue.

Next Issue...

Look for more fascinating articles from CAISU in the next issue of the Cosmonotes in October or November…more alumni updates, efforts to build a Canadian Microgravity Laboratory, report from the 1999 SSP in Thailand, more news from MSS 4 and the new MSS5 students, an update on Radarsat 2, the annual general meeting, CAISU elections, report on the Space Generation Forum, and the famous CAISU T-shirts!

Last Words

I hope you've enjoyed this issue of the Cosmonotes. In parting, I'd just like to add **GO SENATORS GO!** ☺