Cartouche

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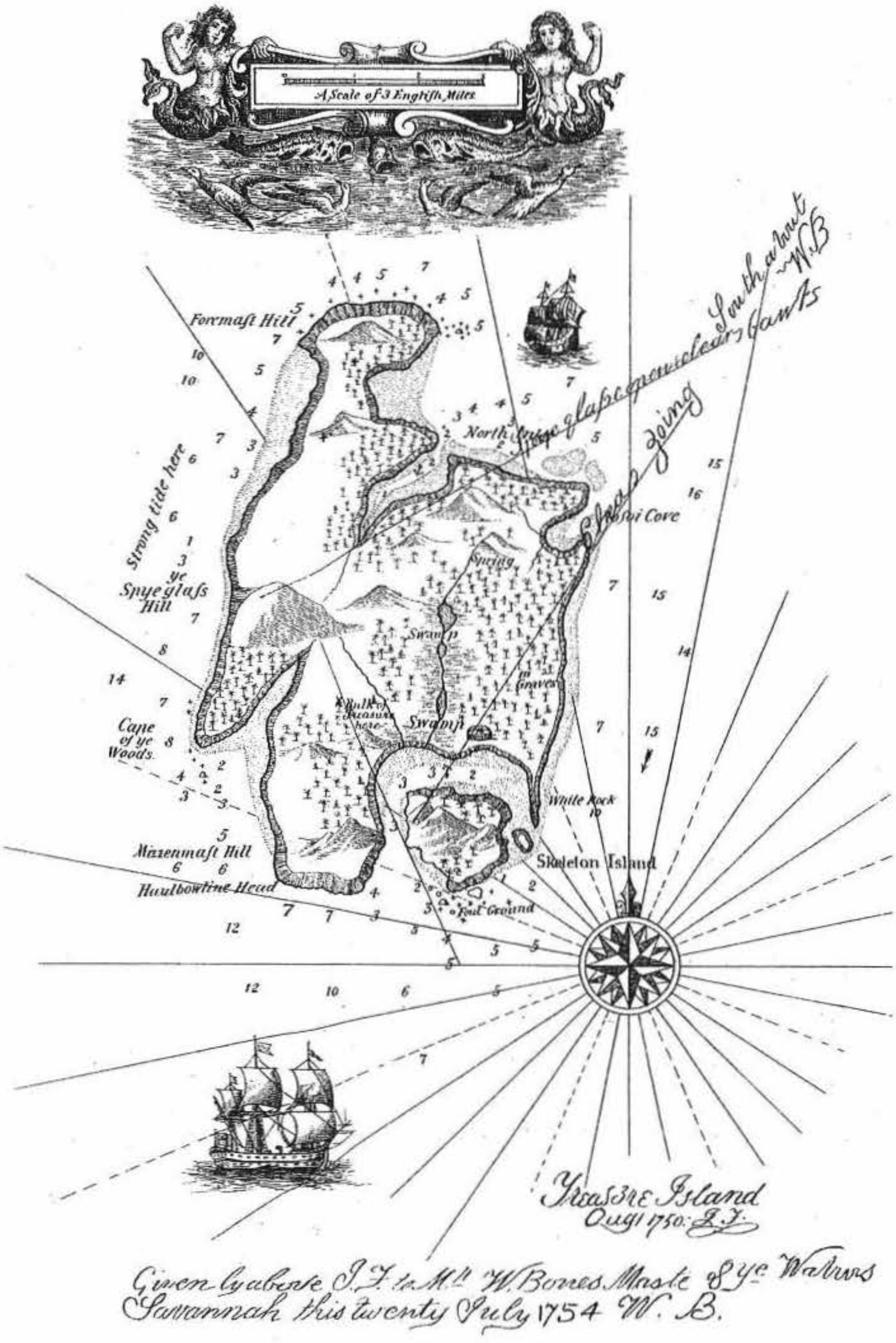

Facsimile of Chart; latitude and longitude struck out by J. Hawkins

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Inside this issue / *Sommaire....*

COLUMNS AND REPORTS
ARTICLES ET REPROTAGE

CCA BUSINESS/ACC AFFARIES

ABOUT THE COVER...

Long John's eyes burned in his head as he took the chart, but by the fresh look of the paper I knew he was doomed to disappointment. This was not the map we found in Billy Bones's chest, but an accurate copy, complete in all things -- names and heights and soundings -- with the single exception of the red crosses and the written notes. Sharp as must have been his annoyance, Silver had the strength of mind to hide it.

"Yes, sir," said he, "this is the spot, to be sure, and very prettily drawed out. Who might have done that, I wonder? The pirates were too ignorant, I reckon. Aye, here it is: 'Capt. Kidd's Anchorage' -- just the name my shipmate called it. There's a strong current runs along the south, and then away nor'ard up the west coast. Right you was, sir," says he, "to haul your wind and keep the weather of the island. Leastways, if such was your intention as to enter and careen, and there ain't no better place for that in these waters."

This quote from Robert Louis Stevenson's sea faring adventure *Treasure Island*, introduces the map on this issue's cover. This is a monotone reproduction of a map that was originally printed with two colours to accompany a 120 year old edition of the text. It is indeed very "prettily drawed out" but as it turns out the story about the actual Treasure Island maps printed with the many editions have a story all their own. See Harry Steward's article (page 7) on the beginnings of his research into this intriguing topic.

ATTENTION

Election Materials enclosed as a special supplement.
Matériels d'Élection Ci-joint comme un supplément spécial.

Remember to mail your Ballot.
Rappelez-vous expédier par la poste votre Bulletin.

Patricia Chalk
University of Western Ontario

Interview with Monika Rieger as She Wraps Up Nine Years of Service as CCA/ACC Membership Coordinator

In June this year, Monika Rieger indicated her desire to retire as membership coordinator. I would like to publicly thank Monika for her patience over the months that followed while we sought out someone to fill the position. In September, Clint Loveman came on board as the membership coordinator 'in training'. Since then, Clint and Monika have been working together to ensure that the transition is as smooth as possible. I am pleased to report that the reigns are now in Clint's hands. Thank you Clint for accepting this post, we are delighted to have you on the executive.

It seemed to me that the best way to gain insight into some of Monika's work as membership coordinator, was to interview her. The following report clearly shows the professionalism, dedication and humour that have characterized Monika's service as membership coordinator.

Trish: Let's begin with a bit of background, Monika, when did you first join the CCA/ACC and what prompted you to join?

Monika: I joined in 1988 while I was an undergraduate in the Department of Geography at the University of Calgary. Mike Coulson prompted me to join and, frankly, I wanted my own copies of Cartographica at a good price. I stayed on as a member after that for the interaction with other cartographers across Canada and elsewhere. I attended many conferences as a graduate student and I can't even begin to list all the benefits of that.

Trish: What prompted you to become membership coordinator and how long have you been working in this position? Any arm-twisting required when you were first approached, or did you volunteer?

Monika: Roger Wheate did. He's to blame. No, really, Roger approached me in the fall of 1992 to take over the membership coordinator role from him. Any arm-twisting? Yes, I admit it took a bit, but I wanted to do it in order to contribute to the organization and to get to better know all the members.

Trish: So that the membership can appreciate the detailed data base that you have developed and maintain for the association, please elaborate on the various fields in the database and why they are required.

Monika: Besides the regular fields of the member's title, name, mailing address, phone numbers, e-mail address, my database contained information on the 'date joined' and information about the current status of his/her membership (the expiry date, the payment date, and the payment type). These are absolutely vital to answer the many queries I would get over the space of a year regarding payments, renewals and such.

I also kept track of the date any address changes took effect, the interest groups the member indicated on joining and whether the member wished to be on the cca-list 'mailouts' and any other mailing lists. Other very important fields (since that is why most members join) are those that record which publications' issues the member is due as a benefit of his/her membership.

In the current database are fields showing the members' membership categories for each year over the past five years. In addition, I kept archived databases back to when I took over the job as frequently questions would arise about long-past members – which years did they hold a membership and how many members did the association have at any particular point in time, for example.

Trish: In the course of a year, how many items of mail do you estimate that you send out to members? Do you have help?

Monika: Most of my mailings deal with renewals - I send out renewal forms three times a year. The first mailing can often be as many as 250 forms and envelopes. The second and third mailing are progressively fewer in number. Then I mail receipts to some members and often the back issues of Cartouche if the members renew late in the year. I've been doing this by myself. There aren't many around here I can lasso to help out.

Trish: Do you have any special anecdotes from executive meetings or from your own business with members that can be shared in a public forum?

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Monika: Let's just say that "I don't remember!" That protects everyone, including myself. Seriously, no. Nothing special.

Trish: In following the membership trends from year to year, what aspect have you found most interesting?

Monika: There are always a number of people who join for a year or maybe two and then drop their membership, but I am most impressed by the number of members who have been with us for years (many from the beginning of the organization) and stay with us year after year. That's a trend that is both interesting and so beneficial to the CCA. I've come to know these people very well – some personally and the rest by name – and that has been both an interesting trend to me personally and so rewarding.

Trish: What advice can you offer us based on the membership statistics with respect to maintaining a strong base of members?

Monika: *Bring in the students – they are our main source of new members. We are already providing them a great deal for their membership dues; we need to let them know we are here. Unfortunately, we can't do much to counteract the trend which is resulting in fewer geography departments in Canadian universities and in fewer cartographers in those remaining geography departments.*

Trish: Any parting thoughts that you'd like to mention?

Monika: Parting shots? Oh, parting THOUGHTS! I'm looking forward to pursuing my interests in tactile cartography and antique maps. I'll still be very involved in the CCA though, not to worry.

It's been fun being so closely involved with the association and I encourage anyone on the 'outskirts' of the group who would like to become more involved to do so! Volunteer for a few years and have fun! ⊕

The Morning of 9-11

Ute Dymon
Kent State University

It was September 11, 2001, my first class of the day was scheduled to begin in ten minutes. A student hastily entered my office and asked if we would have our class. "Of course we'll have class, " I replied. "Why shouldn't we?" The student said, "Haven't you heard? A plane crashed into the World Trade Center in New York City." The first idea that came to my mind was that a plane taking off from Kennedy Airport had gone astray. I assured him we would meet for class than hurried to the front office for more information. There, I joined almost the entire geography faculty to watch the events on live television. As we watched, the news bulletins at the bottom of the screen told of the plane hitting the Pentagon. After we saw the second plane hit the World Trade Center, a deadly silence went through the room as we watched the first tower imploding. I had to leave for my class.

The students were upset, and so was I. It was difficult to talk to the students about the subject of geo-coding. At an appropriate break in the lecture, I abandoned it to allow discussion of the horrible incidents taking place. The discussion prompted me to give the students an assignment. Students were to develop a hypothetical data base which could be used during both the response period and the later recovery period of this disaster to aid in handling it.

When completed, the assignment showed that each student had spent considerable time providing a detailed account of what he or she felt was the important information needed. The results were very interesting. The students focused their data bases on one of these four main themes: the Manhattan environment and infrastructure, health needs, social communication and emergency management. Several students concerned with the impacts on the environment in the surrounding area suggested data be gathered to monitor air pollution, especially hazardous materials in the air, and water pollution and to analyze how foreign materials would affect the land, air and water. They put emphasis on data needed to counter the problem of broken sewer and water lines and destroyed utilities such as electric lines and gas distribution systems. Other students concentrated on setting up a database that would identify the hospitals within a given area and their specializations in order to provide the most appropriate care for victims. Data bases to promote social communication included one to help in the identification of victims and their families for them to find each other, another data base would provide maps for where shops were still available and routes for where people could walk their dogs and another data base was suggested for the elderly seeking help with their transportation needs. Some students felt it was important to develop emergency maps to help emergency managers keep abreast of the ever-changing situation in Manhattan. These maps would have data bases which would allow symbols on the maps to show every possible service such as locations for found property, temporary morgues, ambulance areas, food stations, supply points, debris removal routes and debris disposal sites. A few students even looked ahead to speculate on what should be built on the ruined World Trade Center site and why.

The enormity and immediacy of the losses to New York City seemed to spur each student to put a great deal of effort into this exercise. It kept the class in session despite the very difficult circumstances. In all, it gave students a sense for the detailed data needed to manage an emergency of this scale. Neither the students nor I will ever forget this difficult day of national disaster. ⊕

Joe Piwowar
Spatial Information Systems

Why is Everybody so *hyper* About Hyperspectral Scanners?

There has been a lot of excitement in the remote sensing community for some time about hyperspectral remote sensing. After all, the *casi* (Compact Airborne Spectrographic Imager from Itres Research in Calgary) and AVIRIS (Advanced Visible and InfraRed Imaging Spectrometer developed by NASA) sensors have been proving their mettle for well over a decade. Because these are airborne sensors with costly data acquisition fees, however, most of the research and development work has been done outside of the mainstream of remote sensing applications. With the launch of MODIS (Moderate-Resolution Imaging Spectroradiometer) aboard NASA's Terra satellite in 1999, many more people are beginning to take notice.

What is hyperspectral sensing?

Before we can talk about *hyperspectral* remote sensing, we should come to an agreement about what we mean by the more conventional term, *multispectral* remote sensing. In a multispectral system, the sensor gathers radiation from the Earth in a few spectral bands. Take the IKONOS camera, for example: In addition to its popular panchromatic imaging mode (which produces black-and-white imagery with a nominal spatial resolution of 1 m), IKONOS also has a multispectral mode where the sensor captures reflected solar radiation in 4 broad spectral bands. In short, the multispectral capabilities of IKONOS allow us to view colour images and to search for specific surface features based on their colour. A hyperspectral system takes this concept to a new level: Instead of having 4 or 5 spectral bands, a hyperspectral sensor gathers data in *tens* or even *hundreds* of spectral bands.

Why bother?

Let me use an analogy. Those of us living in the more populous regions of the world have come to the realization that we're beginning to run out of phone numbers. Ma Bell is doing her best to rectify the situation by inventing new area codes for some people and by making all of us dial the area code *and* 7-digit phone number, even for local calls. With these new area codes and 10-digit phone numbers we can reach a lot more people in the same geographic area than we could with just the old 7-digit numbers. To put it another way, with the increased number of digits we have an easier time *resolving* or identifying some individual's phone number from that of the big movie complex which just opened across town (a particularly personal peeve of mine!). In the same way by increasing the number of spectral bands acquired by a remote sensor we can make finer distinctions between very spectrally similar features on the ground.

What we try to do in remote sensing image analysis is to differentiate between different objects based on their spectral properties. Consider the close similarities between the spectral response curves for aspen, maple and walnut tree leaves shown in the plot (see Figure 1). Multispectral remote sensing systems measure reflected radiation in a few broad spectral bands. On top of the tree leaf plots, I have drawn the spectral response for deciduous trees from a typical multispectral system: the Landsat ETM sensor. Clearly, four broad spectral observations do not provide enough spectral detail to allow us to determine the individual tree species being measured. Hyperspectral systems, on the other hand, are able to measure these spectral reflectances in many narrow (0.01 µm) wavelength bands and provide enough

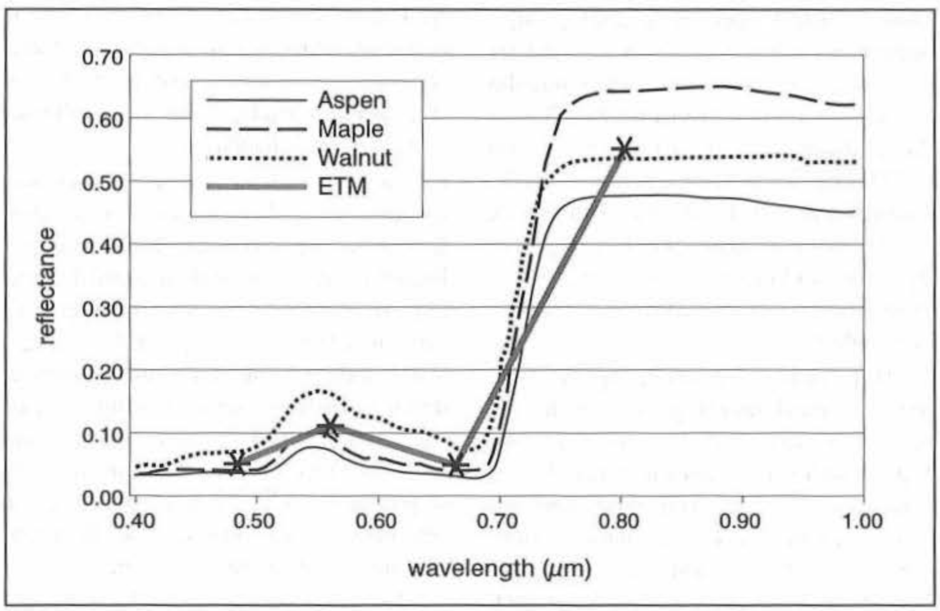


Figure 1

continued next page

spectral detail to enable us to differentiate the trees.

What are the common hypersperspectral sensors?

True to most remote sensing innovations, much of the prototype work has been done using airborne systems. Two of the most popular airborne systems are AVIRIS, from NASA's Jet Propulsion Laboratory (http://makalu.jpl.nasa.gov/aviris.html), and *casi*, developed by ITRES Research in Calgary (http://www.itres.com). These two systems have been around for over a decade and have matured into viable systems in their own rights so they can no longer be considered prototypes for spaceborne sensors.

Hyperspectral remote sensing from space has recently become a reality with the launch of MODIS, a 36-channel sensor aboard NASA's Terra satellite (http://modis.gsfc.nasa.gov). MODIS is playing a vital role in the development of validated, global, interactive Earth system models able to predict global change accurately enough to assist policy makers in making sound decisions concerning the protection of our environment. These data, along with data from a second MODIS (which is being developed for the Aqua satellite to be launched in 2002), will improve our understanding of global dynamics and processes occurring on the land, in the oceans, and in the lower atmosphere.

Hyperion is another spaceborne hyperspectral imaging system (http://eo1.gsfc.nasa.gov). Flying aboard NASA's EO-1 platform, Hyperion is capable of imaging in 220 spectral bands and has produced some spectacular imagery. Since the entire EO-1 mission was designed to be a new technology demonstration project, however, Hyperion data may not be collected for much longer than one year.

High Spectral vs High Spatial resolution trade-offs

One of the interesting characteristics of hyperspectral systems is the trade-off they make between producing many spectral images at lower spatial resolutions or increasing the spatial detail at the expense of the number of spectral bands acquired. This compromise arises simply from the maximum amount of data a system can handle: in order to accommodate more spectral readings at each pixel, a system must sacrifice the number of pixels it makes those readings at, and vice versa. This trade-off is generally user-selectable for airborne systems but fixed on those sensors aboard satellites. For example, MODIS images at 36 spectral bands at spatial resolutions ranging from 250 to 1000 m, depending on the bands involved. The Hyperion sensor can image all 220 bands at 30 m resolution, but compromises with only a 7.5 km swath width.

What can you use hyperspectral data for?

Hyperspectral data are useful for any application where detailed information about the surface features is required. Identifying environmental stresses in forests and croplands are prime examples. Timing is paramount in many of these applications and the increased spectral definition achieved from hyperspectral data can provide warnings of potential problems significantly earlier than conventional multispectral sensors.

The direct identification of vegetation species and geologic minerals is another key advantage to using hyperspectral imagery. A lot of multispectral feature classifications based on "best-guess" estimates from a few spectral readings. With hundreds of spectral values, however, definitive identification of many features can be made. In fact, it is the intent of the MODIS science team to distribute the data as products, such as vegetation indices or sea-surface temperatures, rather than raw radiances acquired at the sensor.

The best part about using MODIS data is that they are free! Check out the MODIS web site at http://modis.gsfc.nasa.gov to search for data of your area of interest.

A word of caution, however ... hyperspectral data sets can consume many, many megabytes of your disk space.

Now that you know what *I* think, let me know what *you* think! E-mail me at piwowar@uwaterloo.ca.

Calendar/ *calendrier*

March 19 - 23 mars 2002
AAG 98th Annual Meeting
Los Angeles, California
For information / *pour renseignements:*
www.aag.org

May 26 - 29 mai 2002
CCACC MMII
Wilfrid Laurier University
Waterloo, Ontario
For information / *pour renseignements:*
email Grant Head at
CCACC@wlu.ca

May 29 mai - June 1 juin 2002
ACMLA ANNUAL CONFERENCE
Toronto, Ontario (part of the Congress of Social Sciences and Humanities)
For information / *pour renseignements:*
www.library.utoronto.ca/maplib/carto

May 28 mai - June 1 juin 2002
CAG 2002
Toronto, Ontario
Joint Hosts: University of Toronto, Ryerson University and York University
For information / *pour renseignements:*
http://zeus.uwindsor.ca/cag

July 9 - 12 juillet 2002
Joint International Symposium: Geospatial Theory, Processing and Applications
Ottawa, Ontario
For information / *pour renseignements:*
www.geomatics2002.org

October 9 - 13 octobre 2002
NACIS XXII
Columbus, Ohio
For information / *pour renseignements:*
www.nacis.org/columbus

November 8-9 novembre 2002
ACM-GIS 2002
The 10th ACM International Symposium on Advances in GIS
McLean, Virginia
For information / *pour renseignements:*
www.cs.fiu.edu/ACM_GIS2002

Harry Steward
Clark University

Looking for Treasure Island

One of the requirements, it seems, to be a university professor, is to accumulate a collection of sketched-out ideas, notes to oneself on the lines of must-look-further-into-this, some less-than-half-finished manuscripts, and much similar stuff, that could be accurately catalogued under the title, "Seemed like a Good Idea at the Time". Occasionally, however, a stray word is said, a synapse, or whatever they are called, fires off in the brain, a dim memory is evoked, a drawer is opened, the dust blown off some pages, and the forgotten thoughts rescued from the limbo of the filed-and-forgotten.

One such resurrection occurred to me recently. I had long had the notion to write a little piece on the map in Treasure Island: a much-loved book of my youth. My intention was to do no more than relate the graphic portrayal with the text, and test the notion, as has been suggested, that the story was a paragon of geography-literature linkage. As it turned out; indeed, as this is a work-in-progress, is still turning out; the picture is much more complicated than I first thought.

It begins, however, by seeming simple. In the early 1880's, Robert Louis Stevenson published his classic, initially as a serialized contribution to a boy's magazine, and then as a book. The latter contained a map, for which the author, much later, provided both a conceptual provenance and an account of its construction for publication. The idea, he said, had its seeds, one rainy day in Scotland, in making a map to amuse his stepson. The thought then developed from there and was incorporated into Stevenson's long-standing interest in pirates; in particular his conception of a character called "The Sea-Cook", who, eventually, morphed into Long John Silver.

As related by Stevenson: drafting the map, was a labour of love. His open avowal of his fascination with maps was approvingly quoted in *The Geographical Journal*, and even used, a few years ago, to introduce the ICA Conference in Australia. This entrancement with the appearance of maps was underlain by a strong familiarity with their mensurational and graphic base. There were good reasons for this: Stevenson had a family background in civil engineering, with a speciality in lighthouse and marine construction. Moreover, he entered undergraduate life at the University of Edinburgh as an engineering student and, although, he was a dismal student and lasted only one year, he retained a good appreciation of geometric fundamentals. Even, in fact, to the level of performing his own surveys on the South Sea island of Apia, where he spent his last days; becoming, as an observer noted, "delighted as a child when his triangles proved out properly".

The formal genesis of the Treasure Island map seems to have been an adventure in itself. The first copy conveyed to the publisher was lost in the post and a second copy had to be hurriedly assembled by Stevenson and his father. This "second-original" seems to have had, in turn, an existence quite separate from the text, turning up at various auction houses during the twentieth century. It all seems so straightforward until we look a little closer.

Firstly, the original conception of the map was disputed by his stepson, Lloyd Osbourne, who essentially said that he had the idea first. A claim which, perhaps, we can take with a pinch of salt, although he did co-author other works with Stevenson and his stepfather was undoubtedly fond of him. A more contentious issue, arising out of Stevenson's account of giving birth to the map, is whether it came entirely out of his own head; or whether he an actual location in mind: or whether, and to what degree, it is a hybrid of both imagination and reality. All this conjecture being crucially linked to the book's first paragraph, in which the hero-narrator, Jim Hawkins, explains he has been asked to relate the adventure, "...keeping nothing back but the bearings of the island".

At this point, we turn to the commentaries of previous investigators, and to the rapid realization that there is a Robert Louis Stevenson industry out there. Throughout this Stevensonia databank, there are many consideration of the map, revealing a field full of contenders and opinions. There are claims that the map-metaphor is present in a number of his works; there are various reported sightings of the 'real' location of Treasure Island in the Caribbean, (where Stevenson never went); there are suggestions that the author transformed an island off the coast of Scotland; there are claims for northern California being the topographic inspiration; there are even Treasure Island rip-offs. It is all a much larger arena than originally envisaged.

The critical scope grows larger still, if we turn to the huge corpus of Treasure Island copies produced since the original text and, particularly, since the expiration of copyright. In these, the map is often reproduced as it first appeared; albeit, in many cases, poorly printed. In others, the map is retained but the scale, or the color, or the orientation, or the marginalia, separately or together, modified. In still others, the approximate form of the island is maintained, (shaped like a dragon, according to Jim Hawkins), but the details of the coastal outline altered; this usually being accompanied by modification of the interior detail and a winnowing-down of the place-names. For some non-English editions, as might be expected, the toponymy frequently undergoes translation and/or alphabetic transliteration. The ultimate flourish is to completely redraw the map with little regard to the original conception. These efforts can vary from slapdash to elaborate. A couple of examples of the latter, seeming to anticipate a current set of on-line instructions for the "antiquing" of pirates' maps; i.e., "pat lightly with an old, slightly damp, tea-bag to produce an aged look".

It is clear that there is ample room for a critical cartobibliography of Stevenson's maps. This would be interesting and valuable in itself, but it assumes an even larger importance if we turn back to the starting-point of the investigation: how important is the map as the lynchpin in the story? Here we could anticipate the familiar, simplistic, and yet useful, tripartite division: very important, somewhat important, not important. And, sure enough, this is roughly how critical assessments tend to go. There is, however, a curious omission: among the wide disciplinary input, the writer has yet to find any thoughtful consideration from the viewpoint of a cartographer or a geographer. An incentive, it seems, to look further, and, in more ways than one, to go back to the drawing board...

GeoConnections

GeoConnections is a government, industry, and academic partnership initiative, led by Natural Resources Canada, to make Canada's geographic information readily accessible on the Internet by developing the Canadian Geospatial Data Infrastructure (CGDI). In keeping its commitment to help foster the growth of Canadian geomatics content, tools, jobs, and expertise, the initiative issues requests for proposals (RFPs) for partnerships to develop geospatial applications, technologies and services. Over 100 of these broad-ranging GeoConnections projects have been completed or are underway across the country. As a result, Canada and many Canadian firms are now clearly being recognized as world leaders in Internet/geomatics. The following are just two of the 12 projects demonstrated at the GeoConnections Project Showcase held January 24, 2002 in Ottawa, Ontario. See the web site at: *www.geoconnections.org/english/whatnew/showcases/Showcase%20Web%20Agenda_e3.html.*

Web Mapping Symbology:

CubeWerx Inc. (Hull, Québec) in partnership with the Department of National Defence; Natural Resources Canada (Earth Sciences Sector and Canadian Forest Service) and GeoConnections is developing a Web Mapping Symbology and CubeSTOR Image Management system. This project has two objectives. The first is to open up Web mapping to users with no specialized cartography skills. To this end, new software and interfaces will enable individuals to generate symbolized maps using only a standard Web browser, such as Netscape or Internet Explorer. With these new technologies, Web users will be able to tailor maps to their own specifications, incorporate a variety of domain-specific symbols, and access features from distributed data servers. The project's second objective is to help data publishers better manage their geospatial images. Using software developed under this project, data publishers will be able to store, access and manage terrabytes of overlapping images captured over time within a single, seamless, integrated spatial warehouse. This improved image management will help data publishers respond better to their Web-based customers' requirements, as well as maintain their spatial holdings more easily. Overall, the project will permit a broader use of geospatial images and image processing. It will also give the public at large timely access to more geodata over the Web, further expanding usage of the Canadian Geospatial Data Infrastructure (CGDI).

High School Geomatics:

GeoInsight Corporation (Kanata, Ontario) In partnership with ESRI Canada Ltd.; ThinkSpace Inc.; Woodroffe High School; Ottawa-Carleton District School Board and GeoConnetions is developing a Geomatics program for High School Curricula. Geospatial data in the classroom is the vision of this project, which will create integrated geography lessons for Ontario's new Grade 9 curriculum. The lesson plans, to be based on Canada's ecozones, will introduce students to the most recent geospatial information from the Canadian Geospatial Data Infrastructure (CGDI). Using EcoMAP and other Web sites, the lessons will highlight geospatial concepts and ecological information, as well as incorporate the latest GIS techniques for visualization, analysis and problem solving. The project will also offer advanced exercises that will encourage students to visit additional sites within the CGDI. Besides designing a dynamic method for teaching and learning Canadian geography, this project will expose students to leading-edge technology, giving them valuable experience in GIS technology and Internet access. The geography lessons, also available in French, will be posted on the Internet for free access across the country. In addition, the lesson template design will accommodate conversion to Grade 11 and 12 curricula and adaptation to science lessons.

For more information about these, or other projects, and GeoConnections see the Web site *www.geoconnections.org*

Weldon Hiebert
University of Winnipeg

Those Were the Days
Reflections of Past Technologies (Part 2)

In the last issue of Cartouche I lamented about the closure of the University's cartography office and reminisced about the good old days of pen and ink drafting. The reason for the demise of traditional drafting methods was of course the computer. Though computers predate my tenure as a cartographer, it took a lot of years before they made an impact in my work. Computers, especially in the early years, were difficult to work with. Also, the quality of the output was less than desirable when compared to traditional. Eventually the technology caught up to and surpassed the traditional methods rendering them obsolete. In this article I will look back at my experiences with computers and computer mapping, first as a passing fancy and my gradual acceptance of it as a tool in map production.

My first experience with computer mapping goes back to college as part of an advanced cartography course. Computing was done on a mainframe, a large computer tucked away in the bowels of the university. The first mapping package I was introduced to was SYMAP, a statistical and thematic mapping package. Maps were "drawn" by writing a set of instructions or commands for the software resident in the computer. Instructions included x-y coordinates for polygons, data values and mathematical equations to process the map. The computer would analyze the instructions and eventually spit out some semblance of a map.

The instructions were typed, yes and I am dating myself, on key punch cards. Each card represented one line of the mapping program. Characters were typed onto the card with a corresponding hole punched out for each character. The cards were then fed into the computer via a card reader. I can honestly say I do not have any fond memories of punch cards. Great care had to be taken to ensure the cards were in perfect shape and in the correct order for the program to work. The slightest bend or tear could result in the card getting jammed in the card reader. Once jammed all subsequent cards ended up on the floor. These cards would have to be carefully picked up and sorted into their correct order and checked to ensure there were no tears or bends in them. Damaged cards had to be retyped.

After the data was successfully fed into the computer, I would patiently wait for the output. It was not unusual to have to wait until the next day to pick up my output. The maps were printed using characters available on a line printer, not the best choice for graphics. Any sort of shading patterns consisted of character over-printing. Put into today's terms, each character basically represented a pixel. With ten or twelve characters to the inch, the map had an equivalent resolution of 10 or 12 dpi. Generalization was the rule of the day and any sort of detail was out of the question. At this stage, computer mapping was an interesting curiosity, quickly forgotten in the darkroom and around the drafting table.

When I assumed the position of cartographer computer technology had made some improvements. The mainframes were more powerful and had better options allowing for the development of computer labs throughout the university including one in the Geography Department. Key punch cards and card readers were gone, replaced by monitors and keyboards. Now instructions were typed and viewed on the screen. This was a vast improvement over key punch cards. Typographical errors could be fixed with a backspace or two and the instructions remained in the correct order. The monitors and keyboards were connected to the mainframe by modems. Modems were slow, 300 baud (about 300 bytes per second) but considerably faster than punch cards and the card reader. Alas, we still had the line printer.

The development of the computer lab led to the formation of the department's first computer mapping course. I signed up for the course to keep abreast of the latest developments in computer mapping. The course was very popular with the students, not because of their interest in cartography but for a chance to play with computers. A lot of these students had no prior knowledge of cartographic theory and it showed in their work. One assignment still stands out clearly in my mind. We had to produce a thematic map of the United States using data supplied by the instructor. We were using SYMAP at the time. Along with the map, especially thematic maps, SYMAP printed out a statistical summary of the data. One such feature was a graph showing class intervals and the number of polygons within each interval. In cartographic theory we are taught the proper way to determine class intervals: natural break, quartiles, quintiles, etc. This was fine for those of us familiar with cartographic theory. But for the others, mostly students with a statistics background, the ideal way to produce class intervals was ensuring that the summary graph conformed to a standard bell curve. There were some very "interesting" maps from that assignment.

As computer technology continued to improve, so did the quality of the output. The line printer gave way to pen plotters, starting the era of vector graphics. The pen plotter was basically an automated drafting pen, much easier than drawing by hand. The plotters had room to fit four pens allowing for the production of color maps. Like the drafting pen, shading patterns were limited to cross hatches. Patterns could be differentiated either by varying the distance between the cross hatches or by using another color. For some students the cross hatch method wasn't good enough. It was solid color patterns or nothing. Solid patterns looked better but it took the plotter an eternity to fill in polygons. With only two plotters in the lab, maps plotted with solid patterns created tension especially when projects were due the next day.

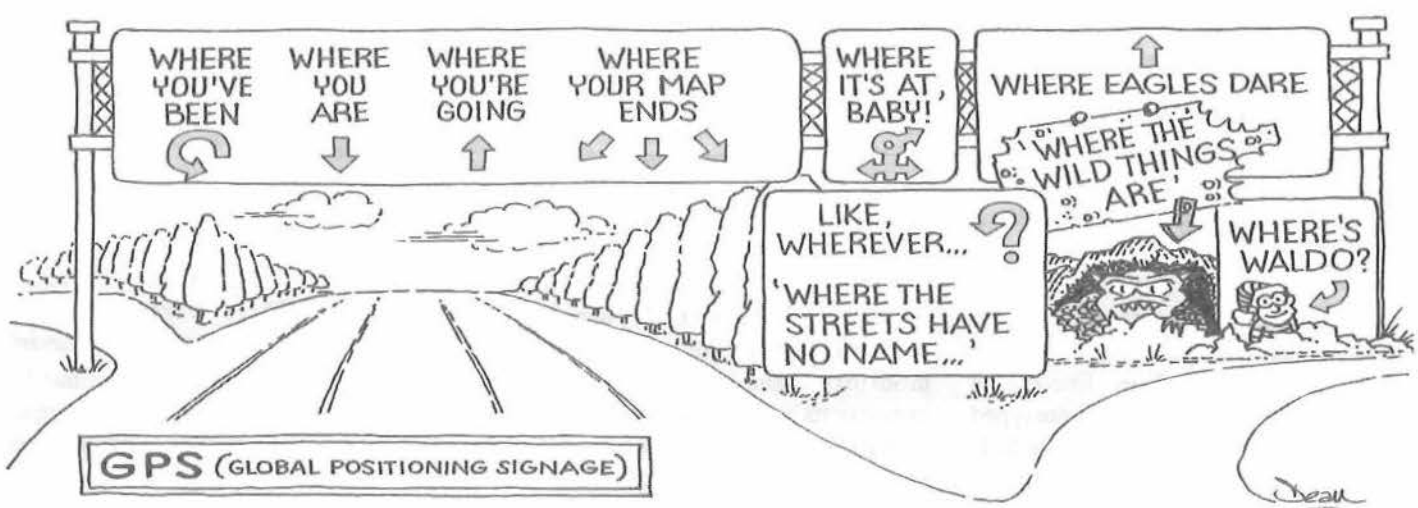
By this stage, there was no fear of computers overtaking the drafting pen. Quality of the output still could not match that of traditional methods. Access to the computer lab was limited to times not scheduled for course work. Even in open periods I had to compete with students and faculty for computer time. The mainframe was prone to breakdowns causing the system to shut. The software limited production to either thematic or statistical maps. I literally went "back to the old drawing board."

Despite my pessimism I continued to follow the developments in computer technology. My attitude slowly changed to cautious optimism when the department shifted from the mainframe in favor of the personal computer. The personal computer (PC) had several advantages over the mainframe. Every PC in the lab was independent entity. Unlike the mainframe, if a PC broke down it was carted off for technical service while the user would just move to another machine. The PC was "user friendly." Instead of writing instructions or commands, the PC prompted the user with a whole range of options. AtlasGraphics was a popular mapping package because of this. Ease of use and graphics quality was greatly improved with the development of Windows (my apologies to Mac users, our institution adopted the PC). Probably the biggest advantage the PC had was that it was affordable to the general public. As the PC became more popular market competition led an explosion in the development of computer technology.

My methods for map production changed significantly with the combined technologies of word processing and the laser printer. With the word processor text could be typed using any font available on the software. As well, these fonts could be produced at any size. The laser printer allowed me to print text at reasonably high resolution (300 dpi). This was a vast improvement from the line printer and the pen plotter. Even at this resolution the text had some rough edges especially with the smaller type size. If typed at a larger size and then reduced photographically (with the permanent mount transfer method), the rough edges could be smoothed out. The photographed text was then cut and pasted onto the map. For the first time I was able to incorporate aspects from both traditional mapping methods and computer technology into making a map.

One day while I was in the university's Media Department waiting to use the camera for text reduction, I happened to glance over at the computer of one of the graphic artists to see what he was up to. He was working with a new software package called CorelDRAW. I watched in amazement while he produced his graphics on the screen, all his drafting tools packaged in one computer program. Here was a software package that could produce any kind of map I needed, thematic or otherwise. When the Geography Department finally approved the purchase of a computer for my office, CorelDRAW was the first program I purchased. I had planned to gradually phase out my pens and other drafting equipment but after a couple of weeks they were abandoned for good. It's ironic, all these years I waited for the right computer mapping package that would meet my cartographic needs. Instead, it was a graphics package, not designed specifically for mapping that replaced my drafting equipment.

I'm in my new office now. It is considerably smaller than my old office. I have no need for a darkroom and my phototypesetter is collecting dust in some storage room. I do have new furniture, new carpet, freshly painted walls and a new computer with far more power than any of the old mainframes. I kept my drafting table and some of my old drafting tools, mostly for sentimental reasons. I don't miss any of this stuff, but every time I get a "General Protection Fault" or "Illegal Operation" on my computer screen I just look toward my drafting table, shake my head and smile. ⊕



David Broscoe
Algonquin College

GIS is Everywhere, GIS is Invisible Part 2: The Challenge of Spatially Enabled Databases

In the last issue [*Cartouche* #43, p5] I discussed changes inside GIS architecture, especially the adoption of the COM model and the use of standard visual programming languages for GIS customization. Another significant change has occurred in the GIS realm over the past few years, one which at first glance has little to do with GIS software *per se.* The change is the new capability of enterprise databases such as Oracle and Informix to handle spatial data. Adoption of the hybrid object-relational model means that enterprise database packages can efficiently store spatial data using the object model, but at the same time retain SQL, the query language based on the relational model.

What does this development mean for GIS? According to Frederick Limp:

> ...before Oracle8i, the "GIS guys" were in the basement, their data were weird, and they played in their own sandbox by their own rules. Before 8i, the "database geeks" who ran the enterprise information systems didn't know how to connect two pieces of information about pieces living in adjacent houses (Limp 2000: 28)

Now those "database geeks" have the tools to deal with concepts such as adjacency and spatial intersection within the enterprise database systems. A set of spatial operators are part of the newer versions of the major enterprise databases.

Where does that leave the "GIS guys"? Is GIS to be relegated to the cyber-scrapheap because enterprise databases can store and manipulate spatial data? Not in the short term, for a number of reasons.

First, the GIS approach may be more suited to the needs of many organizations. Many fields such as environmental assessment and geology require tight integration between map and attribute. The choice between a GIS and a hybrid GIS / enterprise database system is obvious, especially when a new generation of GISs can handle standard-format enterprise databases, and enterprise database systems are expensive and complex, and require extensive staff training. Why use two technologies when GIS alone will do the job?

Second, current enterprise database packages have very rudimentary display capabilities for (geo)graphic information. They have not been conceived and developed as a marriage of cartography and attribute information. The GIS software vendors and the enterprise database vendors have been working together to allow spatially enabled data to be viewed and manipulated within a GIS. In a large organization with an extensive database, a GIS may then act as a viewer for spatial enterprise data. This, however, is not the sense I have of a 'full-function' GIS and may eventually lead to the erosion of the GIS as an analytical tool. If all spatial and attribute manipulation is done in Oracle then using ArcInfo as a viewer is overkill. More appropriate solutions will emerge which are likely not to involve GIS, in name at least.

One way or another there will be change. *De facto* geographic data formats are changing. As an alternative to "weird" GIS-specific formats, ESRI has introduced the Personal Geodatabase, stored in an Access .mdb format file (of course on opening a Personal Geodatabase file in Access only the non-spatial information is in context). Common enterprise database formats will be much more widely used. Specifications are being developed to Open GIS Consortium (OGC) (http://www.opengis.org) specifications, which will further render "weird" proprietary GIS data formats obsolete.

The focus of GIS programming is shifting from developing specific GIS solutions using a software-specific language to getting the GIS to talk to the enterprise database (or to the web site, but that's another column) using a generic programming language. Conversely, GIS-like skills are required to utilize full capacity of spatially-enabled enterprise data, but don't expect automatic openings of enterprise database positions to individuals with a GIS background.

Frederick Limp says "your current GIS compares to Oracle8i in the same sense that a Piper Cub compares to a Boeing 757" (Limp 2000: 28-29). If Limp is referring to the capabilities of the two types of software, I'm not sure I agree with him, but we should all be aware of the size of the respective industries. As more data are explicitly spatial and spatial operators are available within mainstream software, GIS may become more invisible even if the concepts behind GIS are more widely integrated. The challenge of building and maintaining awareness of the special characteristics of cartography and geographic analysis remains.

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Student's Corner

An opportunity for students to showcase their projects and research initiatives in the fields of Cartography and Geomatics.

Mapping Mass Movements Using Remotely Sensed Data Sources

Reid Van Brabant and Andrew A. Millward

1.0 Overview

Mass movements involve the displacement of soil and rock found on sloping terrain and may be triggered by excessive precipitation, earthquakes, deforestation, and/or human activity. Since the 1840s, mass movements in Canada have killed hundreds of people. The financial costs are tremendous as well, with annual damage from mass movements in Canada and the United States totalling over $2.2 billion per year (US).

Relatively few studies exist that address the use of remotely sensed imagery to investigate and map mass movements. A review of the literature revealed several attempts at broaching this topic (*e.g.*, McKean *et al.*, 1991; Chorowicz *et al.*, 1998). These authors suggest that the most important components of natural hazard mitigation are data collection and mapping of the hazard in question. The use of remote sensing for this purpose has great potential, but several factors hinder the development of a sound methodology. These include sensor-related issues (*e.g.*, geometric problems and spatial resolution) as well as problems related to the environmental conditions of mountainous terrain (*e.g.*, high relief and atmospheric conditions). This review evaluates the work of several researchers who have employed remote sensing as a tool for use in mass movement mapping and monitoring.

2.0 Real-Time Observational Challenges

In situ, real-time observation can provide very useful information to researchers studying all types of mass movements. However, the extreme danger of rapid events (*e.g.*, slides, falls, topples) often precludes the survival of witnesses and equipment close enough to observe them in action (Abbott, 1999). Rapid mass movements are unpredictable temporally and spatially making it difficult to correctly position observation equipment (Selby, 1993). Remote sensing provides an alternative method for real-time observation of rapid mass movements from a 'safe' distance; however, collection of these data is not trivial. Observation of rapid mass movement events requires hypertemporal and high-spatial resolution data from geostationary platforms, as well as all-weather remote-sensing devices. At present, many of these are not economically or technologically feasible.

3.0 Mass Movement Detection and Assessment

Most observations of mass movements via remote sensing actually take place after the event has occurred. An early study by Sauchyn and Trench (1978) noted that, although it was possible to identify some mass movement features on Landsat Multispectral Scanner (MSS) imagery, many smaller mass movements were unidentifiable. Sauchyn and Trench (1978) concluded that the, "limitations of Landsat imagery for use in identifying landslides stems from the lack of unique spectral characteristics and the scale of the imagery" (p. 740). The absence of unique spectral characteristics is largely a function of mass movement materials and their location (e.g., steep slopes, shadowed areas in satellite scenes) while scale problems were caused by the inability of Landsat MSS to resolve mass movement features with its low spatial resolution (i.e., 80 metre pixel sizes).

Despite these preliminary challenges, research has continued; more recently contemporary remote sensing technology has emerged to be more effective for the detection and assessment of mass movements. Singhroy (1995) integrated 30 metre Landsat Thematic Mapper (TM) imagery with 6 metre airborne Synthetic Aperture Radar (SAR) imagery to successfully demonstrate that remote sensing can be an effective tool for mass movement identification and assessment. Singhroy *et al.* (1998) used various combinations of TM, RADARSAT, airborne, and interferometric SAR images to identify mass movement features in the Fraser, Saskatchewan, and Ottawa River Valleys of Canada (Figure 1).

4.0 Mapping Mass Movements

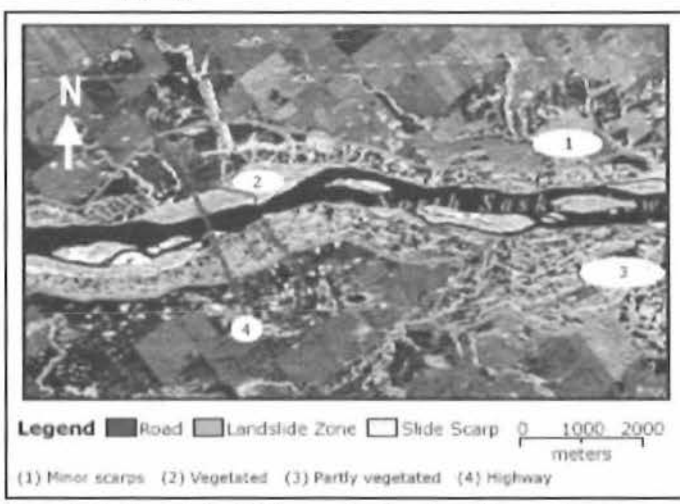

Figure 1: High-resolution SAR image showing a landslide area along the North Saskatchewan River, Saskatchewan, Canada. (Singhroy, CCRS)

Detection and assessment of mass movements using remote sensing data has led to our ability to map these events. Although Sauchyn and Trench (1978) did not recommend Landsat MSS imagery for detailed regional landslide mapping in areas where high-resolution airborne imagery was available, they did acknowledge that under some conditions it had the potential to be useful for preliminary mapping. McKean *et al.*, (1991) were also reserved in their assessment of the use of remote sensing for mass movement mapping stating that, "remote sensing techniques can be used successfully to map site parameters indicative of potential and existing landslides in some circumstances" (p. 1192). Buchroithner (1995), found that although there is great potential for remote sensing to acquire information for high-mountain cartography, there are limitations related to geometric, spectral, and radiometric resolution as well as problems caused by high relief.

Other researchers have been more enthusiastic about the potential for remote sensing data to be used to map mass movements. A 1992 study by Leroi *et al.* examined the use of remote sensing and GIS technology for mass movement hazard mapping in the Colombian Andes. They used a hybrid stereoscopic image of SPOT XS and Landsat TM data in combination with field surveys, to demonstrate that remote sensing can be a highly effective tool for mapping at scales from 1:25,000 to 1:50,000 (Leroi *et al.*, 1992). Rengers *et al.*, (1992) also found that remotely-sensed data from SPOT XS and Landsat TM can be useful for mass movement mapping, although stereo imagery is a necessity and some improvements in resolution are desirable. Singhroy *et al.* (1998) note that, "several remote sensing techniques can assist in producing landslide inventory and risk assessment maps by providing the information on the morphological features of landslides" (p. 465). The conclusions of these studies advocate for remotely sensed imagery's use as a tool for facilitating mapping of mass movements.

5.0 Shortfalls of Remote Sensing as a Data source for Mass Movement mapping

Remote sensing is slowly emerging as a successful tool for researching mass movements. Nevertheless, there are some notable limitations associated with its use for this purpose. Many of these problems are related to topography. Mass movements often occur in mountainous terrain and, according to Buchroithner (1995), high relief is the major cause of remote sensing problems in these areas. Topographic relief within imagery causes geometric problems such as scale variations, horizontal displacements and shadowing. As well, mountain climates can block many optical remote sensing devices because of the presence of clouds, cloud shadows, haze, as well as snow and ice cover (Buchroithner, 1995). Climatic factors are particularly relevant in mass movement studies because, "soil water content is one of the main factors inducing mass movements, thus landslides occur more often in humid regions where extensive cloud cover may be prevalent" (Chorowicz *et al.*, 1998, p. 3187).

Many researchers have suggested the use of active radar imagery to solve climatic limitations because these remote sensing systems generate, transmit, and receive their own radio waves thus providing all-weather and day-or-night capability (Chorowicz, *et al.*, 1998; Toutin and Vester, 2001). However, radar remote sensing is not free from problems caused by high relief. Buchroithner (1995) noted that layover was a problem with remotely sensed radar data in mountainous terrain. Layover occurs when the top of an object or slope is imaged before the base and makes the object appear to lean in the direction of the radar antenna (Toutin and Vester, 2001). Mantovani *et al.* (1996) found that foreshortening and speckle in mountainous terrain may result in poor quality imagery. Foreshortening compresses the foreslopes of hills and mountains making them appear brighter than other image features. The use of lower incidence angles can minimize foreshortening, although downrange features may be shadowed when high angle slopes block radio waves and mask down range features (Toutin and Vester, 2001). Speckle and fading are randomly distributed salt and pepper noise processes and may be reduced by averaging adjacent pixels on radar images or by using multiple look imaging techniques (Toutin and Vester, 2001).

Figure 2: Rotational Slip near Black Hills North Dakota. (Photo: NOAA)

In the past, one of the major limitations regarding the remote sensing of mass movements was the low spatial resolution of satellite imagery. Mass movements often have a relatively limited spatial extent (Figure 2). As a result, it is difficult to detect and characterize mass movements using low to medium spatial resolution data (*e.g.*, AVHRR, Landsat TM). Mantovani *et al.* note this difficulty in their 1996 study and identify the need for higher spatial resolution imagery. The spectral resolution of available imagery was a problem encountered in early research such as that conducted by Sauchyn and Trench (1978). They found that mass movements did not have unique, identifiable spectral properties on the satellite imagery of the time (i.e., Landsat MSS). However, more recent studies (Singhroy, 1995; Nagarajan *et al.*, 1998) have successfully used remote sensing to identify mass movements based on the spectral and textural characteristics of associated features (*e.g.*, displaced vegetation, fissures, ridges, and slope shape).

6.0 Conclusions

This review has demonstrated that despite some limitations, remote sensing techniques are capable of providing information for mass movement research and the representation of this phenomenon in cartographic form. By observing conditions associated with the onset of mass movement events, remote-sensing techniques can aid in the prediction of these events. Real-time observation of rapid mass movements is not presently feasible, and although the real-time observation of slow mass movements is possible, this appears to be a neglected subject in the literature. Remote sensing is suitable for the detection and assessment of mass movements although specialized techniques (*e.g.*, interferometry and stereoscopy) have been demonstrated to enhance the accuracy of the results.

The general consensus among researchers is that remote sensing is capable of providing information for mass movement research. More recent work has been centred on improving the remote sensing techniques used to study mass movement events, and on testing the capabilities of newer, more advanced remote sensing systems. As remote sensing techniques and systems continue to evolve, the information they can provide about mass movements should become more detailed and accurate providing obvious benefits when we attempt to render cartographic outputs for the purpose of hazard mapping, mitigation, and response mapping.

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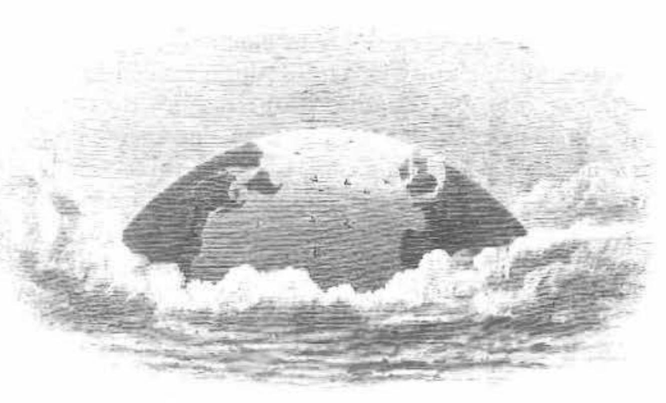
Authors

Reid Van Brabant recently completed this work as part of a senior undergraduate course in remote sensing at the University of Waterloo's Geography Department. Andrew Millward was an adjunct faculty member and co-instructor for the course and advisor to Reid on this project. For more information contact Andrew at: aamillwa@fes.uwaterloo.ca.



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AMENDMENTS TO CONSTITUTION

Canadian Cartographic Association
Association canadienne de cartographie

February 12, 2002

Submitted to the CCA/ACC General Membership for consideration prior to vote at Annual Meeting, Waterloo, May 2002.

Dear CCA/ACC members,

Please find attached six motions forwarded by the executive to amend some of the articles in Section IV (Officers and Committees) of our constitution. The appendix lists the current constitution Article-Section wording, the proposed amendment, and a note for each highlighting the changes that have been proposed.

This motion will be called for vote by the general membership at the Business Meeting held during the Annual Meeting of the Canadian Cartographic Association in Waterloo, Ontario in May 2002. The purpose of this correspondence is to alert you to the amendments being proposed so that you have ample time to consider them ahead of the vote being called.

The motions have been prompted primarily in response to changes in our executive structure as recommended by the President's Special Committee on the Executive Structure. The recommendations included extending the President's term to two years, and the removal of the past president position. Changes to the executive structure also entail extending the vice president term to two years from its current one year term. It is anticipated that the two year terms will provide the opportunity for both the vice president and the president to operate more effectively in their respective roles. The amendments also provide the means to separate the secretary role from the treasurer position, and for the secretarial position to absorb some of the former membership coordinator duties.

Motion #1: To amend Article IV, Section 1 (iv) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

Motion #2: To amend Article IV, Section 2 (i) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

Motion #3: To amend Article IV, Section 2 (iv) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

Motion #4: To amend Article IV, Section 2 (vi) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

Motion #5: To amend Article IV, Section 3 (i) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

Motion #6: To amend Article IV, Section 3 (iii) of the constitution as described in Appendix 1. The motion is moved by Patricia Chalk and seconded by Ute Dymon.

APPENDIX 1 - AMENDMENTS TO CONSTITUTION

ARTICLE IV, Section 1 (iv)

Current

The terms of office shall be one year for President, Vice President, and members of the Nominating Committee; two years for Secretary-Treasurer; two years for Chairs of Interest Groups. The terms of office of Interest Group Chairs shall be arranged so that not all retire in any one year.

Proposed

The terms of office shall be two years for all elected members of the Executive. The terms of office of Interest Group Chairs shall be arranged so that not all retire in any one year.

[Changes: VP and P are now 2 year terms as with other positions on the executive.]

ARTICLE IV, Section 2 (i):

Current:

The elected officers of the Association shall be a President, Vice President, a Secretary-Treasurer and the Chairs of each officially recognized Interest Group and Standing Committee of the Association.

Proposed:

The elected officers of the Association shall be a President, Vice President, Treasurer, Secretary, Chairs of each officially recognized Interest Group and Standing Committee of the

Association. The position of past president will cease following the 2002-2003 term.

[Changes: cites Treasurer, Secretary instead of Secretary-Treasurer, makes reference to the past president still being in effect until the end of 2002-2003 term.]

ARTICLE IV, Section 2 (iv)

Current

Ballots shall normally be sent to each member in good standing twelve weeks prior to the opening of the Annual Meeting. Ballots will cover the offices of President, Vice President, and of Secretary-Treasurer and Chair of an Interest Group in which these officers are to be elected.

Proposed

Ballots shall normally be sent to each member in good standing twelve weeks prior to the opening of the Annual Meeting. Ballots will cover the offices of President, Vice President, Treasurer, Secretary, and Chair of an Interest Group in which these officers are to be elected.

[Changes: Secretary-Treasurer is revised to Treasurer, Secretary. *Note to secretary - revise based on 1999 amendment to this item.*]

ARTICLE IV, Section 2 (vi)

Current

Returning officers appointed by the President from the list of members shall count and tabulate all votes cast. These would normally consist of the Chair of the Nominating Committee (the Past President) and two other members in good standing. The winner shall be the candidate recording the highest number of votes for each office. A tie shall be decided by lot. The results of the election shall be reported to the Business Meeting.

Proposed

Returning officers appointed by the President from the list of members shall count and tabulate all votes cast. These would normally consist of the Chair of the Nominating Committee (the Vice President) and two other members in good standing. The winner shall be the candidate recording the highest number of votes for each office. A tie shall be decided by lot. The results of the election shall be reported to the Business Meeting.

[Changes: The Chair of the Nominating Committee is changed to Vice President from Past President. *Note to secretary - revise based on 1999 amendment to this item.*]

ARTICLE IV, Section 3 (i)

Current

The Executive Committee shall consist of the President, Vice President, Secretary-Treasurer, Chairs of recognized Association Interest Groups and Standing Committees, Editor of the endorsed learned journal, and the most recent Past President.

Proposed

The Executive Committee shall consist of the President, Vice President, Secretary, Treasurer, Chairs of recognized Association Interest groups and Standing Committees, and Editor of the endorsed learned journal.

[Changes: Removes Secretary from Secretary-Treasurer; adds Secretary.]

ARTICLE IV, Section 3 (iii)

Current

The Executive Committee shall meet at least once each year at the call of the President. Notices of Executive meetings shall be sent out at least two weeks in advance.

Proposed

The Executive Committee shall meet at least once each year at the call of the President. Notices of Executive meetings requiring travel shall be sent out at least four weeks in advance. The minutes of all Executive Committee meetings shall be circulated to the Executive within two weeks following any such meeting.

[Changes: Requires a four week notice for meetings requiring travel rather than two, as two weeks is not normally enough time to arrange the lowest fare. The last sentence is new; previously no guidelines were provided regarding the circulation of minutes from Executive meetings, only those from the annual meeting.]

End of Appendix 1.

Please write me directly should you have any questions with respect to these motions or the attached appendix.

Sincerely,

Patricia Chalk
President, Canadian Cartographic Association/Association canadienne de cartographie
Email: chalk@uwo.ca

February 12, 2002

CCA AWARDS

The Canadian Cartographic Association presents several awards each year to deserving members of the cartographic community which it serves. These awards are meant to recognize and encourage the achievements of outstanding individuals in the field.

- **President's Prize Student Map Competition** ($100 prizes in several categories) The details for the **2002 entry** form can be viewed and downloaded from the CCA web site at *www.geog.ubc.ca/cca/pres_prize.html*. All entries must be delivered to Waterloo before Friday May 17, 2002. Entries should be sent to: President's Prize, Canadian Cartographic Association, Department of Geography and Environmental Studies, Wilfrid Laurier University, 75 University Avenue West, Waterloo, Ontario N2L 3C5

- **Norman Nicholson Memorial Scholarship in Cartography** ($500 scholarship) To recognize and encourage exceptional student achievement and ability in any aspect of cartography.

- **Awards of Distinction** To acknowledge exceptional professional or scholarly contributions to the field of cartography or an exceptional contribution to the Association.

For information about eligibility and how to apply or nominate individuals for these awards see the CCA web site: *www.geog.ubc.ca/cca* or contact any member of the executive.

Prix de l'ACC

L'Association canadienne de cartographie présente, à chaque année, plusieurs prix à ses menbres méritants. L'attribution de ces prix a pour but de reconnaître et d'encourager l'accomplissement exceptionnel d'individus dans le milieu cartographique.

- **Le prix du Président pour la compétition des étudiants** (Des prix de $100 pour différentes catégories.) Les détails pour la feuille d'inscription 2002 peuvent être vus et téléchargés du site Web l'ACC à *www.geog.ubc.ca/cca/pres_prize.html*. Toutes les entrées doivent être livrées à Waterloo avant vendredi, le 17 mai 2002. Les entrées devraient être envoyées : Prix du Président, Association canadienne de cartographique, Département de Géographie et Études Environnementales, Wilfred Laurier Université, 75 Ouest d'Avenue d'Université, Waterloo, l'Ontario N2L 3C5

- **Bourse Norman Nicholson** (Bourse de $500) Bourse attribuée afin de reconnaître et d'encourager un étudiant pour son accomplissement exceptionnel et ses capacités dans tous les aspects de la cartographie.

- **Prix de distinction** Prix pour reconnaître les contributions professionelles ou académiques exceptionnelles dans le domaine de la cartographie ou pour une contribution exceptionnelle à l'Association.

Pour de plus amples renseignements concernant l'éligibilité, comment postuler ou proposer un candidat pour ces prix, s'il vous plaît, veuillez visitez le site web de l'ACC à l'adresse URL suivante : *www.geog.ubc.ca/cca*, ou veuillez contacter un membre du comité exécutif.

The Canadian Cartographic Association
L'Association canadienne de cartographie
www.geog.ubc.ca/cca

TEMPORARY
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The CCA was founded in 1975 to promote interest and education in maps and cartographic data, and to provide for the exchange of ideas and information, at the regional, national, and international levels, via meetings and publications. Membership in the Canadian Cartographic Association is open to all individuals, and public and private institutions which have an interest in maps and the aims and objectives of the Association. Membership is available in the following categories at the annual rates listed below ($CND):

Regular	$80
Student	$40
Institutional	$100
Corporate	$200
Family	$95
Retired	$40
Associate	$40

To cover mailing costs US residents please add $5 CDN and Overseas residents please add $10 CND to the applicable membership category.

Members receive the quarterly journal *Cartographica*, published by the University of Toronto Press and endorsed as the journal of the CCA; four issues of *Cartouche*, the CCA newsletter and the International Cartographic Association Newsletter. The Association also provides an annual conference to promote discourse and access to a range of expertise through the interest groups and regional contacts.

For further information about membership qualifications and benefits contact the membership coordinator or any executive member or visit www.geog.ubc.ca/cca

L'ACC a été créé en 1975 pour promouvoir les intérêts et l'enseignement des cartes et de la cartographie ainsi que pour permettre l'échange d'idées, d'informations tant sur les plans régionaux que nationaux et ce via des bulletins et des conférences. L'adhésion à l'association est ouverte à tous les individus et institutions (privées et publiques) qui sont intéresés par les cartes et par les buts et objectifs de l'association. Vous pouvez adhérer dans les catégories suivantes selon les taux indiqués (cdn$) dans la liste ci-dessous :

Régulier	$80
Étudiant	$40
Institutionnel	$100
Société	$200
Famille	$95
à la retraite	$40
Associé	$40

Un montant de 5$ (cdn$) est ajouté pour couvrir les frais postaux aux membres américains (É-U) et de 10$ (cdn$) pour les membres outremers.

Les membres recoivent la monographie trimestrielle Cartographica, publiée par le University Toronto Press; 4 numéros du bulletin de nouvelle Cartouche et le bulletin de nouvelle de l'Association cartographique internationale (ACI). L'Association organise également une rencontre annuelle avec des conférences qui donne accès à l'expertise issue des groupes d'intérêts et des diverses régions du pays.

Pour plus d'information concernant l'adhésion et les bénéfices de l'association, contactez le coordonnateur des adhésions ou l'un des membres de l'exécutif ou encore, visitez notre site Internet *www.geog.ubc.ca/cca*.