

Comments on 'GIS and GeoSkills: New Ways to Achieve New Evidence for Better Decisions'

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**Comments on the PowerPoint Slides
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SLIDE 1. Background. The PowerPoint slides prepared for the GIS Day presentation can be used in various ways, and are subject to various interpretations. The intent of his paper is to outline the reasons for each slide, and to briefly expand the texts for the benefit of those unable to attend the presentation.

SLIDE 2. Need for new ways to achieve new evidence. The central thesis of the presentation is that Canada is in need of better decisions on a variety of fronts, and that new ways of obtaining new evidence to support better decisions are a critical key to achieving improved decision making. The associated, companion thesis is that better decisions are the product of rational thought processes imbedded in one's brain, and on knowledge of the various methodologies used in decision making. Casual reliance on the "anatomical sourcing" approach, on the other hand, may be cause for grief.

SLIDES 3, 4, 5, 6, 7, 8, and 9. Are better decisions required on a variety of fronts? 28 topics covering all the theme days are listed in slides 3-9; each of the topics has been around for a decade or more and in some cases for many decades, all of them have been identified as Problematic with a capital "P", none of them appears to be moving closer to resolution with the passage of time, and the list could easily be expanded to 50, 60, 70, or more entries. Throw in the interdependent infrastructures aspect with its cascading effect, and the need for better decisions involving many decision points goes way beyond overwhelming.

SLIDES 10, 11, and 12. Why new ways to achieve new evidence? The topics listed in slides 3-9, and many others identified in daily and weekly newspapers and other media, involve orders of complexity that call for answers derived from rational thought processes imbedded in one's brain, and on knowledge of the various methodologies used in decision making.

Unfortunately, analysis of media reports, and news releases and reports by governments and businesses, for example, indicates that while some opinions and decisions of individuals and entities appear to be based on rational thought processes imbedded in one's brain, and on knowledge of the various methodologies used in decision making, it appears clear that many more choices, selections, priorities, etc., are seemingly the result of opting for the other kinds of anatomical sourcing noted in slides 10 and 11.

SLIDE 12. Whose brains? There are many contributors to the respective problem domains identified in slides 3-9, and there is not even one likely case in which a sole decision maker, including powerhouses such as the United Nations and the World Bank, can effectively and fully deal with the situation.

The fact that there is a spatial aspect to every one of the domains underlines both: 1) the need to include geographic considerations in the decision process and in the preferred outcome; and 2) the need to express those geographic considerations in ways that can



be understood by all the contributors to the problems and their respective solutions. Geography Awareness Week has due regard for that two-part premise.

SLIDE 14. New ways to achieve new evidence? As shown by slide 14, there are at least 20 separate ways that GIS and geoskills contribute to deriving evidence about the past, present, and future states of affairs involving the topics listed in slides 3-9. And, there are many more ways when combinations of ways are used.

Further, as the alert reader will have already ascertained, GIS and geoskills are major contributors to the bodies of evidence presented in or referred to in the 150 websites that have been identified for inclusion in the Theme Days component of Geography Awareness Week.

It has already been established that GIS and geoskills are “new ways of achieving new evidence”, but there is more, much more that could be done and should be done. The next 12 slides provide the basis for such an assertion.

SLIDE 15. An example of where to find new ways of achieving new evidence? Check out the Applied Geography Showcase at:

http://www.cag-acg.ca/files/pdf/GAW/Applied_Geography_Showcase.pdf

It is reasonable to expect that a concerted effort would readily increase the Applied Showcase to 100 entries. In view of the high rate of return that is likely to flow to the sponsor(s) of such an effort, it appears reasonable to expect that federal, provincial, and municipal governments, as well as firms in the GIS and geoskills industries, will turn increased attention to creating or embracing opportunities to expand the array of materials contained in the CAG's Applied Geography Showcase, or a variation thereof.

SLIDE 16. Another example of where to find new ways of achieving new evidence? Check out the Guide to Applied Geography Resources at

http://www.cag-acg.ca/files/pdf/GAW/GAW_2009_Guide_Applied_Resources.pdf

The body of applied geography resources in Canada far exceeds those which are listed here for illustrative purposes. In view of the high rate of return that is likely to flow to the sponsor(s) of such an effort, it appears reasonable to expect that federal, provincial, and municipal governments, as well as firms in the GIS and geoskills industries, and of course university and college departments, as well as professional and technical associations, will turn increased attention to marketing or promoting the opportunities which they provide to the users, consumers, etc., of applied geography products and services.



SLIDE 17. Another example of where to find new ways of achieving new evidence? Check out the GeoSkills Showcase at

http://www.cag-acg.ca/files/pdf/GAW/GAW2009_GeoSkills.pdf

It is reasonable to expect that a concerted effort would readily increase the GeoSkills Showcase to many hundreds of entries.

One very useful avenue to pursue is for professional and technical associations to survey their members, or to pull the materials from files if a survey has already been done, and assemble Internet-based compilations of work, perhaps along the lines of the GeoSkills Showcase model, that can be readily examined by anyone with access to a computer.

SLIDE 18. Another example of where to find new ways of achieving new evidence?

Check out the Guide to GeoSkills Resources at

http://www.cag-acg.ca/files/pdf/GAW/GAW_2009_Guide_GeoSkills_Resources.pdf

The body of geoskills resources in Canada far, far exceeds those which are listed here for illustrative purposes. It is expected that as time goes on, a more comprehensive listing will be compiled by an organization which has the most to gain from such an initiative.

SLIDE 19. Another example of where to find new ways of achieving new evidence?

Check out the Theme Day websites at

http://www.cag-acg.ca/en/geography_week_2009.html

The focus of Theme Days is on non-academic websites, and the 150 websites selected to date demonstrate a strong, national capability to obtain evidence of a spatial nature in a variety of ways for a wide range of exploratory and confirmatory types of studies.

I hasten to add here that although the theme day topics are of considerable scope, the consideration of other topics would no doubt substantially increase the ways that non-academic websites inform us about how GIS and geoskills enable us to achieve new evidence. Further, explicit regard for the materials on websites of academic institutions, including course outlines, research reports, and dissertations and theses, would no doubt introduce even more new and different ways of achieving new spatial evidence.

SLIDE 20. Another example of where to find new ways of achieving new evidence?

Check out the GIS Day websites at

**http://www.cag-acg.ca/files/pdf/GAW/GIS_Day.pdf, and
<http://www.esricanada.com/english/7301.asp>**

GIS Day is an event held at many universities and colleges across Canada, and is also "celebrated" by municipal, provincial, and federal departments, as well as by firms and other organizations. The websites accessible through the links in this presentation



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provide an important but limited picture of the many and varied ways that GIS contributes to achieving new evidence of a spatial nature.

SLIDE 21. Another example of where to find new ways of achieving new evidence?

Check out professional organizations such as the Urban and Regional Information Systems Association at <http://www.urisa.org/>.

This organization has been around for more than 45 years, and is probably the leading source of documentation on the ways that GIS and geoskills contribute to deriving evidence about the urban and regional aspects of many of the topics listed in slides 3-9, and dozens of other topics as well.

In addition to URISA, there are a number of other professional and technical organizations, including those of geographers, engineers, surveyors, cartographers, and geomaticians which also make valuable contributions to the ways that GIS and geoskills assist in achieving new evidence of a spatial nature.

SLIDE 22. Another example of where to find new ways of achieving new evidence?

Check out GIS Day poster events at universities and colleges. By way of illustration, posters have been a popular GIS Day event at the University of Ottawa and Carleton University for many years, and a particularly important feature of this activity is that it requires students to think about why and how they are going to obtain the data needed for a spatial project. The only way to succeed at the highest level in such a mission is to call on the rational thought processes imbedded in one's brain, and on knowledge of the various methodologies used in decision making. More on this when I get to slide 26.

SLIDE 23. On the path to better decisions. Former U. S. Senator Everett Dirksen (Illinois) is credited with the admission, "When I feel the heat I see the light". In my experience a first step on the path to more enlightened decision making is by applying some heat through questions that leave no wriggle room. One such question that I have used to considerable effect, and commend to others without reservation is:

What are the names of the decision-making methodologies that you use when making decisions?

It is my associated experience that this question often leaves the recipients looking like 'deer caught in the headlights'. However, if your question-answer sessions are invariably good ones, that is, the persons to whom your questions are addressed are knowledgeable about decision methodologies, then jump to slide 27.

SLIDE 24. Plodding along the path to better decisions. I have asked the methodologies question many times, and rarely have I had a reply on the first go-around. Be prepared to hear "What was the question again", and be prepared to re-pose the question,

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What are the names of the decision-making methodologies that you use when making decisions?

SLIDE 25. Sometimes one encounters a little “music” along the path to better decisions. Be prepared to hear strains of the *Humma, Humma, Humma* chorus instead of an informed answer, and be prepared to shift gears. It is quite possible that your would-be respondent has little or no clue about the methodologies used in decision making, and it is appropriate to move on. One approach that may help to stimulate brain cells is to give him or her some names of decision methods and techniques to raise the level of the discussion, and see what happens.

The names of methods and techniques listed in Slide 26 may serve as ice breakers, but it is useful to bear in mind that several hundred names of methods and techniques could be brought into the discussion. Heads up!

SLIDE 26. Getting a handle on decision methods and techniques. This slide contains a selection of the names of methods and techniques that were included in a report that I prepared for Transport Canada on decisions to identify, adopt, and implement sustainable transport practices. The 2008 report is titled *Methods and Techniques that Could be Used in Making Decisions about Identifying, Adopting, or Implementing Sustainable Transport Practices*. (Research Report 1, Transport Canada Project, Methodologies for Identifying and Ranking Sustainable Transport Practices in Urban Regions). It can be viewed at <http://www.wellarconsulting.com/>.

The list of 34 methods and techniques is indicative, that is, an expanded version is needed to cover all the aspects of the transport sector, and a much-expanded list is needed to serve the topics embraced by the other four themes (weather and climate; water; energy; and food and health) which are core components of the Geography Awareness Week design prepared for the CAG.

Following from slides 23, 24, and 25, it might be highly instructive to ask municipal councillors and mayors, members of provincial and federal governments, and all manner of people who make decisions in the public interest, for their lists of the names of the methods and techniques that they use when making decisions about specific issues. And, for a variety of reasons it could be highly instructive for investors and shareholders to ask corporations in the mining, manufacturing, construction, retailing, wholesaling, investment, banking, forestry, building, trucking, communications, resource, and other sectors to list the names of the methods and techniques that they use when making decisions of any kind, and especially those of a spatial nature.

SLIDE 27. The big pay-off combines the ways that GIS and geoskills provide evidence (Slide 14) with the methods and techniques of rational decision making (Slide 26). Many of the ways of obtaining evidence via GIS and geoskills have been around for decades, as

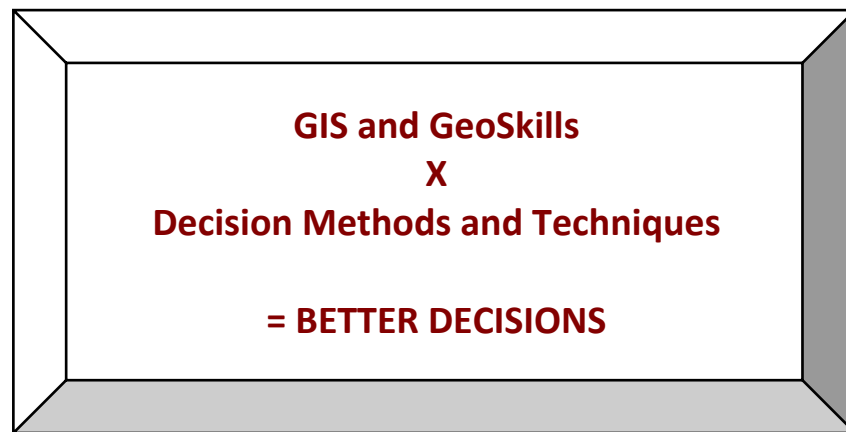


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have many of the decision methods and techniques. However, we are in the very early stages of figuring out how to best combine the ways that GIS and geoskills provide evidence with the methods and techniques of rational decision making.

It is clear that this making connections mission is a formidable task. However, it is equally clear that if we do not pursue this avenue with imagination, diligence, and resolve, the issues associated with slides 3-9 will be a drop in the bucket compared to what awaits us in a decade or so.

SLIDE 28. The big pay-off is all wrapped up in a neat little graphic. The graphic in slide 28 warrants repeating because it summarizes the key point of this presentation.



Moreover, I suggest, this neat little graphic serves the larger purpose of explicitly connecting GIS and geoskills with decision methods and techniques to obtain better decisions. As a result, it can be used as a design instrument in operations, evaluation, performance measurement, and other functions of governments, businesses, etc.

SLIDES 29, 30, 31. Background to the *are, could, should* distinction and relationship. Significant, fundamental differences exist between the ways that GIS and geoskills *are used, could be used, and should be used* to obtain evidence, and significant, fundamental differences exist between the methods and techniques that *are used, could be used, and should be used* to assist in making decisions. And, by extension, therefore, significant, fundamental differences also exist between the ways that GIS and geoskills *are combined, could be combined, and should be combined* with decision methods and techniques to achieve better decisions.

For further discussion of this research design issue, see *Methods and Techniques that Could be Used in Making Decisions about Identifying, Adopting, or Implementing Sustainable Transport Practices*. (Research Report 1, Transport Canada Project,



Methodologies for Identifying and Ranking Sustainable Transport Practices in Urban Regions) at: <http://www.wellarconsulting.com/>

SLIDE 29. Building Casebook 1 to demonstrate how GIS and geoskills are combined with decision methods and techniques to produce better decisions. Professional organizations such as the Urban and Regional Information Systems Association already have entries on file in their proceedings and journals to contribute to Casebook 1, as do government agencies and business firms.

I believe it is important for economic, good governance, research and development, quality of life, and other reasons, for Canada's GIS and geoskills communities to lead the way in designing and contributing to Casebook 1. That said, members of the GIS and geoskills communities can take as a condition of success that the degree to which they succeed with Casebook 1 is directly affected by the extent that they build thoughtful, interactive bridges with the methods and techniques communities in government, business, and academia.

SLIDE 30. Building Casebook 2 to demonstrate how GIS and geoskills could be combined with decision methods and techniques to produce better decisions. Arguments similar to those made for slide 28 are applicable here, but the scope of the story has changed considerably because the ways that GIS and geoskills could be combined with decision methods and techniques far exceed those that are in place. It follows, therefore, that Casebook 2 must be very carefully designed in order to not collapse under its own weight!

SLIDE 31. Building Casebook 3 to demonstrate how GIS and geoskills should be combined with decision methods and techniques to produce better decisions. Casebook 3 is the challenge of challenges for three reasons in particular. First, relatively little methodological effort has gone into ascertaining which of the ways of obtaining evidence via GIS and geoskills are best for which kinds of decisions. Second, relatively little methodological effort has gone into ascertaining which decision methods and techniques are best for making which kinds of decisions. Third, by extension, even less methodological effort has gone into ascertaining how to best combine GIS and geoskills with decision methods and techniques in order to achieve better decisions.

I expect that Casebook 3 will be a work-in-progress for many years, but if anyone is discouraged by this prospect take another look at slides 3-9.

As noted above, the 28 topics could easily be increased to 50, 60 or 70 or more, all of which are as problematic as those listed. And, for numerous examples of decisions made via the non-brain, anatomical sourcing route, review just three or four daily newspapers for a week. Yes, work on Casebook 3 will be a tough slog, but it will be a walk in the park compared to the challenge of coping with further deterioration of the things already

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gone wrong and going wrong, compounded by the continuing inability of failed decision-making processes to produce needed, better decisions.

SLIDE 32. Let's get it done. As illustrated by slides 3-9, the bad news is that Earth and Canada face a number of major social, economic, environmental, governance, and other challenges of a spatial nature, and few if any of them are self-correcting. The good news is that the GIS and geoskills communities have a distinguished record of devising new ways to achieve new evidence for better decision making.

However, if the good news is to effectively contribute to dealing with the bad news, then two outreach efforts must be instituted. First, while the ways of obtaining new evidence continue to improve, much more must be done to effectively connect with the methods and techniques communities.

And, second, much, much more must be done to persuade and enable all the parties listed in slide 12 to take anatomical sourcing to a higher level, that is, to make better decisions by relying to the fullest degree on rational thought processes imbedded in one's brain, and on knowledge of the various methodologies used in decision making.

SLIDES 33 and 34. Background references and sources. This presentation draws on previous presentations and published reports. It is appropriate to identify some of those materials for illustrative purposes, and for the convenience of readers who may wish to examine the original materials.

Acknowledgement. Thanks are given to Sam Herold for the graphics work.