

# *From NASA Satellite Images (1966) to Google Earth (2008): Geography, Geomatics and GIS Have Come a Long Way*



**Dr. Barry Wellar**  
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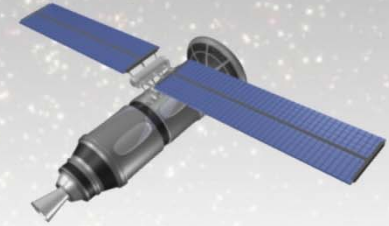


Slides for an Invited Lecture

**Sigma Xi,  
The Scientific Research Society  
Ottawa Chapter**

Thursday, April 24, 2008  
National Research Council,  
Ottawa, Ontario

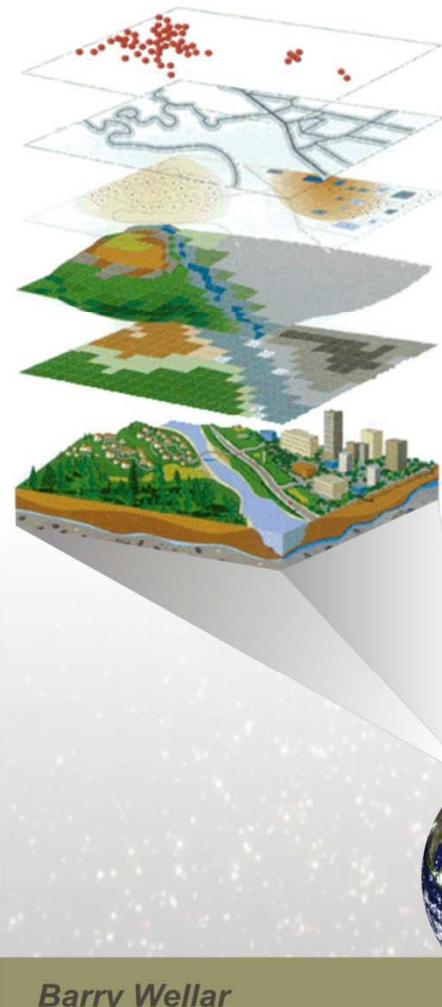
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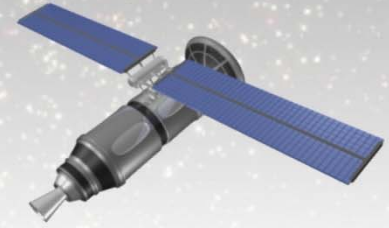
## Lecture Outline

In the late 1960s NASA made satellite images available to government agencies, research institutes, and universities, and promoted interest in and laid foundations for remote sensing, geomatics, geographic information system (GIS) technology and science, global positioning systems, and Google Earth. Over the past forty years since the 'buzz' created by NASA, the research methods, techniques and operations of geography, geomatics and GIS have become core features of multi-disciplinary teaching and research programs at the university level, in government and private sector operations/applications using spatial data, as well as in such 'popular' activities as geocaching, route finding, public participation in community planning, and in recreation (snowmobiling, fishing, hunting, skiing) where location information is valued for safety, search-and-rescue, and for sport reasons.

This talk explores the contributions of geography, geomatics and GIS to curiosity-driven and client-driven research agendas, and uses the Doomsday Map project, the Interdependent Infrastructures and the Strategic Safety and Security research programs of NSERC/PSEPC, Geography Awareness Week, and the IPCC initiative to illustrate the scientific and societal importance of the contributions.



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**GIS**

Technology

**Geomatics**

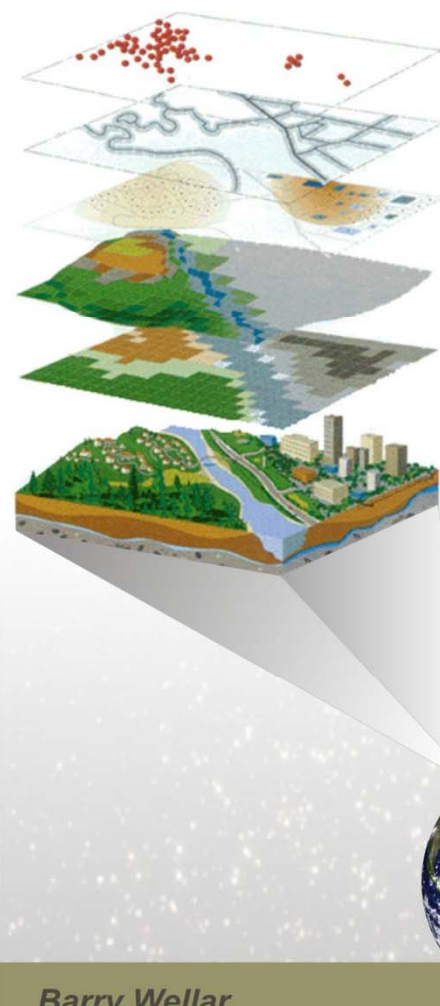
Methods, Techniques

**MAKING TRIPLE-G  
CONNECTIONS**

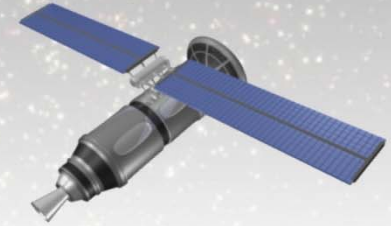
Operations

Spatial Concepts  
and Relationships

**Geography**

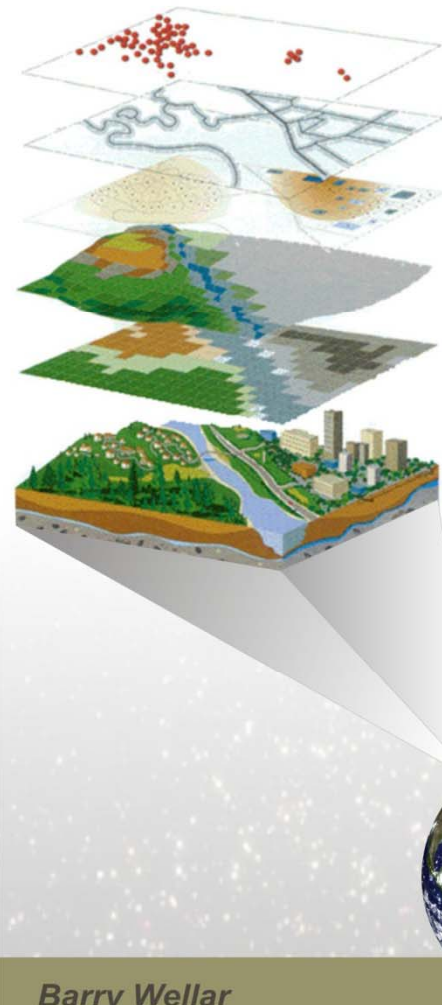


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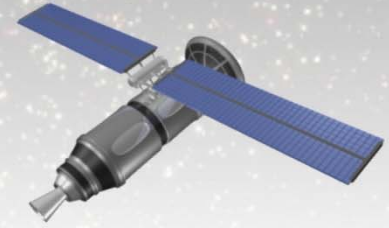


## **Talking Point (1) for an Overview of 40 Years of Progress in Geography, Geomatics and GIS**

Understanding and appreciating the underlying multi-dimensional reality of geography. Or, in more popular terminology, Who knew that points, lines and polygons would come to fascinate millions of people around the world, and underpin data, information, and knowledge bases in governments, businesses, schools, homes, etc., etc. ?

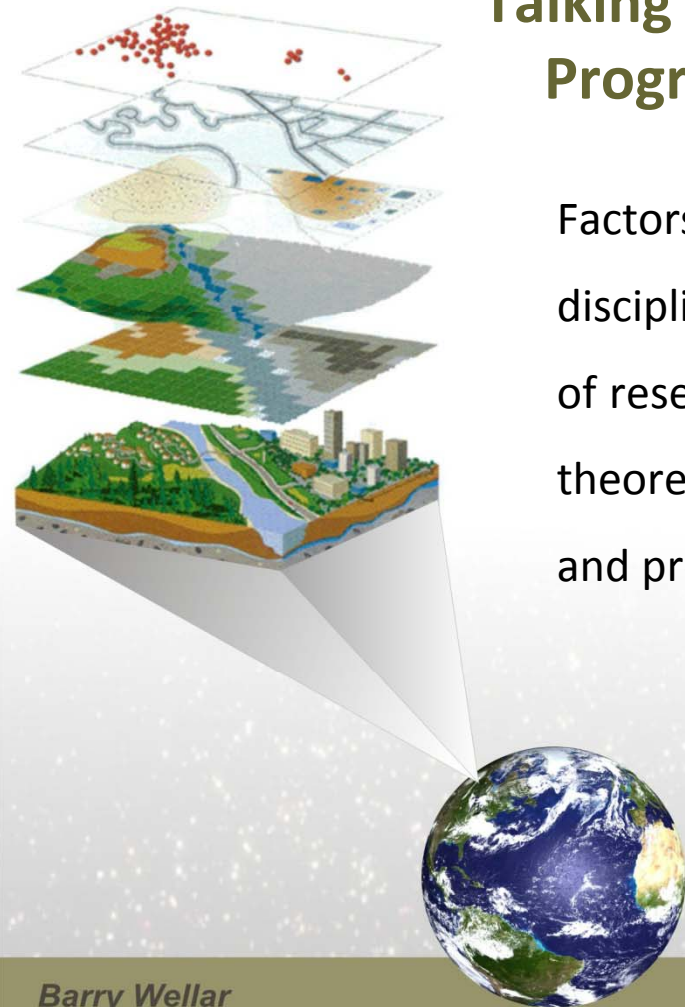


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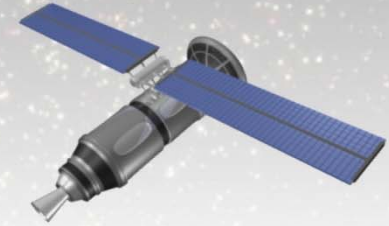


## **Talking Point (2) for an Overview of 40 Years of Progress in Geography, Geomatics and GIS**

Factors behind the emergence of Geomatics as the multi-disciplinary trigger that fostered the search for and validation of research methods, techniques and operations which support theoretical explorations into how to better describe, explain, and predict spatial phenomena.



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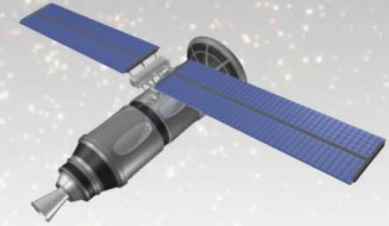


## **Talking Point (3) for an Overview of 40 Years of Progress in Geography, Geomatics and GIS**

Factors behind the emergence of Geomatics as the multi-disciplinary trigger that fostered the search for and validation of research methods, techniques and operations which support applied explorations into the design and implementation of public and private sector policies, plans, programs, and projects that involve spatial objects and processes.

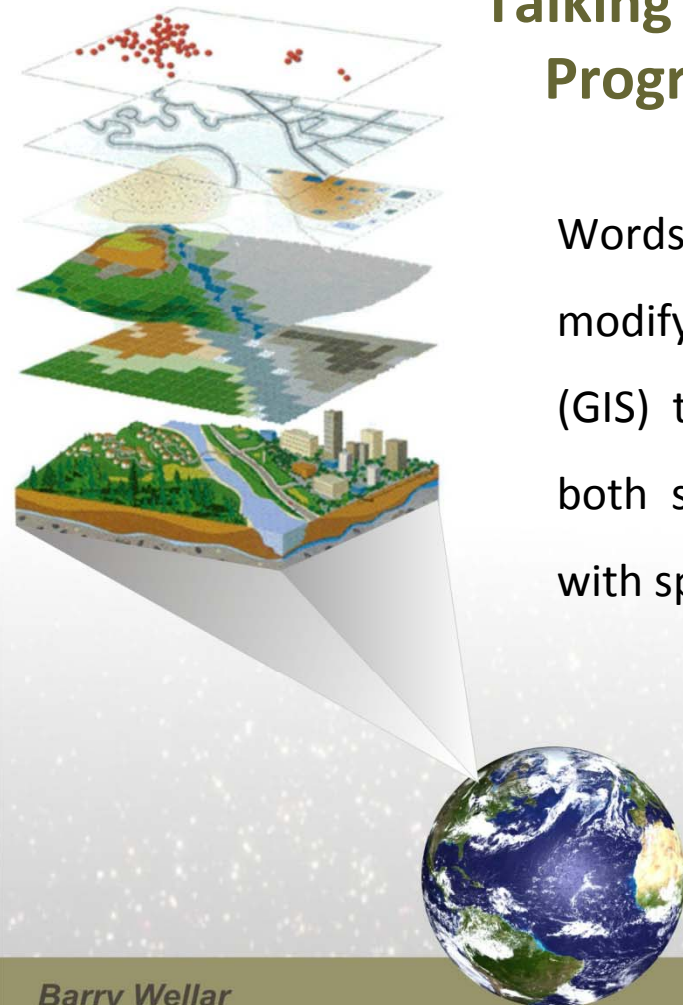


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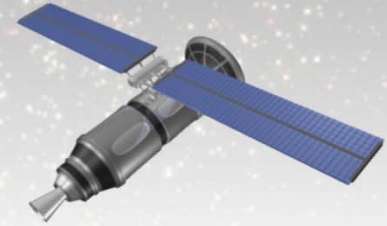


## **Talking Point (4) for an Overview of 40 Years of Progress in Geography, Geomatics and GIS**

Words of praise for those who invent, design, create, maintain, modify, update, and invent the geographic information system (GIS) technology that supports, encourages, and precipitates both scientific inquiry and real-world applications associated with spatial objects and processes.



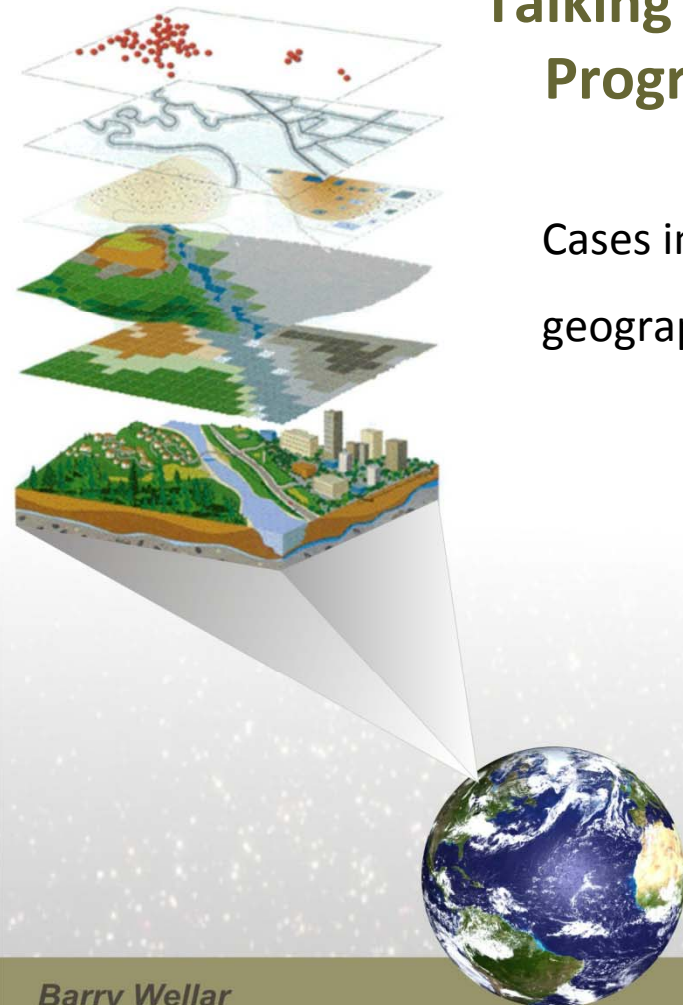
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## **Talking Point (5) for an Overview of 40 Years of Progress in Geography, Geomatics and GIS**

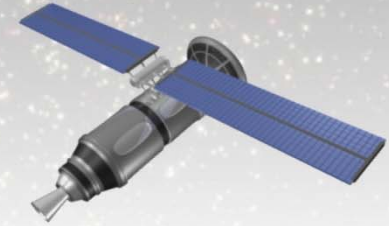
Cases in point that make the Triple-G connection among  
geography, geomatics and GIS:

- Doomsday Map
- Interdependent Infrastructures Research Program
- Strategic Safety and Security Program
- Google Earth
- Geography Awareness Week
- IPCC





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## About the Speaker – Dr. Barry Wellar

For more than 40 years Barry Wellar has undertaken curiosity-driven and client-driven research and applications in the fields of geography, geomatics, and GIS. As a graduate student at Northwestern University (MS, 1967; PhD, 1969) he conducted pioneering research for the National Aeronautics and Space Administration, and the U.S Geological Survey. Tasks undertaken included the design and application of remote sensing products and techniques, including satellite platforms and systems, for housing, environment, transportation, urban, and land use database development and analysis studies and programs.

Dr. Wellar was Assistant Professor and Research Associate at University of Kansas, 1969-1972. While at Kansas he won a NASA-sponsored competition to design an information system infrastructure to dynamically monitor U.S. land use change, was co-investigator for one of the initial environmental impact assessments, and was a senior researcher for the first major research project to design and operationalize an integrated municipal information system. In 1977 Dr. Wellar was elected President of the Urban and Regional Information Systems Association, and has been appointed to numerous geographic, geomatics, and GIS boards, panels and committees at the local, national, and international levels.

Recent appointments and associated activities in the triple-G field include the Interdependent Infrastructures Panel (PSEPC, NSERC), the Strategic Safety and Security Panel (NSERC), Director, Geography Awareness Week, Canadian Association of Geographers, and Distinguished Geomatics and GIS Scientist, Lab for Applied Geomatics and Geographic Information Systems, University of Ottawa.

