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Peter Gould and Waldo Tobler, An Experiment in Geo-Coding. *CSISS Classics*

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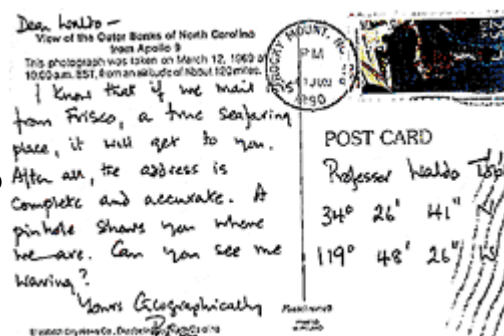


Peter Gould and Waldo Tobler: An Experiment in Geo-Coding By CSISS Staff

Background

Editor's Note: This CSISS Classic documents a simple experiment that captures the importance of identifying precise locations in everyday life—mailing a postcard to a friend. Spatial analysis in the social sciences also requires attention to locational attributes of information. The geo-coding of information for specific point

locations and for regional boundaries is of fundamental importance to the ability of researchers to map spatial patterns and to explore relationships among phenomena across geographical space. Waldo Tobler, Professor Emeritus of Geography at the University of California Santa Barbara, recounts an experiment that he and Peter Gould (1932–2000), the late Professor of Geography at Pennsylvania State University, conducted in the late 1980s to test the universality of geo-coding standards.



Innovation

There are many ways of naming places. Latitude and longitude coordinates and house number with street name are two, among many, of these. They may be considered aliases of each other. Telephone numbers—international calls often require twelve digits—also locate a place to within one or two meters (cellular phones are different—triangulation between transmission towers is required for these).

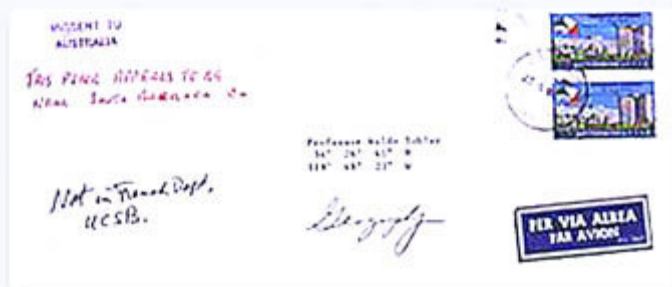
Peter Gould and I conducted a little experiment in the late 1980s to demonstrate this. He sent envelopes on which he had typed my name along with the geographical coordinates of my house to thirty-four colleagues throughout the world. The envelopes contained only a blank piece of paper.

The instructions to his friends were to add stamps and put the envelopes into the local postal system.

Four of these "letters" arrived, and are shown in the accompanying figures. But they came to my university office because of the Professor title on the letters. In some cases the postal clerks added (wrote or typed) the name "Santa Barbara" to the envelopes. Some of the letters were routed through unexpected places as is shown by the inserted notations. We do not know how many envelopes were actually mailed, but believe that most were sent.

Peter also sent post cards with my "address" to me from several cities in the United States. One of these cards is shown above.

Using county or city name, census tract, zip code, telephone area code, or regional names are also ways of identifying location, but with variable quantities of resolution. These aliases can be interconverted, or converted to latitude and longitude, with a precision that depends on their resolution. In the Western United States the Public Land Survey system of Townships, Ranges, and Sections. provides another addressing scheme. The Universal Transverse Mercator (UTM) system works worldwide and is related to latitude and longitude by known equations. The State Plane Coordinate system in the United States, and comparable systems in other countries, often have legal status for describing locations. Bingo coordinates (B-1, I-2, N-3, etc) are frequently used in atlas reference tables and on road maps. Route and mileage indicators are often used to identify places along a road. Obviously there are also many additional idiosyncratic variations for describing locations, and all can be considered aliases for locations on the earth. There have long been attempts and procedures to provide conversions between these aliases. Many Geographical Information Systems now have routines for some of these conversions, including the mapping of information from one locational scheme to another.



Publications

Tobler, Waldo. 2002. Ma Vie: Growing Up in America and Europe, in *Geographical Voices*, W. Pitts and P. Gould, eds, Syracuse University Press; pages 292–322.

Gould, Peter. 1999. *Becoming a Geographer*. Syracuse University Press.

Gould, Peter. 1985. *The Geographer at Work*. Routledge.

Links [Waldo Tobler](#)

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