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Erwin Raisz and His Wonderful Landform Maps

Most of us geologists have a love of maps — or at least we should, as we have to make and use them all the time. As an elementary school student in the northeast U.S., one of my favorite ways to spend a cold winter's eve was to lie on the floor of the living room with the family World Atlas, sheets of tracing paper, pencil and eraser, and proceed to sketch rivers, lakes, mountain ranges, etc. from faraway, exotic realms of the globe. I would imagine how these places really looked, and dreamt of traveling there. I guess that's the origin of my own affection for maps, and perhaps for geology.

Despite their potential as vehicles for the imagination, most maps that we create and use these days are rather mundane affairs. They are exclusively designed to convey dry, spatial information of some sort, be it the streets of Houston or the distribution of allochthonous salt canopy in the Gulf of Mexico. If they have any aesthetic appeal at all, it's probably unintended. It wasn't always that way.

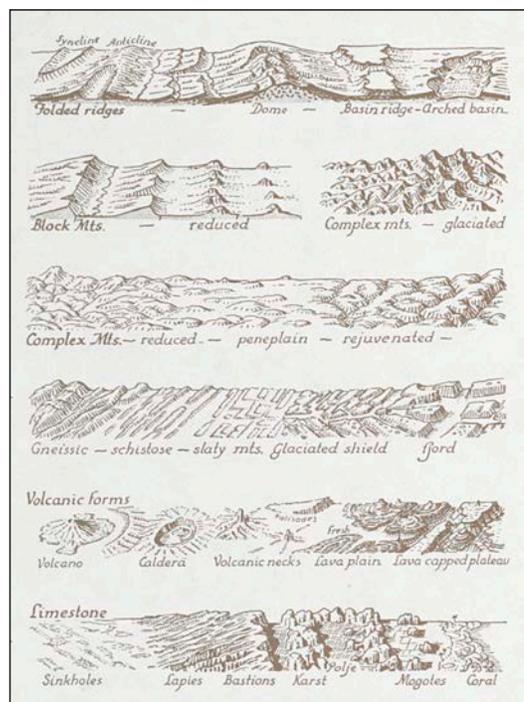
Erwin Josephus Raisz (1893-1968) was born in Lőcse, Hungary, the son of an engineer, and initially followed in his father's footsteps earning degrees in civil engineering and architecture from the Royal Polytechnicum in Budapest in 1914. After the Great War he emigrated to the United States, and worked at the Ohman Map Co. in New York City to support himself while he pursued a PhD in geology at Columbia University (Raisz, 1929). In a conversation I recently enjoyed with his grandson, Jonathan Raisz, he told me that the reason for Dr. Raisz's switch from engineering to geology is unclear, though Jonathan suspects it may have been related to another part-time job he had in New York, making drawings of fossils in the collection of the American Museum of Natural History.

Regardless of how it came to pass, in addition to a number of renowned cartographic inventions such as the cartogram and the "Armadillo" map projection (*Wired* magazine, 2014), Erwin Raisz produced in his lifetime some 5000 hand-drawn, pen-and-ink "landform" maps, which must have required the patience of Job: they are beautiful renditions of the



Earth's surface that are fascinating to ponder. These maps could never have been automatically generated by a computer software application, but required the hand and sensibility of a human artist, convolved with the knowledge of a human geologist. Most of them were created during his 20 years at the former Institute of Geographical Exploration at Harvard University, where he taught, was curator of their map collection, and published the first comprehensive textbook in English on cartography (Raisz, 1938).

So what are these "landform" maps of Dr. Raisz? They are essentially physical relief maps, but use a set of realistic physiographic symbols that are derived from oblique views (excerpt copied here). The emphasis is on realistic symbols: "... the good symbol is that which can be read without an explanation... the [landform] map appeals immediately to the average man. It suggests actual country and enables him to see the land instead of reading an abstract location diagram. It works





on the imagination.” (Raisz, 1931). According to Garver (2003), “He learned to know the land by its geological structure. Like a painter or sculptor who first approaches the human form by focusing on anatomy, Raisz instinctively read in a landscape the forces that molded it.” Spend a moment and take a close look at the excerpt from his Landforms of Mexico map reproduced here. It doesn’t take long before one is virtually transported to the Trans-Mexican Volcanic Belt, and sees with the mind’s eye the majestic Pico de Orizaba, Popocatepetl and other stratovolcanoes of the region.

Jonathan told me that his grandfather was also an avid photographer, and indeed, one of the resources on which he based his landform maps were the many photos he took while on an airplane, always taking care to book a window seat. He also used aerial photos, and in his last years even began to use astronaut photos from NASA’s Gemini program. So I suppose it can be said that Dr. Raisz was one of the fathers of geological remote sensing.

I’ve always been intrigued by the meeting of science (especially

geology) and art, and Erwin Raisz’s maps have for me been one of the most inspiring examples of this confluence. ■

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Raisz Landform Maps: <http://www.raiszmaps.com/>

Wired magazine, <http://www.wired.com/2014/01/projection-raisz-armadillo/>