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William Smith's 1815 Delineation of the Strata of England and Wales with Part of Scotland: ...Varieties of Soil According to the Variations in the Substrata

The Industrial Revolution is frequently credited for creating the impetus for advancements in geologic maps at the end of the 18th century. However, a second ingredient was needed: accurate base maps. Accurate base maps greatly facilitate identifying locations and properly representing spatial proportions of the new thematic information. While commercial interests may have supported the motivation, there are three other elements of note to be learned from William Smith's 1815 map:

1. The map is built upon John Cary's 1812 topographic map.
2. The technique of color coding a base map was adopted by Smith after observing the same in a soil map.
3. The title of the map reflects the agogeology philosophy on the importance of geology in the variation of soil.

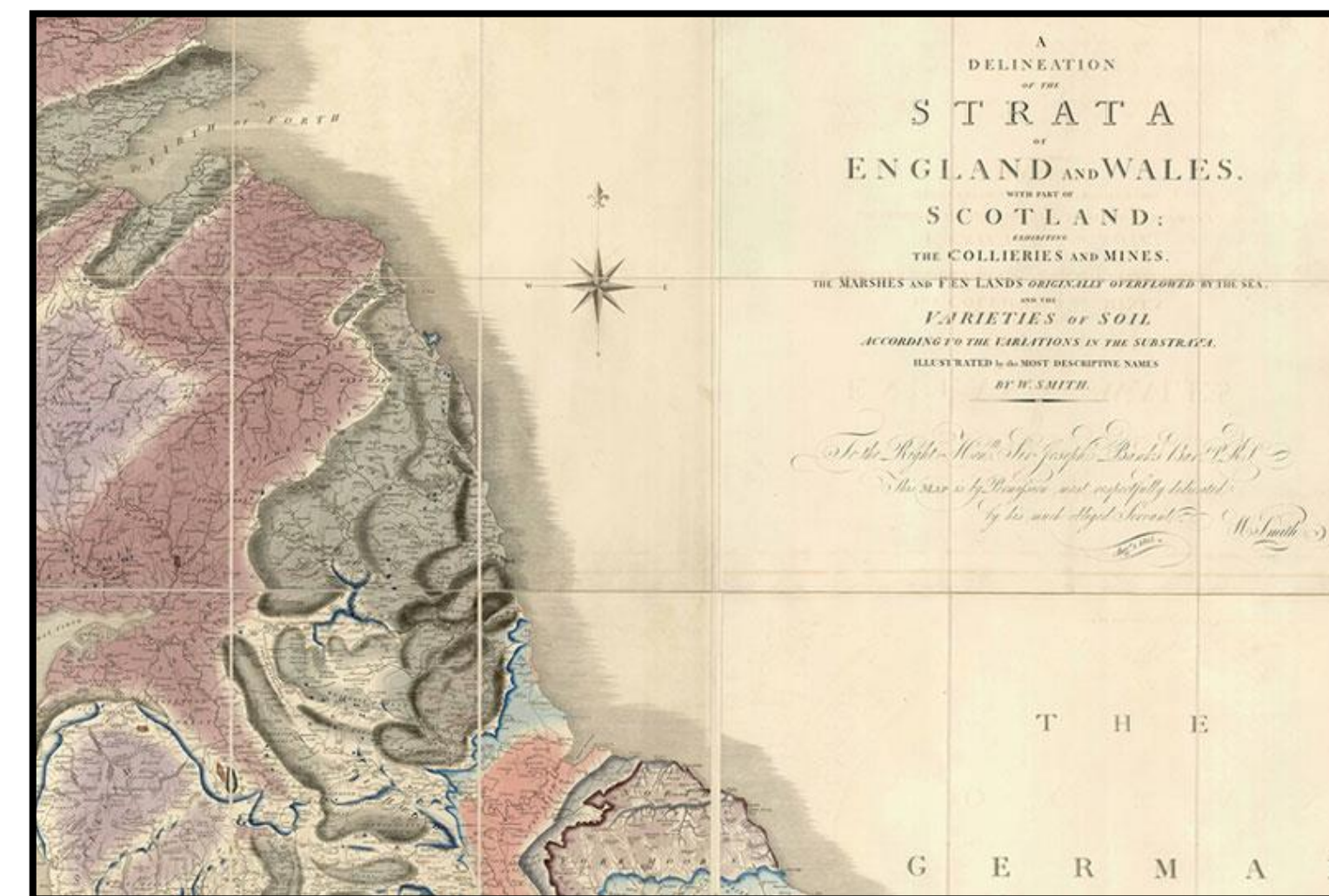
The Base Map

Shortly prior to Smith producing this map, topographic maps were revolutionized by the confluence of two key innovations. Namely, newly invented devices that could determine location very accurately by measuring angles at fractions of seconds combined with the wide-spread use of printing presses that could mass produce copies resulted in readily available topographic maps in Europe.



The Philosophy

Following the agogeology concepts of the time, the title claims that by mapping the geologic strata, the varieties of soil are also shown. Smith viewed his map as a tool for industry and agriculture. Although we understand the soil landscape to be more complex today, the variability of soil at this map scale is largely accounted for by association with geologic units.



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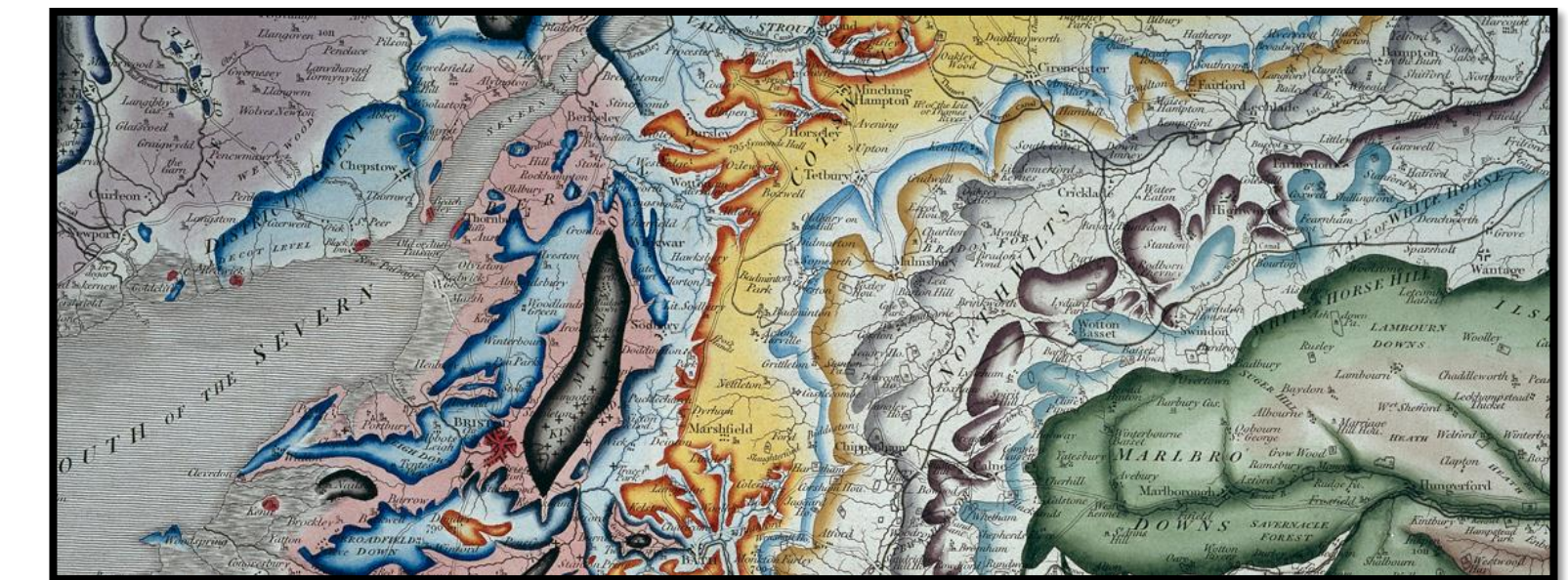
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The Water Colors

After topographic maps were being mass produced by printing presses, they became useful base maps on which to add thematic information. The coloring of those maps became very popular as a form of recreational education, like how we use coloring books today. For the Earth scientists, they could paint their observations onto positionally accurate topographic maps, reducing the amount of positional survey work needed.

The geologic attributes were added by hand, using watercolors. Smith shaded the colors, making them darker at the base of a strata to provide a 3D effect.



The Other Fun Facts

- The map was printed on 2 x 2 ft. panels as that was the limits of printing presses of the time. Those panels were then attached together to make the complete 6 x 8.5 ft. map.
- The map was sold as a subscription service. Costing between 5 guineas to 12 pounds (€880 today), depending on format.
- Approximately 400 copies of the 1815 map were published; less than 10% are known to exist today.
- John Cary and William Smith produced a number of editions as more information became available.
- Dokuchaev's famous 1883 "Schematic Map of the Chernozem Zone of European Russia" was also drawn onto a pre-existing topographic map.