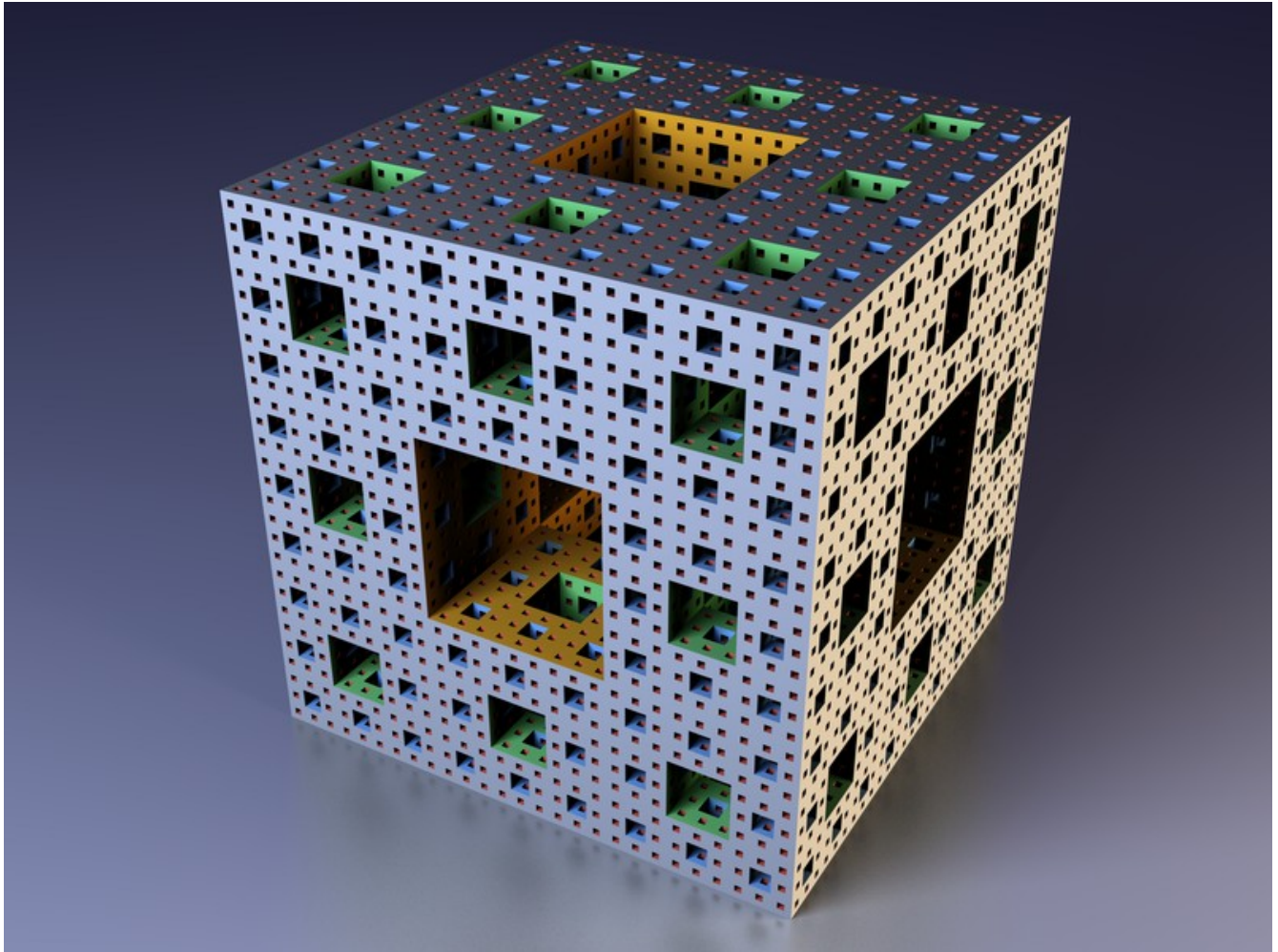


$i=0$

$i=1$

$i=2$

$i=3$

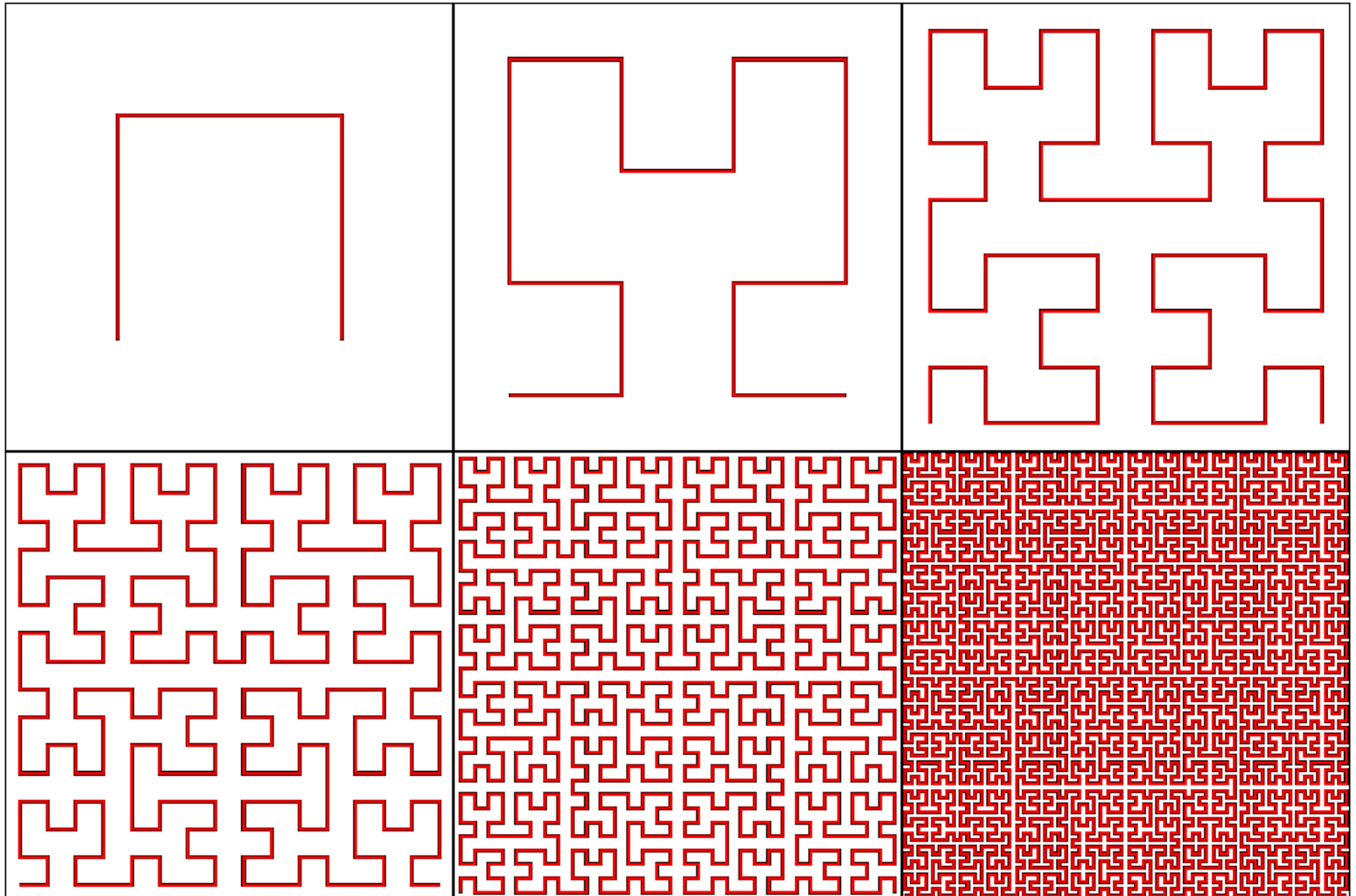


$i=4$

Menger Sponge

Iterations of the Hilbert curve.

Two-dimensional space-filling curves are known as Peano curves, for Giuseppe Peano, the first to discover them.



How Long is the Coast of Britain?

Statistical Self-Similarity and Fractional Dimension [Mandelbrot - 1967]



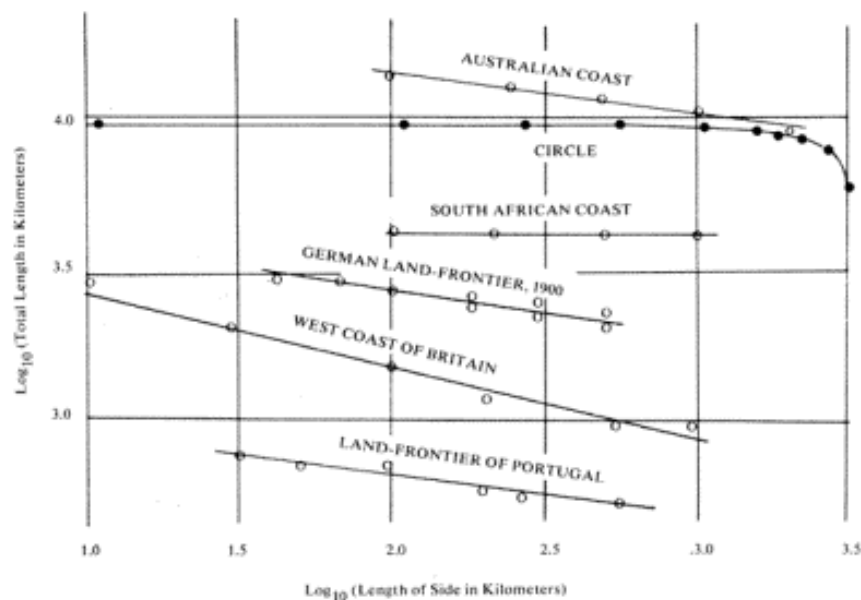
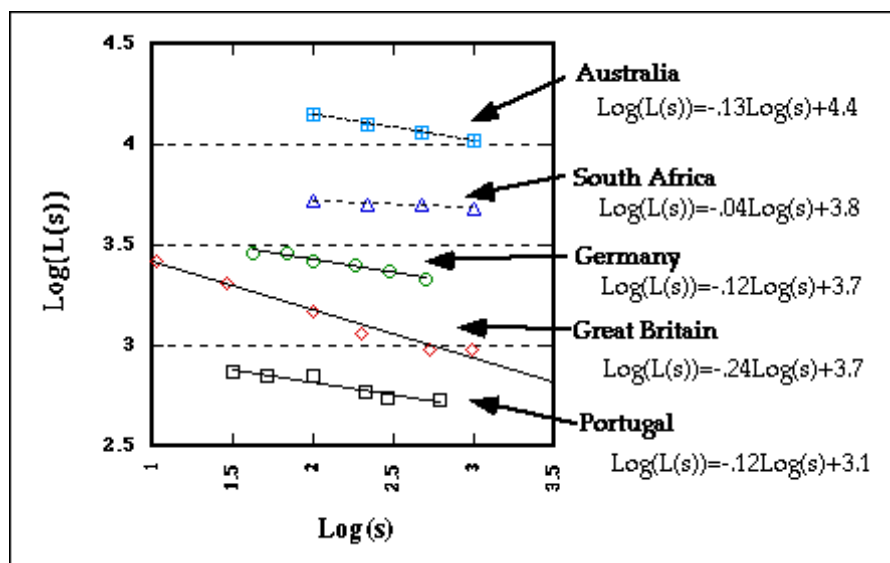
Unit = 200km, Length ≈ 2400 km Unit = 100km, Length ≈ 2800 km Unit = 50km, Length ≈ 3400 km

*The images above are from Wikipedia (Wikimedia Commons), created to accompany the entry discussing Mandelbrot's 1967 article.

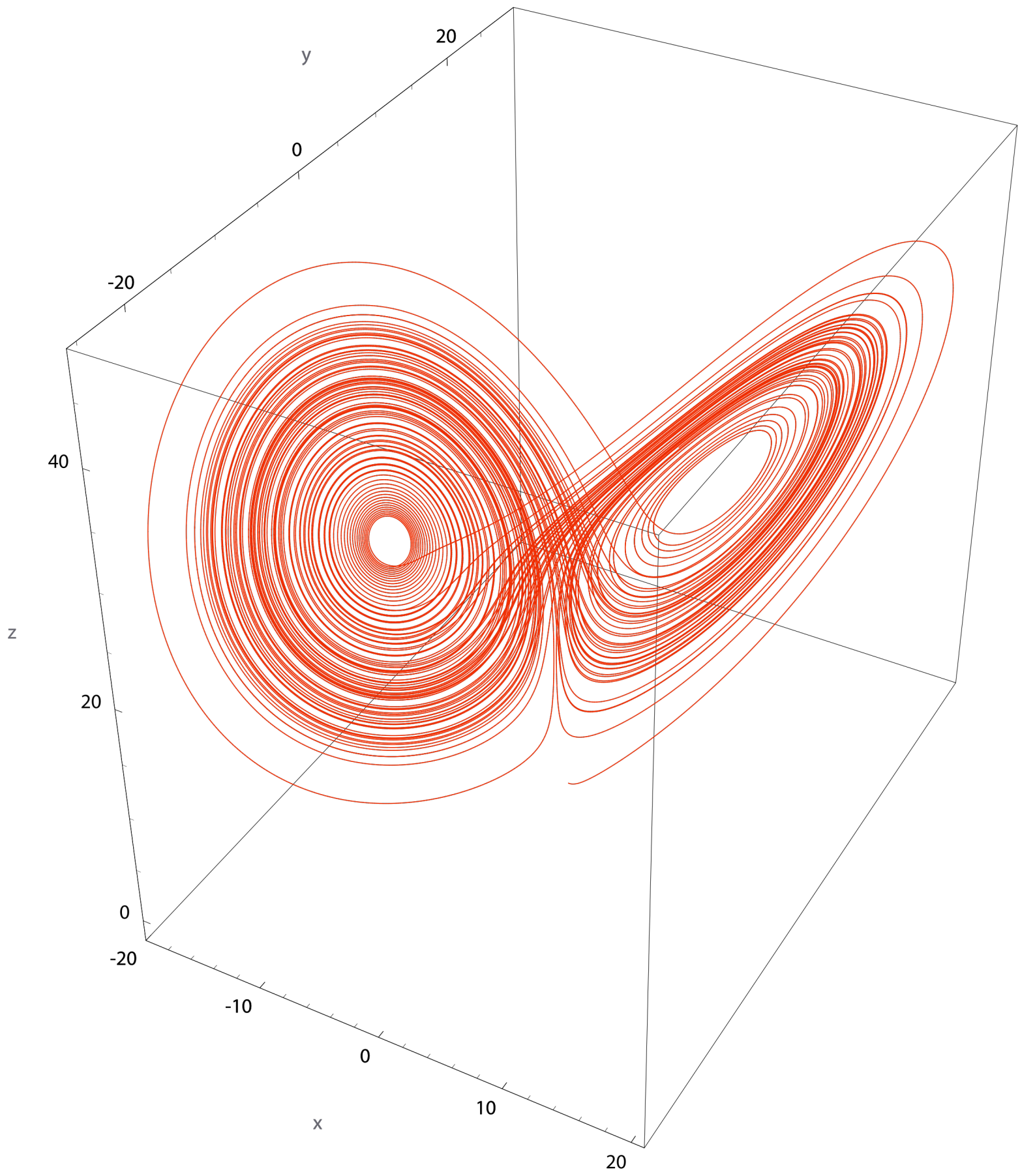
The Fractal Dimension of various coastlines:

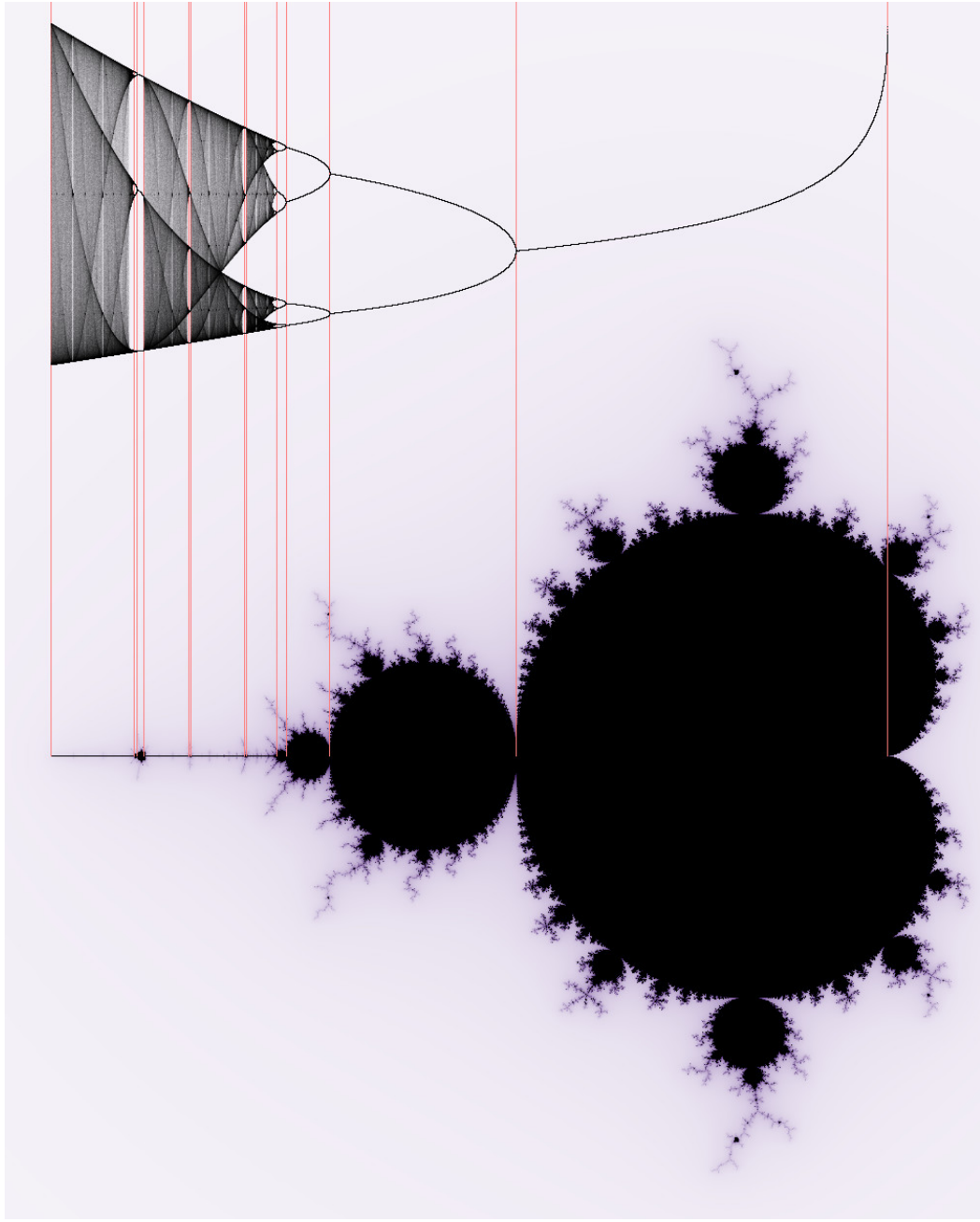
- 1.52 – Norway
- 1.25 – Iceland
- 1.25 – Scotland
- 1.24 – Great Britain
- 1.13 – Australia
- 1.12 – German
- 1.12 – Portugal
- 1.04 – South Africa

*note that calculations are approximate, and will vary.



← (bottom) from Richardson 1961, who explored the relationship between measurement scale and coastline length, and included this graph in an appendix to *Statistics of Deadly Quarrels...*





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