Hutchinson's Theorem 1981

- X a complete metric space

  $f_i : X \to X$ contractions with contraction constants k_i

Let F: the space of subsets of X (the "Bobs") $\longrightarrow$ the space of subsets of X

↑
a metric space with the Hausdorff distance

where $F(\text{Bob}) := f_1(\text{Bob}) \cup f_2(\text{Bob}) \cup \dots \cup f_n(\text{Bob})$

Then F is a contraction, with contraction constant $k = \max(k_1, k_2 \dots k_n)$

- So F has a unique fixed point (our fractal!) and we can get it by picking any initial subset and iterating F!

[First identify desired fractal as such a fixed point!]