NIMBIOS AND TRUST IN SCIENCE ?

Susan Holmes, Stanford University
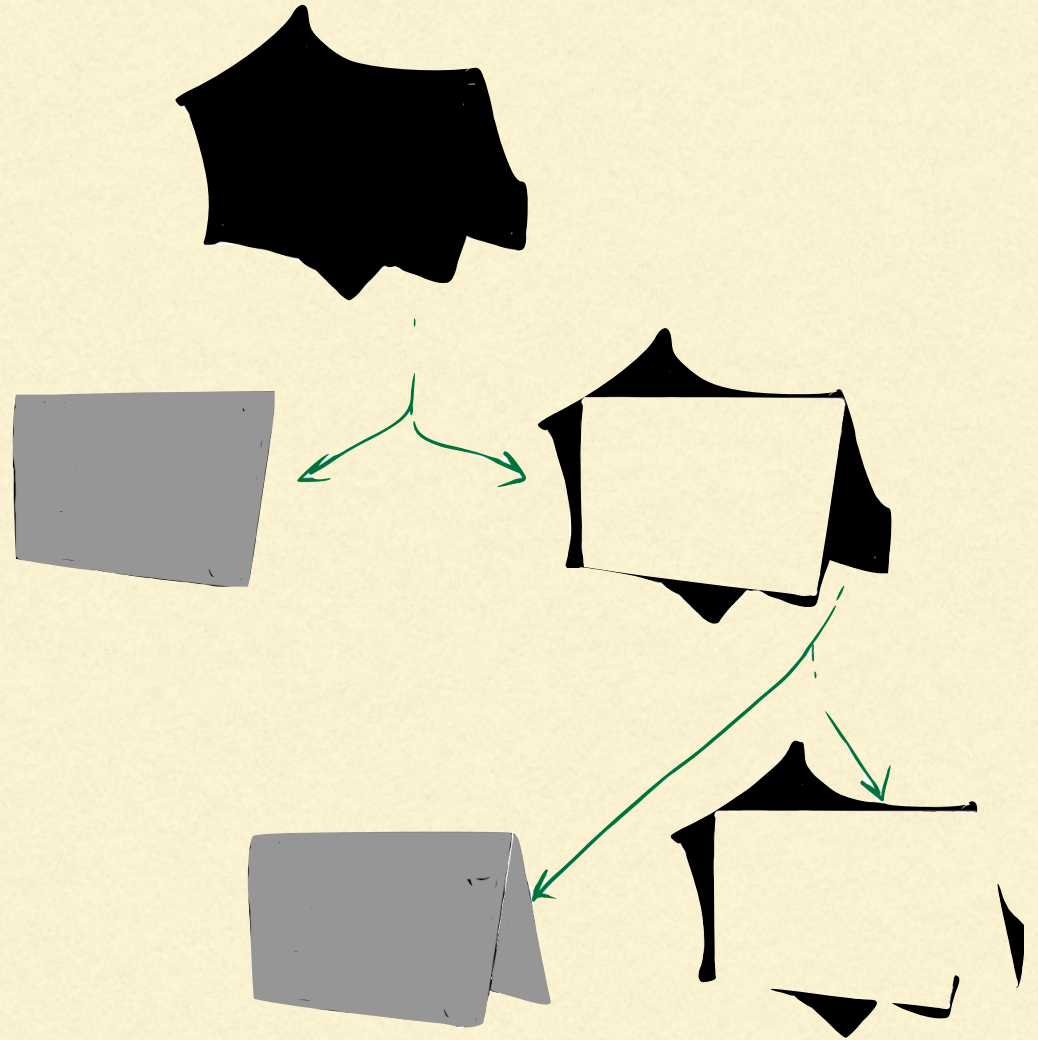
TRANSPARENT

HONEST

PARSIMONIOUS

REPRODUCIBLE

SCIENCE

AS

ITERATIVE

APPROXIMATION

APPROXIMATIONS ?

- Mathematics has proof and Biology has experiments.

- Publication of rigorous work, explain what we agree on.
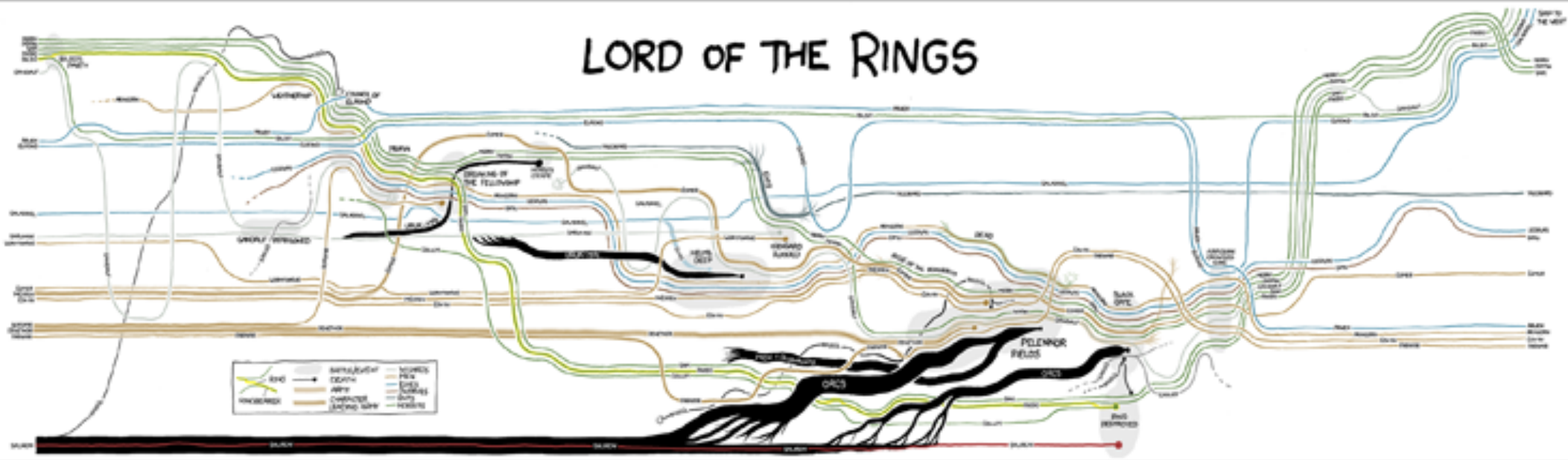
- One more term?

"Le Mieux est l'Ennemi du Bien."

—Voltaire

"Perfect is the enemy of good."

FUTURE: SO MANY CHOICES

THESE CHARTS SHOW MOVIE CHARACTER INTERACTIONS. THE HORIZONTAL AXIS IS TIME. THE VERTICAL GROUPING OF THE LINES INDICATES WHICH CHARACTERS ARE TOGETHER AT A GIVEN TIME.

LORD OF THE RINGS

How many choices?

Choose the data transformation (here proportions replaced the original counts)
... log, rlog, subsample, prop, orig.
 * Take a subset of the data, some samples declared as outliers.
    ... leave out 0, 1, 2 ,...,9, + criteria (10)......
 * Filter out certain taxa (unknown labels, rare, etc...)
    ... remove rare taxa (threshold at 0.01%, 1%, 2%,...)
 * Choose a distance.
    ... 40 choices in vegan/phyloseq.
 * Choose an ordination method and number of coordinates.
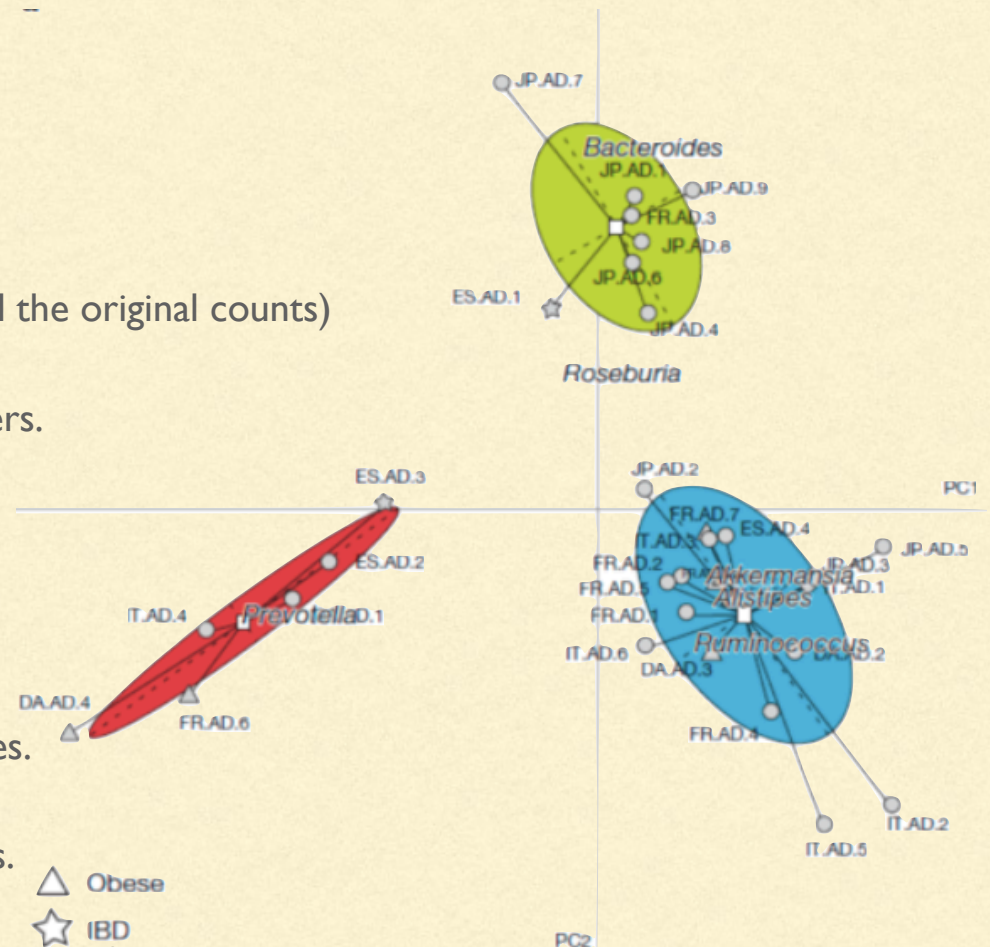   ... MDS, NMDS, k=2,3,4,5..
 * Choose a clustering method, choose a number of clusters.
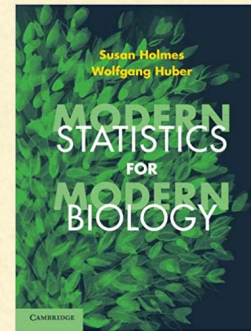 ... PAM, KNN, density based, hclust ...
 * Choose an underlying continuous variable (gradient or group of variables: manifold).
 * Choose a graphical representation.

5 x 100 x 10 x 40 x 8 x 16 x 2 x 4 = 204 800 000

REFERENCES

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