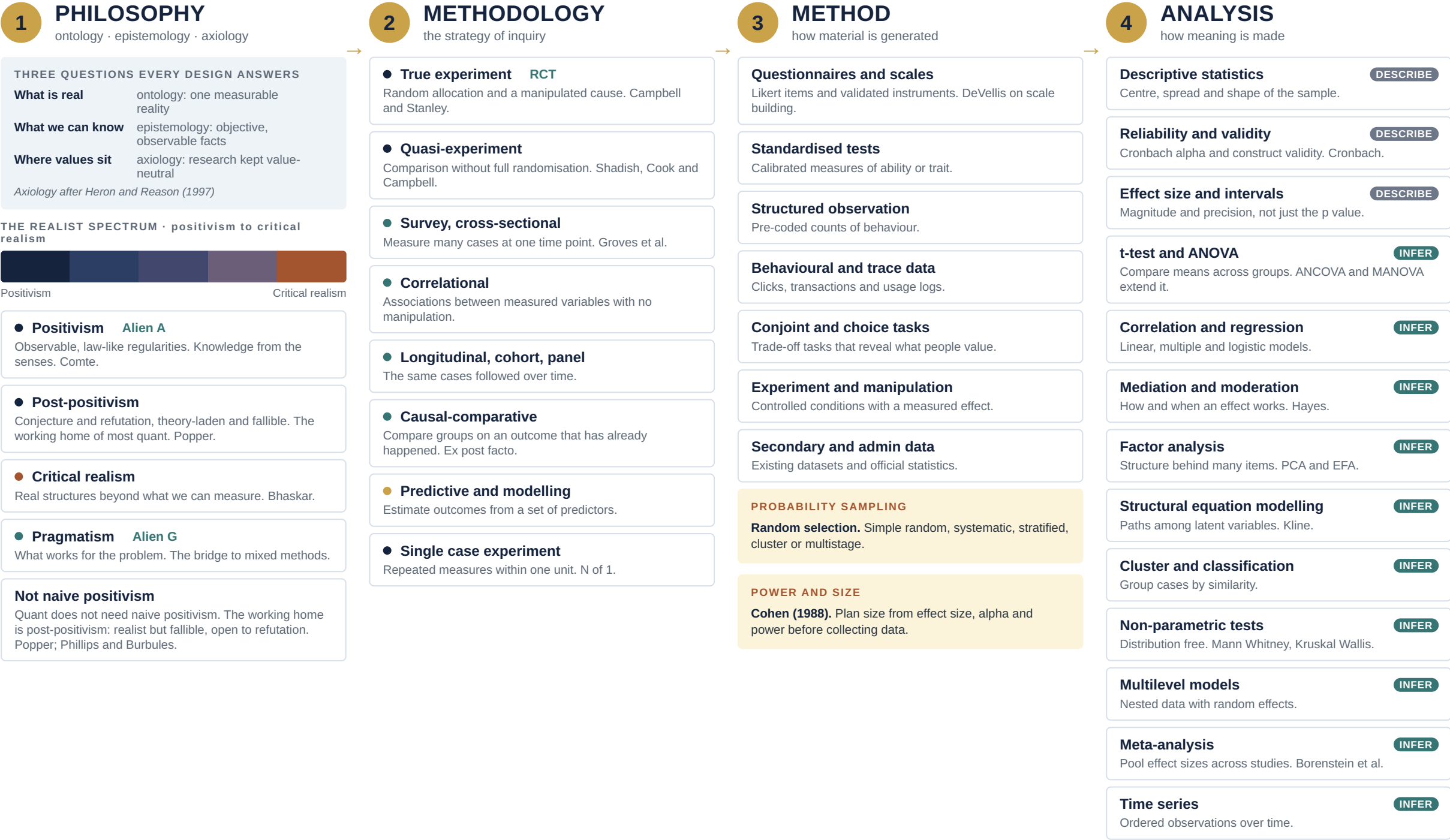




THE QUANTITATIVE RESEARCH UMBRELLA

Philosophy, design, method and analysis on one map

THE GOLDEN THREAD



Designs trade control for reach. The dot shows the dominant logic, not a cage.



THE QUANTITATIVE RESEARCH UMBRELLA

Extended approaches, keyed to the four columns

The umbrella shows the main families. Statistics is vast, so this page sets out the working set a doctoral study is likely to need, keyed to the four columns.

Philosophy

The realist spectrum

Positivism, Alien A. observable, law-like regularities *Comte*

Post-positivism. realist but fallible, falsifiable *Popper; Phillips and Burbules*

Pragmatism, Alien G. what works, the bridge to mixed

Critical realism. used by some, outside your Seven Aliens *Bhaskar*

Methodology, designs

Experimental

Randomised controlled trial. random allocation *Campbell and Stanley*

Factorial. two or more factors at once

Repeated measures. within-subjects design

Crossover and Solomon four-group. control order and testing

Single case, N of 1. repeated measures, one unit

Quasi-experimental

Non-equivalent groups. comparison, no randomisation *Shadish, Cook and Campbell*

Interrupted time series. before and after a change

Regression discontinuity. cutoff on a running variable

Propensity matching. balance groups statistically

Non-experimental

Cross-sectional survey. many cases at one time *Groves et al*

Longitudinal. panel, cohort, trend

Correlational. associations, no manipulation

Causal-comparative. ex post facto

Predictive and modelling. outcomes from predictors

Secondary and econometric. existing and official data

Method and measurement

Instruments

Questionnaires and scales. Likert, semantic differential

Scale development. building valid measures *DeVellis*

Standardised tests. calibrated ability or trait

Behaviour and choice

Structured observation. pre-coded counts

Behavioural and trace data. clicks, transactions, logs

Conjoint and choice tasks. trade-offs reveal value *Rao*

Response and reaction times. timed measures

Sampling

Probability sampling. random, systematic, stratified, cluster *Thompson*

Power and size. effect size, alpha, power *Cohen*

Analysis

Describe and check

Descriptive statistics. centre, spread, shape

Effect size and intervals. magnitude and precision

Reliability. alpha and omega *Cronbach*

Validity. construct and criterion

Group differences

t-tests. compare two means

ANOVA family. ANOVA, ANCOVA, MANOVA

Non-parametric. Mann Whitney, Kruskal Wallis, chi-square

Association and prediction

Correlation. Pearson and Spearman

Regression. multiple, logistic, ordinal, Poisson

Mediation and moderation. how and when an effect works *Hayes*

Latent and multivariate

Factor analysis. EFA, CFA, PCA

Structural equation modelling. paths among latent variables *Kline*

PLS-SEM. variance based SEM *Hair et al*

Cluster and classification. group cases by similarity

Nested, time and synthesis

Multilevel models. nested data, random effects

Time series. ARIMA and trends

Survival analysis. time to an event

Meta-analysis. pool effect sizes across studies *Borenstein et al*

Bayesian methods. prior and posterior



Full sources for every author named on the Quantitative Research Umbrella, grouped by the four columns of the map. References follow UK Harvard style.

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Extended sources

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