Chapter 11, Explanations: Confirming and Falsifying Theories

Popper

1. Bold theories

    a) Forbid more things – therefore more testable – more tests it passes the more confidence we have in it
    b) Simple theories = bold theories

2. Experiments and observation

    Purpose = to test theories not to gather data to arrive inductively at a theory

3. Pseudo-scientists

    a) Protect their theories against falsification
    b) Save their theories with excuses

4. Falsification

    P sidesteps the problem of induction:

    (a) we make conjectures
    (b) deductively draw conclusions/predictions
    (c) seek to falsify them

5. Problems:

    a) Still makes an inductive inference – once falsified the theory will stay falsified

    b) If a theory is falsified it's difficult to discover where the problem lies

    c) In these circumstances verification = also a reliable outcome – P's asymmetry may be the reverse:
        – failed predictions point neither one way nor the other
        – verifications confirm everything

    d) fundamental theories are not conclusively verifiable because they don't forbid anything without other theories

    e) therefore what's wrong about a pseudo-scientist is not

        (i) that he doesn't seek to falsify theories
            – distinctive feature of genuine scientific theories = that they say definite things about the world i.e. they are not vacuous
        (ii) nor is it true that a genuine scientist will throw out and not just save a falsified theory
            – unreasonable to reject falsified theory when most theories cannot be conclusively falsified

Chapter 11, Explanations: Confirming and Falsifying Theories continued

Kuhn

1. Science progresses through revolutions in which one paradigm replaces another

2. Paradigm:

   – defines broad assumptions of science: goals, problems, methods

3. Normal science:

   – supporters work to confirm it – must make promising theories work

4. Crisis:

   – some questions defy solution – but only way of challenging a dominant paradigm = to show its reliability = weak in the long run – no single failure will do

5. Revolution:

   – anomalies become the focus for research that lies outside the paradigm
   – new paradigm successfully challenges the old one because it promises better long-term predictive success