End Notes of Chapter 5

1. Pitts claims that Laudan and Leplin's notion of the instability of auxiliary assumptions (IAA) was exemplified in the case of Yang-Mills and massive Yang-Mills field theories in physics. Both theories are "approximately empirically equivalent classically, but this equivalence appears to be violated at the quantum level." (Pitts 2011, 283)

2. For example, Laudan and Leplin hold that the boundary of observable/unobservable class is determined in the course of scientific development:

   ….findings of empirical equivalence are not reliably projectable, since we cannot reliably anticipate which of a theory's now unobservable consequences may become observable.

   (Laudan and Leplin 2002, 365)

3. In their response to Kukla's *Laudan, Leplin, Empirical Equivalence and Underdetermination*, Laudan and Leplin have changed their mind from holding (implicitly) a temporal thesis of empirical equivalence (in *Empirical Equivalence and Underdetermination*, first published in 1991) to an atemporal thesis of empirical equivalence (in *Determination Underdeterred: Reply to Kukla*, 1993). Such a move was intended to counter the temporally indexed thesis of empirical equivalence which was embraced by Kukla in his convincing rebuttal to Laudan and Leplin's argument.

4. Critics may rebut that it is too quick to come to a conclusion that an extended rival-generating algorithm may produce infinitely many true theories (empirical equivalents) and pragmatic theories (e.g. simplicity-equivalents, usefulness-equivalents, etc). The rebuttal has no teeth because the critics do not consider the fact that a rival-generating algorithm has been thought to be capable of generating infinitely many rival theories. It is no surprise that a subset of infinitely many true theories and pragmatic theories may be obtained from the set of all (i.e. infinitely many) rival theories generated by the algorithm. The relativist conclusion is still tenable even if we agree with critics that it is inconceivable to have an infinitely many true and pragmatic theories as a subset of an infinitely many rival theories. Granted that such scenario is unlikely to happen, we may still reasonably hold that it is conceivable to obtain at least *some* true rival theories (empirical equivalents) and pragmatic theories (e.g. simplicity-equivalents) from a set of infinitely many rival theories generated by the algorithm. Relativism is still inevitable.