Understanding Science and Scientific Methods:

An Overview for Lawyers

SUMMARY – 24 October 2005

Class on 17 October 2005 Covered 3.a.i. on the Syllabus

I. Bendectin and the *Daubert* (1993) Decision

A. What is *Scientific Knowledge* and when is it *reliable*? – (F & H p.1) --

1. **Observation, Experiment, Explanation, Prediction -- Goal – Universal Laws**
2. **Inductive Reasoning and Creative Leaps**
3. **Textbook example is Physics: F=MA, e=Mc^2 ,**

   F(gravitation)= $F_g = G\frac{m_1 m_2}{r^2}$ **, etc. Interlocking, Universal Laws.**

4. **To be scientific knowledge *it must be*:**

   a. **Falsifiable –**

      i. To be scientific a theory must make predictions concrete enough to be proved wrong if the claim is in fact not true.

      ii. ***You cannot prove a negative*** – You cannot prove that UFOs do not exist

      iii. Non-falsifiability plagues **psychiatric** work and **pop psychology**.

b. **Reliable – *reliability*** refers to the reproducibility of data**. A reliable test can be repeated under identical circumstances and yield the same results.**

c. **Valid – Validity** refers to the Theory in question

   i. Logical Consistency – logically coherent – does the theory interlock with other theory. Qualification – ***no purely Logical System can be complete***.

   ii. Agreement of a theory with experiment