MODELS OF INSPIRATION
Assumptions in science

- Laws are simple in nature.
- Laws are quantifiable.
- Formulated laws are valid at all times.
Formulate Hypotheses.

Test hypotheses by experimental observation.

Where do hypotheses come from?

How about direct step by step process to derive hypotheses from raw observational data?
“It may be heuristically useful to keep in mind what one has observed. But on principle it is quite wrong to try grounding a theory on observable magnitudes alone. In reality the opposite happens. It is the theory which determines what we can observe.”
Specific questions to be answered.

System of mathematical reasoning.


At best verification of proofs is possible using computers.
No systematic procedure

- Hypotheses in science
- Systems of reasoning in Maths

They almost universally arise within the mind of the investigator by sudden inspiration!
Specific gravity

- 250 BC

- Determine whether a craftsman defrauded the king (Heiro II) of Syracuse.
  - Is the crown made of pure gold?

- Sudden inspiration while taking a bath.
Characteristics of Inspiration

- Previously made unsuccessful conscious effort.
- A sudden awareness of the problem’s solution.
- A conviction that the solution is correct and final.
- One perceives the solution in its entirety – though long and complicated when written down.
- Propels significant advancement in science.
“Finally, two days ago I succeeded... Like a sudden flash of lightning, the riddle happened to be solved. I myself cannot say what was the conducting thread which connected what I previously knew with what made my success possible.”
"At the moment when I put my foot on the step, the idea came to me, without anything in my former thoughts seeming to have paved the way to it, that the transformations I had used... were identical with those of non-Euclidean geometry."

"... with just the same characteristics of brevity, suddenness, and immediate certainty..."
"When I feel well and in good humor, or when I am taking a drive or walking, ... thoughts crowd into my mind as easily as you could wish. Whence and how do they come? I do not know and I have nothing to do with it... Once I have a theme, another melody comes, linking itself with the first one, in accordance with the needs of the composition as a whole... Then my soul is on fire with inspiration, if however nothing occurs to distract my attention. The work grows; I keep expanding it, conceiving it more and more clearly until I have the entire composition finished in my head, though it may be long... It does not come to me successively, with its various parts worked out in detail as they will be later on, but it is in its entirety that my imaginations lets me hear it."
Two features of inspiration

- The source of inspiration lies beyond the subject’s conscious perception.

- It provides the subject with information unobtainable by conscious effort.
Mechanistic explanation

“subliminal self” puts together many combinations of mathematical symbols by chance until at last it finds a satisfying combination. [Poincare and Hadamard]
The phenomenon of inspiration requires a process of choice capable of going more or less directly to the solution – without even considering the vast majority of possible combinations of arguments.

Selection criteria – hard to define!

Several instances in which famous mathematicians have, without proof, stated mathematical results that later investigators proved only after elaborate systems had gradually come to light.
“All these complements could be brought to Riemann’s publication only by the help of facts which were completely unknown in his time; and for one of the properties enunciated by him, it is hardly conceivable how he can have found it without using some of these general principles, no mention of which is made in his paper.”
“(1) that Galois must have conceived these principles in some way; (2) that they must have been unconscious in his mind, since he makes no allusion to them, though they themselves represent a significant discovery.”
Another Mechanistic explanation

- Very powerful algorithm built into the neural circuitry of the brain.
Problems?

- **Origin** of such a pattern of nerve connections embodying mathematical, scientific and artistic inspirations?

- **Subjective experience** without awareness of intermediate steps?
Sound
Touch
Form
Taste
Smell
Mind
Intelligence
False ego
Supersoul

Simple material laws
Subtle material laws
Spiritual laws
The Supersoul factor

- **Unconstrained will** of the Supreme.

- Perceiving our desires and translating them into action.

- Current desires + past activities (karma).

- Living entity → helpless spectator because of identification with the body.
Assumptions in science revisited

- Laws are simple in nature.
- Laws are quantifiable.
- Formulated laws are valid at all times.

Not necessarily true!