GP - GEB Reading Assignment:

Introduction + Three-Part Invention

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Abstract: This is the first reading assignment from Douglas Hofstadter's "Godel, Escher, Bach" book. It is intended to provide an introduction to Hofstadter's writing style, and to set the stage for subsequent assignments associated with the book.

Ten Salient Ideas from "Introduction: A Musico-Logical Offering"

1. Fredrick the Great, king of Prussia was well known and is well-known for his military power, but he was also an avid lover of music and was a composer himself.
2. Scholars have deduced that the three-part fugue in the Musical Offering is the same as the musical improvisation Bach did for King Fredrick, who was a very big fan of Bach's work.
3. Ricercar, an Italian word for "to seek", also was the original word for the musical term which is now known as Fugue.
4. Escher's drawings have been the subject of wide admiration from mathematicians for optical illusions that take place in his art. Strange Loops are a recurrent thing in his art, which can be arranged in many different ways throughout it.
5. Godel believed that a statement of number theory could be a statement of number theory if and only if numbers would be able to stand for statements. Each statement acquires a Godel number to which it is able to be referred to by.
6. In the nineteenth century, mathematicians discovered that there were many different geometries, aka a theory of different properties of abstract lines and abstract points.

7. Different issues within the foundations of mathematics which questioned the validity of different theories lead to widespread interest with codifying human reasoning methods present in the early part of the century.
8. Principa Mathematica had a goal of executing a complete codification of universally accepting models of human reasoning. It set out to find if all mathematics was truly contained within methods created by Whitehead etc., and if the methods given were self-sufficient.
9. Babbage was one of the first to conceive the computing potential of machinery. In his lifetime, Babbage created machines which generated mathematical tables of different kinds of "methods of difference".
10. Essential abilities for intelligence, in AI and physical beings include: responding to situations flexibly, taking advantage of fortuitous circumstances, make sense out of ambiguous messages, recognize important elements of a situation, find similarities between different situations, find differences between similar situations, synthesize new concepts by taking from old ones.

Reaction to "Three-Part Invention"

Three Part Invention is a fable which aims to explain Zeno's Paradox. In this story, Achilles, the fastest of all mortals, is in a race with a tortoise to see who will reach a flag and the end of a track. Being absorbed with pride that he will automatically win; he agrees to give the tortoise a head start after discussing the paradox of Zeno in which he states that movement is inherently impossible. The tortoise will always win because he will always be one step ahead of Achilles, regardless of how finite the distance between them may be. This paradox is extremely interesting to

me. It rests on the idea that no matter how hard Achilles tries, because he will always be behind the tortoise, every point he reaches will be after the tortoise has crossed it. As for its truth, it may not be sound, however it is an interesting way to view movement. I find myself thinking about it even after completing reading it.