# 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 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. Canons are one single themed played against itself and fugues are like cannons but with different voices and keys. This fact wasn't what interested me but the ordering of how the author chose to talk about canons and fugues prior and it made me curious about what they were, then he proceeds to explain them later on.
2. The concept of infinity is an implicit concept of the Strange Loop, and that a loop represents infinity in a finite way.
3. Most sets are not members of themselves, but "self-swallowing" sets such as the set of all sets, do contain themselves as members, and then R: the set of all run-of-the-mill sets. So Russell's paradox, is R itself a run-of-the-mill set or a self-swallowing set? To think about this makes my head hurt.
4. In the Epimenides paradox, the sentence each by itself is harmless and does not mean anything, but when put together, it becomes a Strange Loop.
5. Ambiguity is most likely, if not always possible when "natural language" is used for reasoning. For example mathematical reasoning is done in "natural language."
6. Londoner Charles Babbage, was not only an inventor of principles of modern computers, but he was also one of the first to battle noise pollution.
7. The first "giant electronic brains" was a result of the theory of axiomatic reasoning, the study of mechanical computation, and the psychology of intelligence.
8. The book says computer's are the "epitome of unconsciousness", but they can be programmed to do "intelligent" things.
9. Intelligence is flexible, because there are endless amounts of rules for someone/(thing?) that can result from different situations.
10. Towards the end the author mentions how he brings up new concepts twice, and in my mind it connected all the times in the introduction he has done that. It is very effective because while reading I have questions about what some of the things he mentions are, but later on he explains in detail what they are.

## Reaction to “Three-Part Invention”

The format of “Three-Part Invention” reminds me of stories told to me as a child, with more complicated concepts. It’s very interesting to think about the idea of how motion is an illusion of the senses and it’s all in our mind. What I understood and took out of this chapter was about Zeno’s paradox and how the Achilles paradox and the dichotomy paradox present the same bigger concept of infinity. In Zeno’s paradox, it includes Achilles and Tortoise where Tortoise starts ahead, and suggests that Achilles can never catch up to Tortoise. When I think about this, it seems to make sense but like Achilles says that something just feels flawed. That is because Zeno’s reasoning is based on a false assumption that space and time can be divided infinitely since when we think about the reasoning of the distance between Achilles and Tortoise we have a pause in time and it’s not happening simultaneously.