

## A.I. essay on Turing, Hofstadter and Lem

Read the following 3 essays:

- [Computing Machines and Intelligence](#) by Alan Turing (read parts 1, 2, 6 and 7)
- [A Coffeehouse Conversation on the Turing Test](#), by Douglas Hofstadter (you needn't read the Post Scriptum section at the end)
- [The Seventh Sally](#) by Stanislaw Lem (a much shorter sci-fi short story)

Write a response to the following two questions about machine intelligence and the reality of simulations...

The paper should be at least one-side long (double-spaced).

1. In Turing's paper, Lady Lovelace says: "The Analytical Engine has no pretensions to *originate* anything. It can do *whatever we know how to order it to perform*." The implication is that it can only do what we know how to order it to do. Do you think this is true? How can machines do more than humans? (Remember: you know how to program...)
2. I've reproduced, below, a short section of Hofstadter's conversations on simulations. Is every simulation different from its corresponding "real thing"? Are there exceptions?

In Lem's science fiction piece, Klapaucius ends his criticism of Trurl with the sentence: "Prove that you only imitated suffering, and did not create it!" Discuss the relationship between simulating hurricanes and simulating suffering.

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*Pat:* Maybe, but that isn't necessarily equivalent to thinking, is it? It seems to me that passing the Turing Test would merely prove that some machine or other could do a very good job of simulating thought.

*Chris:* I couldn't agree more with Pat. We all know that fancy computer programs exist today for simulating all sorts of complex phenomena. In theoretical physics, for instance, we simulate the behavior of particles, atoms, solids, liquids, gases, galaxies, and so on. But no one confuses any of those simulations with the real thing!

*Sandy:* In his book *Brainstorms*, the philosopher Daniel Dennett makes a similar point about simulated hurricanes.

*Chris:* That's a nice example, too. Obviously, what goes on inside a computer when it's simulating a hurricane is not a hurricane, for the machine's memory doesn't get torn to bits by 200 mile-an-hour winds, the floor of the machine room doesn't get flooded with rainwater, and so on.

*Sandy:* Oh, come on-that's not a fair argument! In the first place, the programmers don't claim the simulation really is a hurricane. It's merely a simulation of certain aspects of a hurricane. But in the second place, you're pulling a fast one when you imply that there are no downpours or 200-mile-an-hour winds in a simulated hurricane. To us there aren't any, but if the program were incredibly detailed, it could include simulated people on the ground who would experience the wind and the rain just as we do when a hurricane hits. In their minds-or, if you'd rather, in their simulated minds-the hurricane would be not a simulation, but a genuine phenomenon complete with drenching and devastation.