Following the path of Turing

ALEXANDER SHEN

(LIRMM, CNRS, Univ. Montpellier 2)

To follow the path of a great thinker like Turing is always a rewarding experience, even (especially?) if he makes errors. One of the examples is Turing's paper "Computing machinery and intelligence"[1] where he described his famous "Turing test" as a scientific version of the philosophical question "Can machines think?", and conjectured an affirmative answer to this question. This paper is exceptionally clear and contains several remarks well ahead of its time. Turing notes, for example, that "it is probably possible to rear a complete individual from a single cell of the skin", anticipating cloning technologies. Another remark (made while explaining that one cannot distinguish a human from a deterministic algorithm just because human behavior is "unpredictable") anticipates the notion of a pseudorandom number generator (as defined by Blum-Micali-Yao many years later):

> I have set up on the Manchester computer a small programme using only 1000 units of storage, whereby the machine supplied with one sixteen figure number replies with another within two seconds. I would defy anyone to learn from these replies sufficient about the programme to be able to predict any replies to untried value.

Not all his remarks sound convincing now; e.g., Turing notes (speaking about extra-sensory perception) that "the statistical evidence, at least for telepathy, is overwhelming". But the most important fault of Turing is the main point of the article:

> I believe that in about fifty years' time it will be possible to programme computers, with a storage capacity of about 10^9, to make them play the imitation game so well that an average interrogator will not have more than 70 per cent. chance of making the right identification after five minutes of questioning.

Turing even suggested a specific approach: "Instead of trying to produce a programme to simulate the adult mind, why not rather try to produce one which simulates the child's? (...) Presumably the child brain is something like a notebook... Rather little mechanism, and lots of blank sheets."

"Turing test" had an important and lasting impact, turning a philosophical question into something scientific. On the other hand, it is clear now that Turing's prediction turned out to be too optimistic (or too pessimistic, depending on the point of view). It is quite unclear, however, why this happened. Is this approach a wrong one? Do the laws of Nature (or God's will) prevent us from achieving Turing's goal? Or we just are not clever enough to implement Turing's ideas? If not his tragic death, may be Turing himself could implement this program? Or maybe he could explain why this approach does not work, and try different things?

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[1] A.M. Turing, Computing machinery and intelligence, *MInd, A quarterly review of psychology and philosophy*, Vol. LIX, No. 236, October, 1950. Available online: http://mind.oxfordjournals.org/content/LIX/236/433.full.pdf