

Given the Web, What is Intelligence, Really?

Selmer Bringsjord & Naveen Sundar G.
Department of Cognitive Science
Department of Computer Science
Lally School of Management
Rensselaer Polytechnic Institute (RPI)
Troy NY 12180 USA
selmer@rpi.edu • govinn@rpi.edu

September 13, 2011

Let's assume that vast declarative information covering nearly all human collective knowledge, courtesy of the Semantic Web a decade hence, enables a flawless version of what is known as **QA** technology.¹ And we add a second assumption: viz., that the QA cycle is mediated by direct brain-Web interfacing. Under this foreseeable-in-the-near-future assumption, if Smith is verbally asked a question q , he can internally and mentally ask it of the Semantic Web, receive back an answer a immediately to his neo-cortex, and convey a as required (e.g., by vocalizing the answer to the interlocutor before him). If Smith could do this today, surreptitiously, he would certainly cause most questioners to believe that he is rather intelligent. He would for example be able to: say which of Shakespeare's plays contain any given snippet of the Bard's immortal verse, answer any question about any settled part of science (e.g., "What was Frege's quirky notation for what is essentially modern first-order logic?"), produce the notes in sequence for Bach's Organ Mass (and throw in a word-for-word verbalization of Luther's Catechism), and so on. If no one knew about Smith's hidden, wireless, brain-to-Web link, again, he certainly would be regarded intelligent — probably even positively brilliant, at least by many.

By many, but not by all. What would a truly discriminating judge say? I'm afraid that on accounts of *real* intelligence of the sort that Descartes had in mind, your secret Web link would be insufficient. Why? Because Descartes would know that a mere mechanical machine could in principle do just what you qua QA master are doing. Thus, by considering whether the Web, given current trends, will fundamentally alter the very concept of human intelligence,

¹The best QA technology in the world is currently the Watson system, created by IBM to compete against humans in the game of *Jeopardy!*, which is essentially a QA game. For a description of the system, see (Ferrucci, Brown, Chu-Carroll, Fan, Gondek, Kalyanpur, Lally, Murdock, Nyberg, Prager, Schlaefter & Welty 2010). Given Watson's prowess, the future we envision could very well soon arrive.

we find ourselves carried back to the longstanding debate about whether human (or *human-level*) intelligence can be captured in mechanical form. Descartes answered this question in the negative. Long before Turing, he claimed that only the human has *domain-independent* intelligence, and that therefore certain tests would be exceedingly difficult for machines to pass. A test of domain-independent intelligence requires success on topics with which the agent has had no prior experience. In our thought-experiment, by definition, you look smart specifically because you are really you plus the Web, and the Web gives you access to mountains of *pre-established* information.

To follow Descartes in testing for real intelligence we must present you with a problem that you have never seen before, and wait to see whether you can provide a solution by means that you invent on the spot. A series of simple tests of this form, for children, are provided by Piaget (Inhelder & Piaget 1958). In the full talk/paper encapsulated by the present abstract, We defend the position that while the Web and associated cognitive technologies promise to make possible the fake brilliance of Smith, the Web will not bring us any closer to the flexible, general intelligence that Descartes correctly claimed would continue to separate minds from mere machines.

References

Ferrucci, D., Brown, E., Chu-Carroll, J., Fan, J., Gondek, D., Kalyanpur, A., Lally, A., Murdock, W., Nyberg, E., Prager, J., Schlaefter, N. & Welty, C. (2010), 'Building Watson: An Overview of the DeepQA Project', *AI Magazine* pp. 59–79.

URL: <http://www.stanford.edu/class/cs124/AIMagzine-DeepQA.pdf>

Inhelder, B. & Piaget, J. (1958), *The Growth of Logical Thinking from Childhood to Adolescence*, Basic Books, New York, NY.