Spaces of imagination in the triangular relation: machine/human/ecosystem.

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In 1936, Alan Turing imagined to be a "human computor… acting on a child's note book", his Logical Computing Machine: read/write 0/1, move left/right. Jointly to Church's Lambda-calculus (1932), these "term re-writing systems" are still now the logical foundation of computing and, for too long, a paradigm for human cognition and AI. Turing presented them as a possible "*imitation*" of a human brain. The "connectionist turn" is instead based on a "*model*" of the brain, since Hebb and Rosenblatt (1950s) and opened the way to contemporary Deep Learning. In either case an input-output machine is meant to simulate an animal brain, with no three dimensional space (or with just an imitation of it by a cascade of two dimensional layers), nor the biological materiality of brain in its context (an animal skull, in a body, in an ecosystem). Some limitative (mathematical) results of Deep Learning will be mentioned as well as the differences between dynamical unpredictability and creativity, as an instance of "production of anti-entropy", a notion proposed in 2009. In mental processes, anti-entropy production may be understood as the "invention of configurations of sens".

References (downloadable from: https://www.di.ens.fr/users/longo/download.html):

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