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L'inimitabile intelligenza del vuoto

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The idea of a «thinking» machine, i.e., a machine able to stand comparison with a person in Turing's «imitation game», emerges from a deeper investigation into strengths and weaknesses of a *universal Turing machine*. If one judges intelligence from observable performances, it seems perfectly reasonable to expect a machine to perform like a human, once endowed with a suitable program (which might involve *random* elements). However, by taking «mechanical procedures» to their limits, incompleteness and undecidability focus on a crucial difficulty involved in a search for a *nontheorem* through the class of theorems. Gödel maintained that our understanding of *abstract* terms requires some *effective non-mechanical* procedures. Turing continued to struggle over possible ways to «copy» human *initiative* into a program. Going back to Dedekind's reflection on mathematical thought, we encounter an «effective definition of the essence of continuity» in his explanation of the irrational numbers as «cuts». Dedekind observed that even if we were sure that space is discontinuous, there would be nothing to hinder us from making it continuous by *intellectually filling in its holes*; this filling in would consist in the creation of new individual points. Analogously, the creation of new *irrational* numbers will make the system of numbers continuous. Such an intellectual act, however, requires the vision of the *void*, the vision of a *non-observable*. How can a machine, which operates on symbols «immediately recognisable», *see* and fill in the void?