Can Machines Think?

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

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I.—COMPUTING MACHINERY AND INTELLIGENCE

BY A. M. TURING

1. *The Imitation Game.*

I PROPOSE to consider the question, 'Can machines think?'
This should begin with definitions of the meaning of the terms
'machine' and 'think'.   The definitions might be framed so as to
reflect so far as possible the normal use of the words, but this
attitude is dangerous.   If the meaning of the words 'machine'
and 'think' are to be found by examining how they are commonly
used it is difficult to escape the conclusion that the meaning
and the answer to the question, 'Can machines think?' is to be
sought in a statistical survey such as a Gallup poll.   But this is
absurd.   Instead of attempting such a definition I shall replace the
question by another, which is closely related to it and is expressed
in relatively unambiguous words.

The new form of the problem can be described in terms of
a game which we call the 'imitation game'.   It is played with
three people, a man (A), a woman (B), and an interrogator (C) who
may be of either sex.   The interrogator stays in a room apart
from the other two.   The object of the game for the interrogator
is to determine which of the other two is the man and which is
the woman.   He knows them by labels X and Y, and at the end
of the game he says either 'X is A and Y is B' or 'X is B and Y
is A'.   The interrogator is allowed to put questions to A and B
thus :

C: Will X please tell me the length of his or her hair?

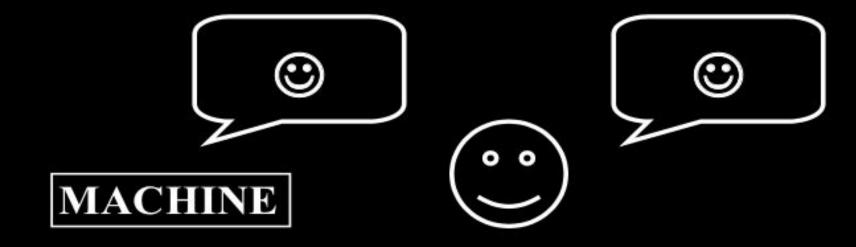Now suppose X is actually A, then A must answer.   It is A's

Turing begins by refining the question

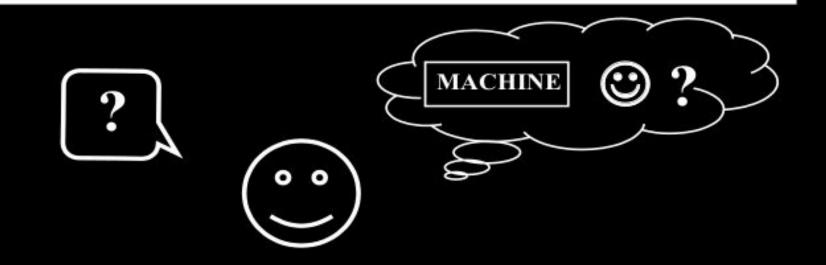**'Can Machines Think?'**

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operationalize

'Are there imaginable digital computers which would do well in the imitation game?'

('Are there discrete state machines which would do well?')