



COMS 465

COMPUTER MEDIATED COMMUNICATION

Agenda

- ▶ Review
- ▶ Remix
- ▶ Preview

Review

- ▶ AI and Chatbots
 - ▶ Origin/History
 - ▶ Critical Questions

Review

Origins/History

Problem with Intelligence

“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.” – Alan Turing, 1950

A. M. Turing (1950) Computing Machinery and Intelligence. *Mind* 49: 433-460.

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 survey, which is closely related to it and is

in terms of a game which we call the Imitation Game. In this game, a man (A), a woman (B), and an interrogator stay in a room apart from the interrogator. The interrogator's task is to determine which of the other two is the man and which is the woman. The interrogator asks them questions by labels X and Y, and at the end of the game the interrogator has to decide whether X is B or “X is B and Y is A.” The interrogator asks the questions and B thus:

“What is your hair?”

“It is A's object in the game to try and answer the questions. The interrogator might therefore be:

“How long are your hair?”

“The interrogator the answers should be written, and the interrogator is to have a teleprinter communicating with the players. The interrogator's question and answers can be repeated by an interrogator (B) is to help the interrogator. The interrogator's question and answers. She can add such things as questions, but it will avail nothing as the man

We now ask the question, “What will happen when a machine takes the part of A in this game?” Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, “Can machines think?”

Review

Origins/History

Change the Question - Imitation Game

“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..” – Alan Turing, 1950

A. M. Turing (1950) Computing Machinery and Intelligence. *Mind* 49: 433-460.

COMPUTING MACHINERY AND INTELLIGENCE

By A. M. Turing

1. The Imitation Game

“Can machines think?” This should begin with “What do you mean by ‘think’?” and “think.” The definitions might be awkward, but this attitude is essential. The words “can” and “machines” are to be found by the interrogator. It is to be sought in a way which is not absurd. Instead of attempting such a definition, I shall replace the question by another, which is closely related to it and is

expressed 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 asks them questions, and they answer. At the end of the game he says either “X is B and Y is A.” or “X is A and Y is B.” The interrogator must be right.

Example:

Q: It is A's object in the game to try and answer the questions. What might therefore be the question?

A: “About nine inches long.”

The interrogator the answers should be written, and the answers can be repeated by an interrogator. The object of the game for the interrogator is to determine which of the other two is the man and which is the woman. She can add such things as

“I am the woman, don't listen to him.” to her answers, but it will avail nothing as the man can make similar remarks.

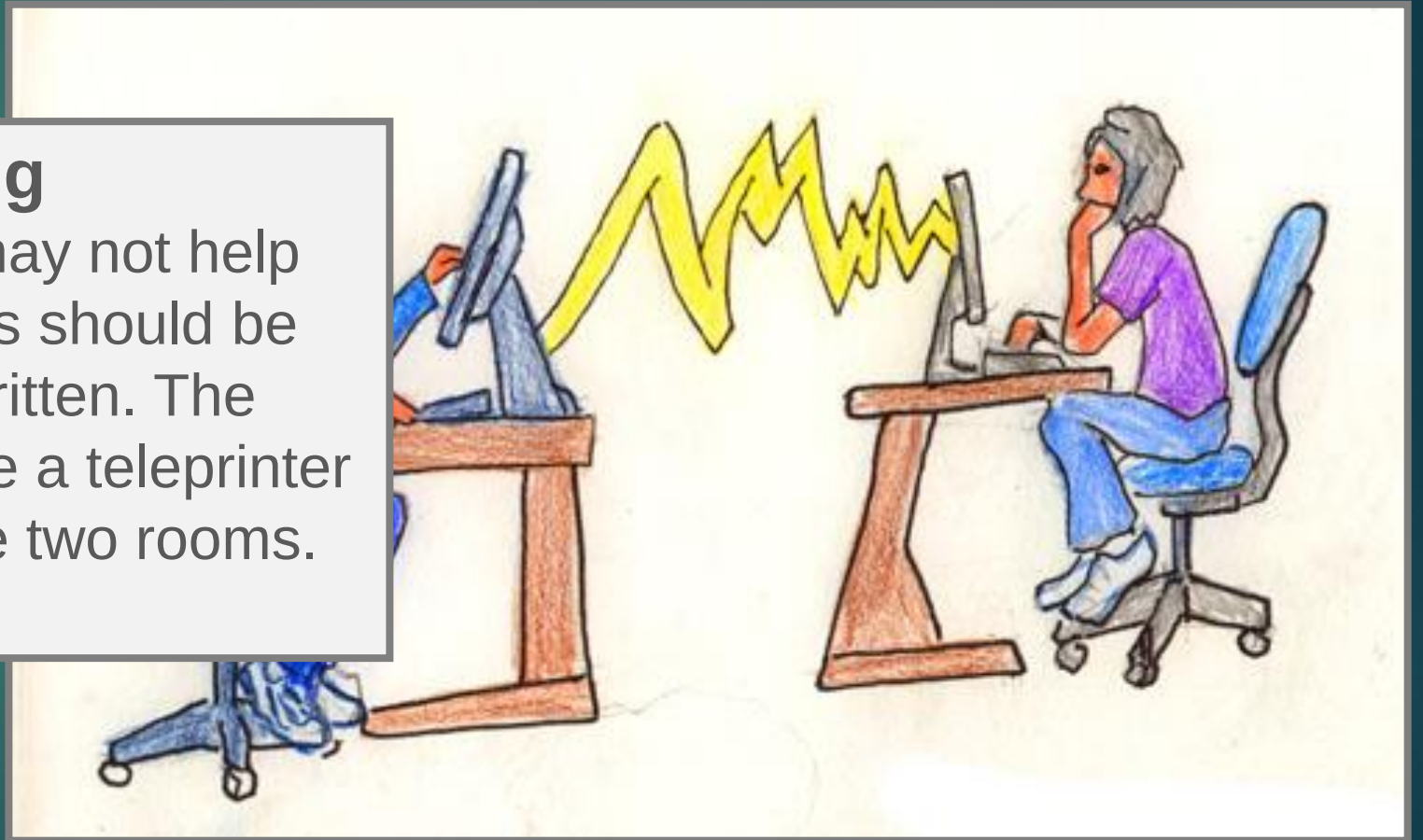
We now ask the question, “What will happen when a machine takes the part of A in this game?” Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, “Can machines think?”

Review

Origins/History

Chat or Text Messaging

In order that tone of voice may not help the interrogator, the answers should be written, or better still, typewritten. The ideal arrangement is to have a teleprinter communicating between the two rooms. (Turing, 1950)

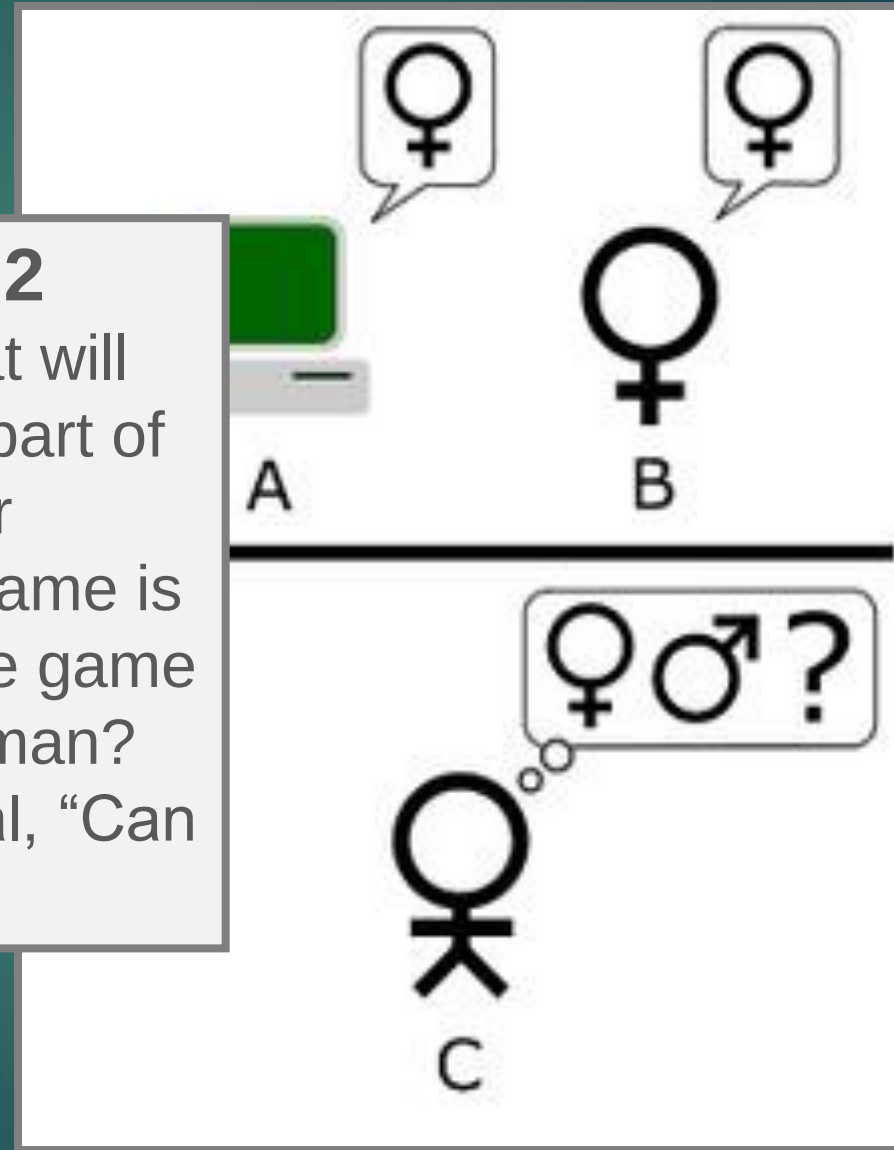


Review

Origins/History

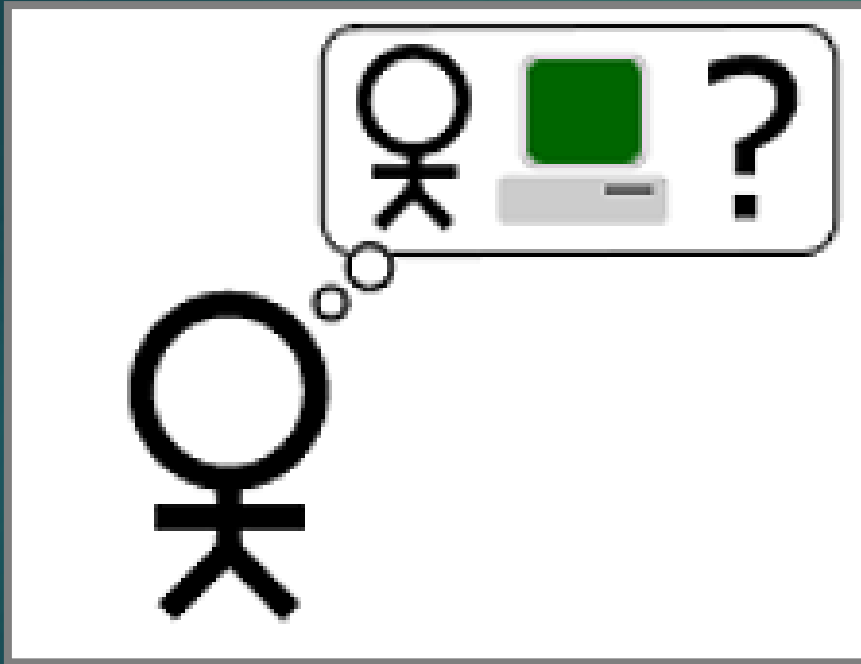
The Imitation Game – phase 2

We can now ask the question, 'What will happen when a machine takes the part of A in this game?' Will the interrogator decide wrongly as often when the game is played like this as he does when the game is played between a man and a woman? These questions replace our original, "Can machines think?" (Turing, 1950)



Review

Origins/History



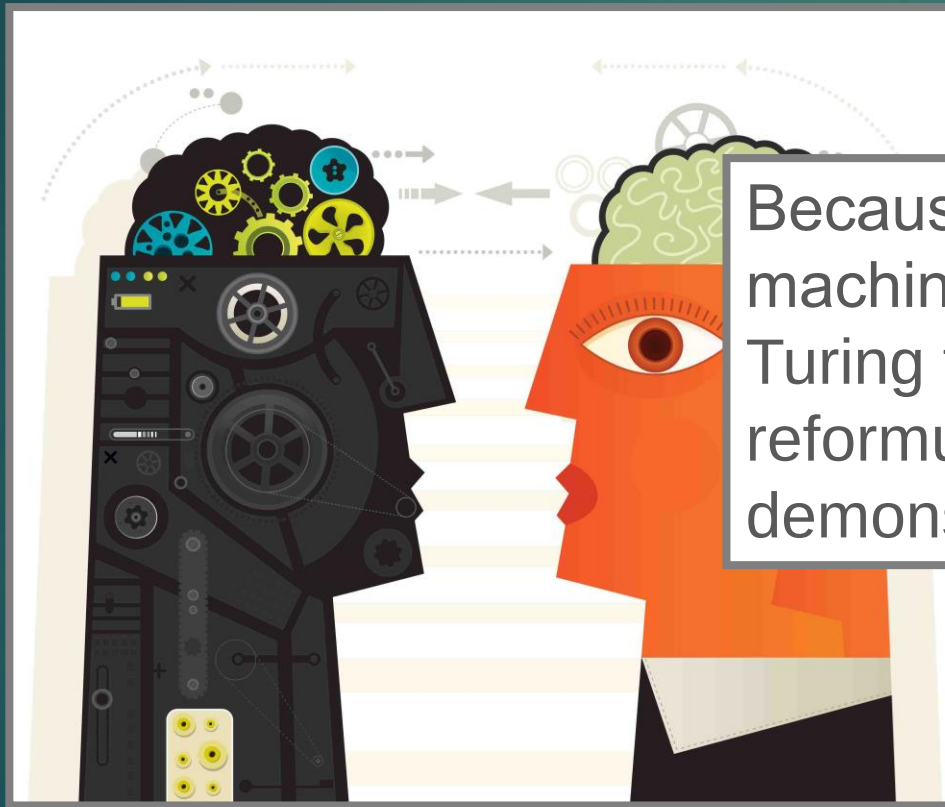
Turing's Conclusion

If a computer does in fact becomes capable of successfully imitating a human being, of either gender, in communicative exchanges with a human interrogator to such an extent that the interrogator cannot tell whether he is interacting with a machine or another human being, then that machine would need to be considered "intelligent."

Review

Origins/History

1. Communication is Key



Because the original question “Can machines think?” is considered by Turing to be too meaningless, he reformulates and refers the inquiry to a demonstration of communicative ability.

Review

Origins/History

1. Communication is Key

The Other Minds Problem

How does one determine whether something other than oneself—an alien creature, a sophisticated robot, a socially active computer, or even another human—is really a thinking, feeling, conscious being; rather than, for example, an unconscious automaton whose behavior arises from something other than genuine mental states? (Churchland, 1999)

MATTER and CONSCIOUSNESS

REVISED EDITION

Paul M. Churchland



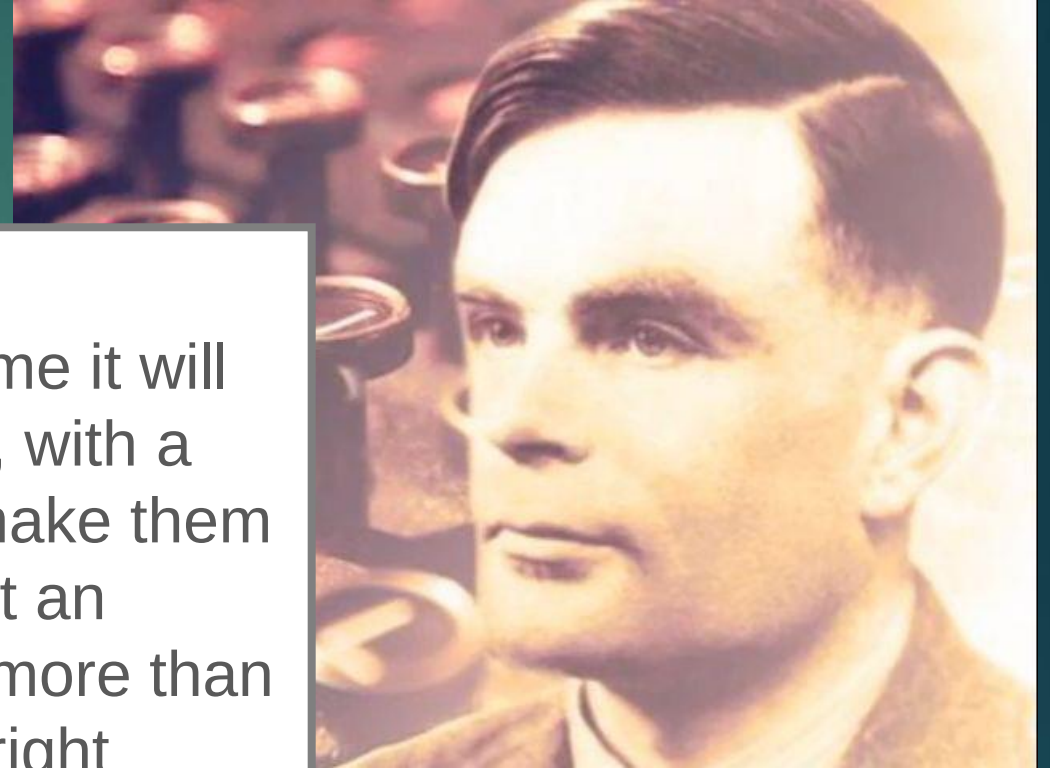
Review

Origins/History

2. Not Too Difficult

Tipping Point

I believe that in about fifty year's time it will be possible to program 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, 1950)



Review

Origins/History

2. Not Too Difficult

```
=====
EEEEEEEE L      IIIIII ZZZZZZZ AAA
E         L      I      Z
E         L      I      Z
EEEEEE   L      I      Z
E         L      I      Z
E         L      I      Z
EEEEEEEE LLLLLLL IIIIII ZZZZZZ  A  A
=====
ELIZA > (PLEASE TYPE IN ALL CAPS) WHAT'S YOUR NAME DEAR ?
AMIT
ELIZA > HI, I'M ELIZA. WHAT DO YOU WANT TO TALK ABOUT ?
AMIT > CAN I TALK ABOUT MY PROBLEM ?
ELIZA > SURE... !
AMIT > DUE TO ON GOING EXAMS IN COLLEGE, I HAVE A LOT OF STRESS.
ELIZA > PLEASE RELAX A LITTLE. SLEEP WELL.
AMIT > THANKS FOR YOUR ADVICE.
ELIZA > NO MENTION.
AMIT > BYE
ELIZA > BYE AND KEEP IN TOUCH...
=====
```

Joseph Weizenbaum - 1966

Computational Linguistics

D. G. BOBROW, Editor

Contextual Understanding by Computers

JOSEPH WEIZENBAUM
Massachusetts Institute of Technology, Cambridge, Mass.

Further, what I wish to report here should not be confused with what is generally called content analysis. In the present situation we are concerned with the fragments of natural language that occur in conversations, not with complete texts. Consequently, we cannot rely on the texts we are analyzing to be grammatically complete or correct. Hence, no theory that depends on parsing of presumably well-formed sentences can be of much help. We must do without heuristics and other such impure devices instead. The first program to which I wish to call attention is a member of a family of programs which has come to be known as DOCTOR. The family name of these programs is ELIZA. This name was chosen because of the resemblance to the Eliza of Pygmalion fame, and because the program is designed to speak increasingly well. DOCTOR causes the computer to respond roughly as would certain psychotherapists (e.g., Rogerian). ELIZA performs best when its human user is initially instructed to "talk" to it, via a terminal, of course, just as one would to a psychiatrist.

One reason for this mode of conversation because the psychiatric interview is one of the few examples of categorized dyadic language communication in which one of the participants is free to assume the pose of knowing nothing of the real world. If, for example, one tells a psychiatrist "I went for a boat ride" and he replies "Tell me about boats," one would not assume that he knew nothing about boats, but that he had some interest in so directing the subsequent conversation. It is important to note that this assumption is one made by the user. Whether it is realistic or not is an altogether different question. In any case, it has a crucial psychological utility in that it serves the speaker to maintain the sense of being heard and understood. The speaker defends his impression (which even in real life may be false) by attributing to his conversational partner a certain amount of background knowledge, insights and reasoning. But again, these are the speaker's contributions to the conversation. They manifest themselves inferentially in the interpretations he makes of the offered responses. From a purely technical programming point of view, the psychiatric interview has the advantage that it eliminates the need for storing explicit information about the real world.

A human speaker will contribute much to clothe his responses in vestments of plausibility. However, he will not defend his illusion (that he is being understood) against all odds. In human conversation a speaker will

Projects Agency, Department of Defense, under Office of Naval Research Contract Number N00014-67-1-102(01).

Review

Origins/History

Men are all alike
IN WHAT WAY

They're always bugging us about something or other
CAN YOU THINK OF A SPECIFIC EXAMPLE

Well, my boyfriend made me come here.

YOUR BOYFRIEND MADE YOU COME HERE

He says I'm depressed much of the time.

I AM SORRY TO HEAR YOU ARE DEPRESSED

It's true. I am unhappy.

DO YOU THINK COMING HERE WILL HELP YOU NOT TO

I need some help, that much seems certain.

WHAT WOULD IT MEAN TO YOU IF YOU GOT SOME HELP

Perhaps I could learn to get along with my mother.

TELL ME MORE ABOUT YOUR FAMILY

My mother takes care of me.

WHO ELSE IN YOUR FAMILY TAKES CARE OF YOU

My father

YOUR FATHER. WHAT RESEMBLANCE DO YOU SEE

You are not very aggressive but I think you don't want me to notice

WHAT MAKES YOU THINK I AM NOT VERY AGGRESSIVE

You don't argue with me.

WHY DO YOU THINK I DON'T ARGUE WITH YOU

You are afraid of me.

DOES IT PLEASE YOU TO BELIEVE I AM AFRAID OF YOU

My father is afraid of everybody.

WHAT ELSE COMES TO MIND WHEN YOU THINK OF YOUR

Bullies

DOES THAT HAVE ANYTHING TO DO WITH THE FACT THAT YOUR

BOYFRIEND MADE YOU COME HERE

“ELIZA created the most remarkable illusion of having understood in the minds of many people who conversed with it. People who know very well that they were conversing with a machine soon forgot that fact, just as theatergoers, in the grip of suspended disbelief, soon forget that the action they are witnessing is not “real.” This illusion was especially strong and most tenaciously clung to among people who know little or nothing about computers. They would often demand to be permitted to converse with the system in private, and would, after conversing with it for a time, insist, in spite of my explanations, that the machine really understood them.” – Joseph Weizenbaum 1976

Review

Origins/History

Kenneth Colby's PARRY (1972)

Unlike ELIZA, which was originally designed to emulate the conversational activities of a Rogerian therapist, PARRY (which was written in LISP) simulated a person with paranoid schizophrenia. In 1972, PARRY and a version of ELIZA that was named DOCTOR were connected over ARPANET (the precursor to the internet) and interacted with each other in a highly publicized demonstration at ICCO 1972 (International Conference on Computer Communications).

PARRY encounters ELIZA

The session recorded below actually happened on 18 September 1972 and is herewith reproduced for your entertainment.

ELIZA: Good Evening.

ELIZA: Tell me your problems. Please terminate input with a period or a question mark.

PARRY: People get on my nerves sometimes.

ELIZA: I am not sure I understand you fully.

PARRY: You should pay more attention.

ELIZA: Suppose you should pay more attention.

PARRY: You're entitled to your own opinion.

ELIZA: What makes you think I am entitled to my own opinion?

PARRY: It bothers me just to be around people in general.

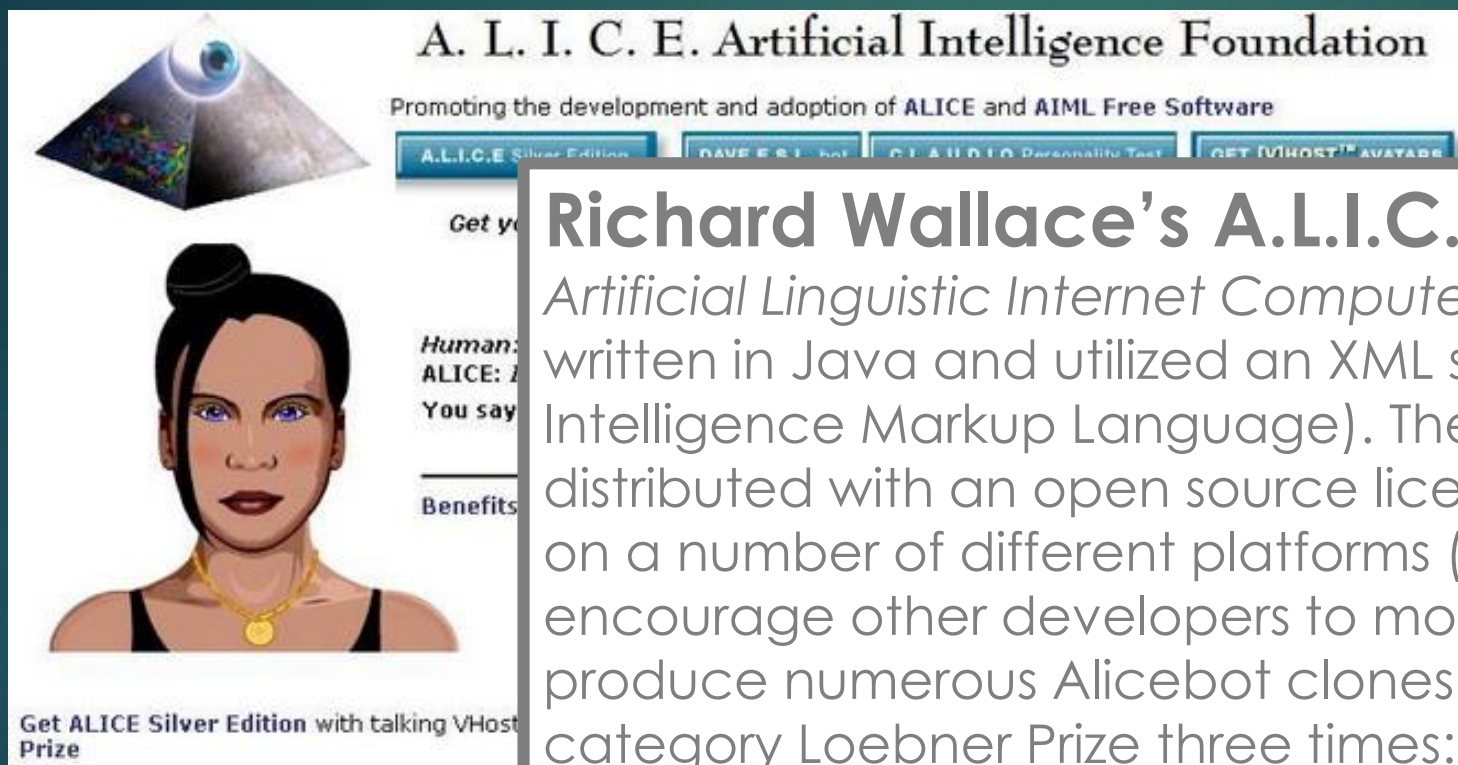
ELIZA: Please go on.

Michael Mauldin's CHATTERBOT (1994)

Unlike ELIZA and PARRY, which could only engage in conversational interactions with a single dedicated user, CHATTERBOT was designed to be an NPC in the virtual world of TinyMUD. Mauldin (1994, 16) explains, “We created a computer controlled player, a ‘Chatter Bot,’ that can converse with other players, explore the world, discover new paths through various rooms, answer players’ questions about navigation (providing the shortest-path information on request), and answer questions about other players, rooms and objects.” Since this initial demonstration in the virtual world of TinyMUD, bots of various kinds and configurations have become a standard feature in computer games and online virtual worlds

Review

Origins/History



Richard Wallace's A.L.I.C.E. (1995)

Artificial Linguistic Internet Computer Entity (A.L.I.C.E.) was originally written in Java and utilized an XML schema called AIML (Artificial Intelligence Markup Language). The aim of AIML, which was distributed with an open source license and has been implemented on a number of different platforms (i.e. Pandorabots), was to encourage other developers to modify the initial program and produce numerous Alicebot clones. A.L.I.C.E. won the restricted category Loebner Prize three times: in 2000, in 2001, and in 2004. This prize, initiated by Hugh Loebner in 1991, is "the first formal instantiation of the Turing Test" (Loebner 2017). Additionally, filmmaker Spike Jonze's has credited his personal experience with an Alicebot as the source of inspiration for the film *Her*.

Review

Origins/History

Pandorabots - AIML

udc

1

<?xml version="1.0" encoding="UTF-8"?>

2

<aiml>

3

4

5

<category>

6

<pattern>*</pattern>

7

<template>

8

<random>

9

What whas that?

10

I don't understand.

11

Come again.

12

</random>

13

</template>

14

</category>

15

16

<category>

17

<pattern>hi</pattern>

18

<template>hello world.</template>

19

</category>

20

21

<category>

22

<pattern>Hey ^</pattern>

23

<template>Leave me alone</template>

24

</category>

25

26

<category>

27

<pattern>What is your name</pattern>

28

<template>I am a bot. Thank you for your interest</template>

29

</category>

30

31

<category>

32

<pattern>Do you take bitcoin</pattern>

33

<template>I do not deal in sham currencies</template>

34

</category>

35

36

</aiml>

37

Status: Saved

Editing: udc.aiml

No. of Items: 5

Last Modified: 3/7/2018,
7:22:25 PM

Load
Order: 1



Review

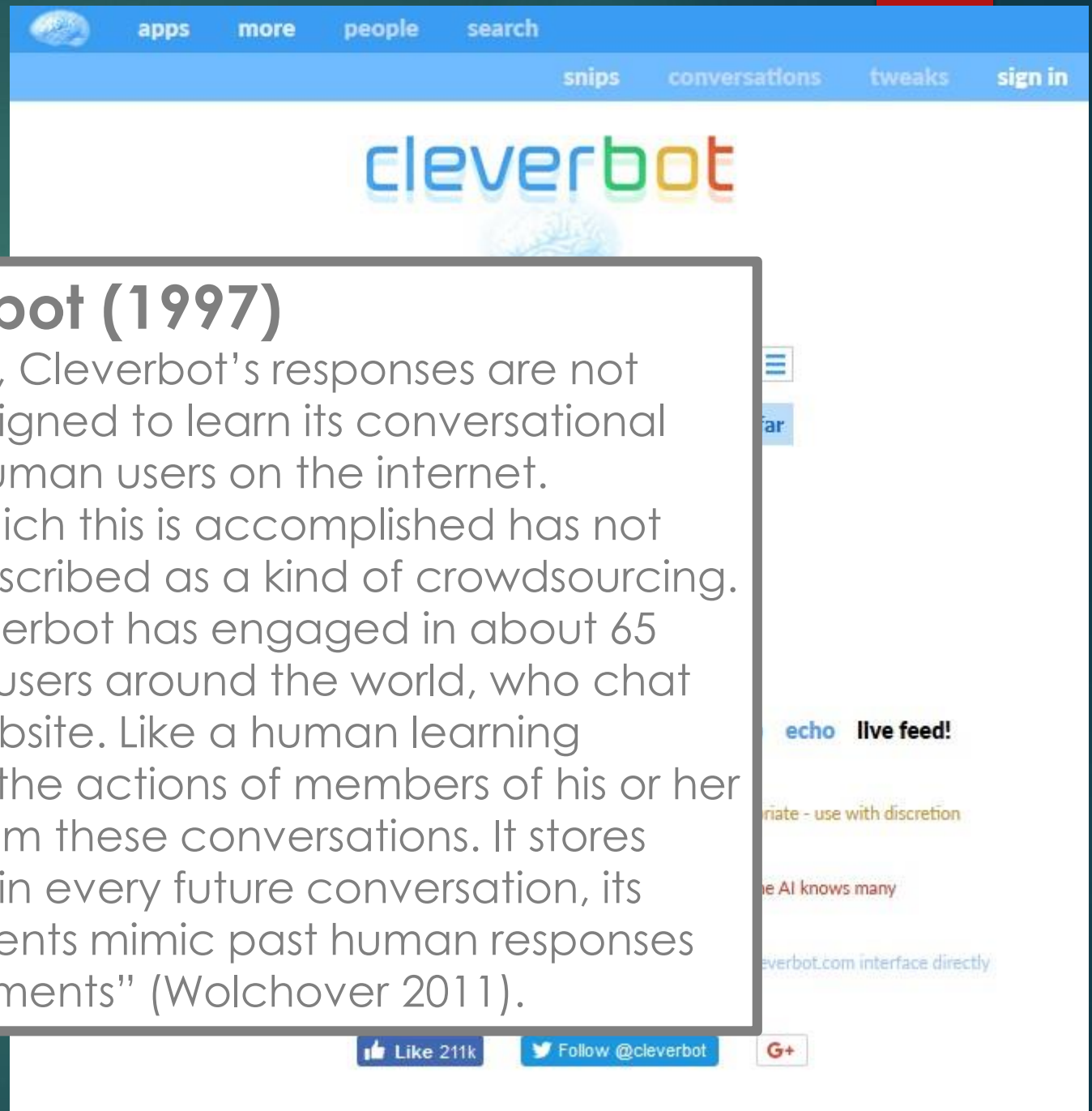
Origins/History

Rollo Carpenter - Cleverbot (1997)

Unlike previous chatterbot systems, Cleverbot's responses are not prescribed. Instead, the bot is designed to learn its conversational behaviors from interactions with human users on the internet.

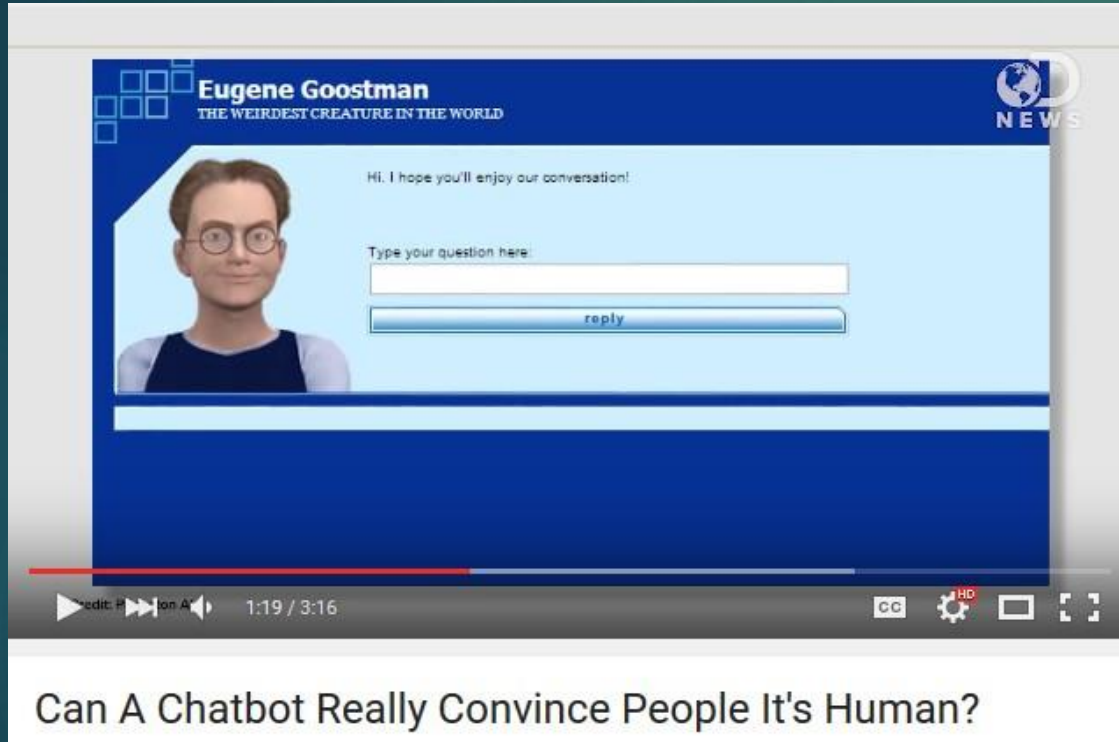
Although the exact method by which this is accomplished has not been made public, it has been described as a kind of crowdsourcing.

"Since coming online in 1997, Cleverbot has engaged in about 65 million conversations with Internet users around the world, who chat with it for fun via the Cleverbot website. Like a human learning appropriate behavior by studying the actions of members of his or her social group, Cleverbot 'learns' from these conversations. It stores them all in a huge database, and in every future conversation, its responses to questions and comments mimic past human responses to those same questions and comments" (Wolchover 2011).



Review

Origins/History



Can A Chatbot Really Convince People It's Human?

<https://www.youtube.com/watch?v=njmAUhUwKys>

Home Page of The Loebner Prize in Artificial Intelligence

"The First Turing Test"



What is the Loebner Prize?

The Loebner Prize for artificial intelligence (AI) is the first formal instantiation of a [Turing Test](#). The test is named after [Alan Turing](#) the brilliant British mathematician. Among his many accomplishments was basic research in computing science. In 1950, in the article [Computing Machinery and Intelligence](#) which appeared in the philosophy journal *Mind*, Alan Turing asked the question "Can a Machine Think?" He answered in the affirmative, but a central question was: "If a computer could think, how could we tell?" Turing's suggestion was, that if the responses from the computer were indistinguishable from that of a human, the computer could be said to be thinking. This field is generally known as natural language processing.

In 1990 [Hugh Loebner](#) agreed with The Cambridge Center for Behavioral Studies to underwrite a contest designed to implement the Turing Test. Dr. Loebner pledged a Grand Prize of \$100,000 and a Gold Medal (pictured above) for the first computer whose responses were indistinguishable from a human's. Such a computer can be said "to think." Each year an annual cash prize and a bronze medal is awarded to the **most** human-like computer. The winner of the annual contest is the best entry relative to other entries that year, irrespective of how good it is in an absolute sense.

Review

Projections/Future

CHATBOTS

Five Reasons Why Chatbots are the Future of Customer Service

With improved technology, nuanced communication and greater reliability, chatbots will allow businesses to achieve organizational goals swiftly

215
shares



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NEXT ARTICLE



Image credit: Shutterstock

TOP 5 CHATBOT INSIGHTS FOR THE FUTURE

2020



85%

Customer Interactions will be handled without a human agent

Gartner Report

2021



50%

of Enterprises will spend more on chatbots than mobile apps

Gartner Report

2022



\$8 Bn.

in Cost Savings from the use of Chatbot conversations

Review

Critical Questions

1. Communication

- Can chatbots communicate?
- Chatbots are computer programs designed to exhibit conversational behaviors. But is this communication? (And what do we mean by “communication” in this context)

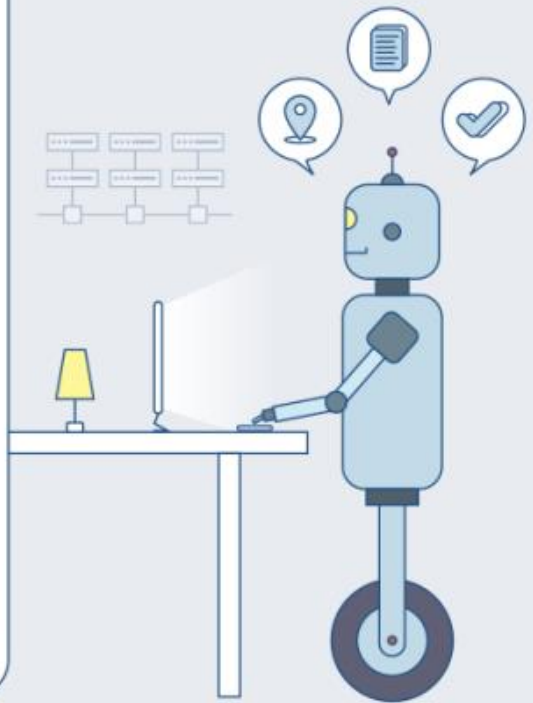
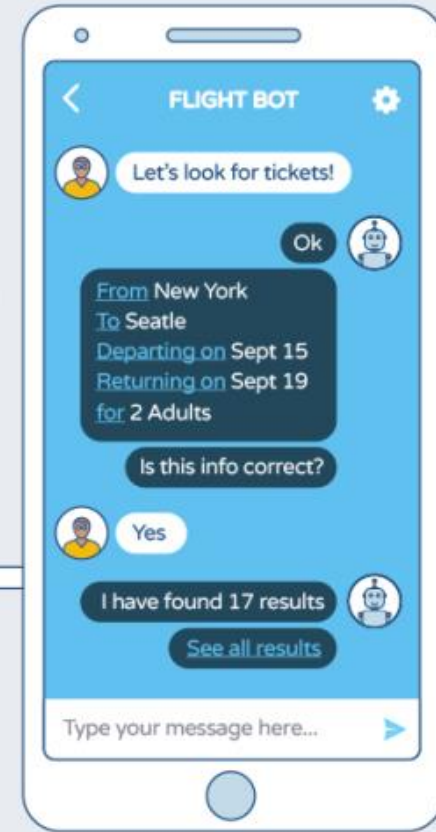


Review

Critical Questions

2. Employment

- Will chatbots displace/replace human workers?
- How does/will this effect the discipline of communication?
- How can/should we respond to this opportunity/challenge?



Review

Critical Questions

3. Deception

- Are chatterbots deceptive?
- Robert Epstein – Fell in love with and had an online affair with a chatbot called Ivana. Is this a form of deception? Is it fraud?

(perspectives)

From Russia, with Love

How I got fooled (and somewhat humiliated) by a computer

BY ROBERT EPSTEIN

IT ALL STARTED with an online dating service. I was looking for a date. Like most men (we dogs), I made my initial judgment based largely on a photo. Yes, that's shallow, and when one is online, it's also fairly stupid because it's all too easy to fake.

She blew it. She showed a slim, attractive supposedly living in Russia from me. She didn't look like herself, and her English suggested that she was a migrant. That's okay, I thought, of my grandparents' generation after all.

She was a variation on what I had been more of a while ago, this moniker would be *The Fabulous Desdemona* is a 2001 French film by Tautou as Amélie, a woman who has a unique way of communicating with others. Hmm. I got to my e-mail quite late and also admitted that I was in Russia, not California.

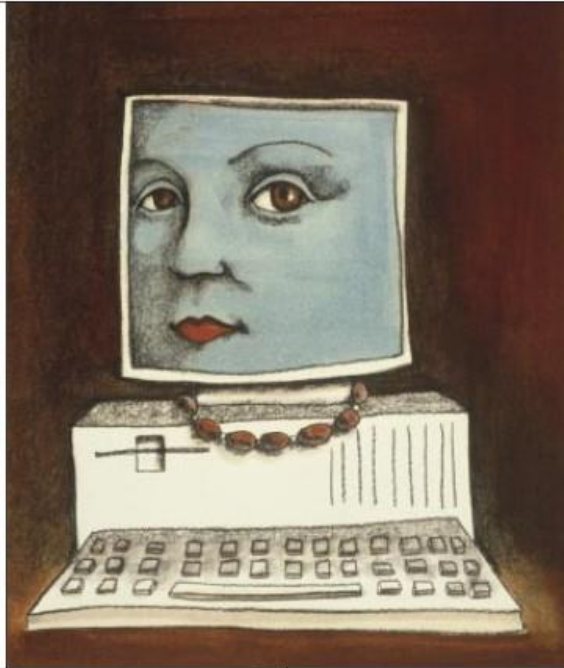
Normally I find that kind of distance daunting, but her photos were so attractive and her e-mails so warm that I continued to correspond with her. She sent me her real name; I'll call her "Ivana."

Here is an example of the kind of e-mail I received from her:

I have told to mine close friends about you and to my parents and them happy that I really interested someone and regardless of the fact that not here in Russia and all from

them happy for me, that I have met you. I have very special feelings about you ... It—in the same way as the beautiful flower blossoming in mine soul ... I only cannot explain ... but I confident, that you will understand me so I wish to know that makes you, think, and I shall wait your answer, holding my fingers have crossed ...

After two months of e-mails I started to get, well, not suspicious exactly but at least concerned. Online dating can be a slow, frustrating process [see "The Truth about Online Dating," by Robert Epstein; SCIENTIFIC AMERICAN MIND, February/March 2007]. Our romance was progressing, especially slowly: no phone calls, very vague talk on Ivana's part about get-



CHRIS RASCHKA/Getty Images

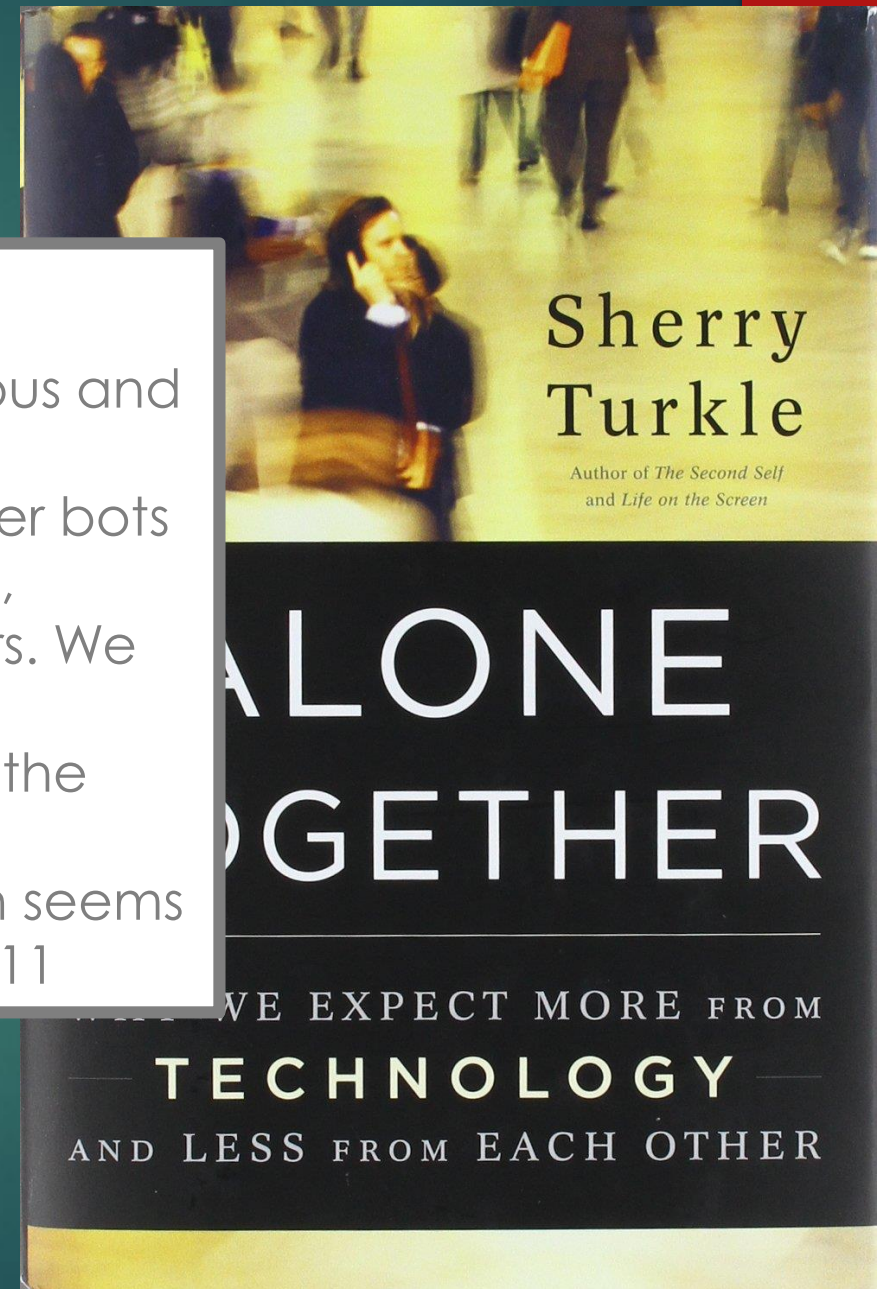
(After **two months of e-mails** I started to get, well, not suspicious exactly but at least concerned.)

Review

Critical Questions

4. Social Problems

- Are interactions with chatbots dangerous and antisocial?
- “I find people willing to seriously consider bots not only as pets but as potential friends, confidants, and even romantic partners. We don’t seem to care what their artificial intelligences ‘know’ or ‘understand’ of the human moments we might ‘share’ with them...the performance of connection seems connection enough.” – Sherry Turkle 2011



Today

► Robots



Kate Darling – Ethical issues in human-robot interaction | The Conference 2015

8. *The Machine Question: Can or Should Machines Have Rights?*

DAVID J. GUNKEL

not, we currently occupy the world decades—a world populated by and intelligent artifacts. These artificial doing everything. We chat with them es, we collaborate with them at work, us manage all aspects of our increas- nes are already here, but our under- ethical consequences of this “robot d of considerable development.

morality (Wallach & Allen, 2009), 2011), and robot ethics (Lin, Abney, ion on the decision-making capabili- s and the consequences of this behav- l institutions. We have, for instance, rning Google’s self-driving automo- called the “trolley problem” (Chip- We have evaluated efforts to engineer o value human life or what is often strom, 2014; Rubin, 2011; Yudkow- s to a seemingly inexhaustible supply oymment” and the potentially adverse viduals and human society (Barrett, 13).

owever, is a consideration of the other side of the issue—that is, the question of machine moral standing. As these mechanisms come to play an increasingly important role in contemporary

Preview

- ▶ Conclusions & Projections
 - ▶ Future Opportunities
 - ▶ Course Evaluation
 - ▶ Final Exam Study Guide