

After Death: Big Data and the Promise of Resurrection by Proxy

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Overview

- The Problem: Simulating Deceased People
- Motivation
- Related Work
- Disclaimers
- Factors/Challenges
- Ethical and Moral Questions/Dilemmas
- Conclusion

The Problem

- Making simulations of deceased people
- Since nowadays people leave large digital traces online it is possible to simulate some aspects of their personality and behaviors
- With more advanced data capturing technologies it will be possible to make even more convincing simulations
- How will this be done and what are its implications?

Big Data meets Deep Data

- “I was into data before it was big.”
- The Machine Learning Hipster
- People leave digital traces in all sorts of environments e.g., text messages, email, Facebook, Search, movement data etc.
- This data can be used as a proxy for simulating how they would behave in a particular situation
- 80/20 rule: If one can predict 80% of a person’s behavior in 80% of the cases then it’s a win
 - Downside: The Uncanny Valley

Motivation

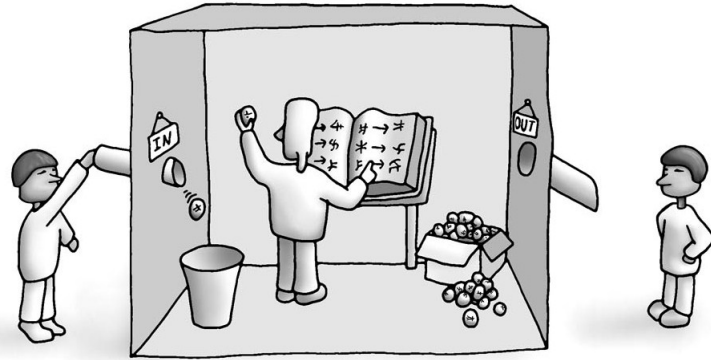
- Loss, Bereavement: Memories and physical artifacts help us cope with loss
- The loss of loved ones deprives one of meaningful experiences that one could have had if they were alive
- A simulation of the deceased be thought of as a proxy of having new experiences *of* the deceased
- Personal Reasons: The loss of my father and the birth of my child

Revisiting the Imitation Game

- **Imitation Game:** If you know enough about a person then you can pretend to be them
- **Turing Test:** If a computer can convince a human that it is a human then it possesses intelligence
- **Chinese Room Experiment:** A seemingly dumb system with well defined I/O rules can converse in a language without “understanding” it
- **Lovelace Test:** The Turing Test with Cognitive Mapping to how humans think

Related Work

- Turing Test
- Lovelace Test (Bringsjord 2003)
- The Chinese Room
- The Life Logging Project (Microsoft)
- Harry Collins (Gravitational Physics Social Experiment)
- Work on Predicting Real World Characteristics of People



Related Work: Eliza

ELIZA: Is something troubling you ?

YOU: I feel alone and sad

ELIZA: Do you enjoy feeling alone and sad ?

YOU: not really

ELIZA: Tell me more about that.

YOU: I have no friends or family who care about me

ELIZA: That's quite interesting.

YOU: That sounds amusing to you

ELIZA: What are your feelings now ?

YOU: depressed

ELIZA: Does talking about this bother you ?

YOU: not really I prefer to talk about it

ELIZA: Can you elaborate on that ?

YOU: I would like to talk about it but I do not have anyone to talk to

ELIZA: Do you say you would like to talk about it for some special reason ?

YOU: It helps me feel better

ELIZA: What does that suggest to you ?

Sometimes it is not very difficult to fool people especially if they are willing to believe

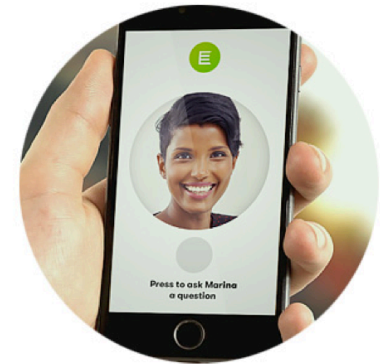
Related Work: Digital Bereavement

- People leave digital traces on the internet; all people die eventually
- These digital traces become a source of memory and bereavement
- Virtual Memorials on MySpace (Brubaker 2011) and Facebook (Church 2013)



Related Work Continued

- Emulating Style of authors and painters (Gatys et al 2016)
- Eterni.me: Save interactive memories for posterity
- Jacquelyn Morie's work on the *Ultimate Selfie*



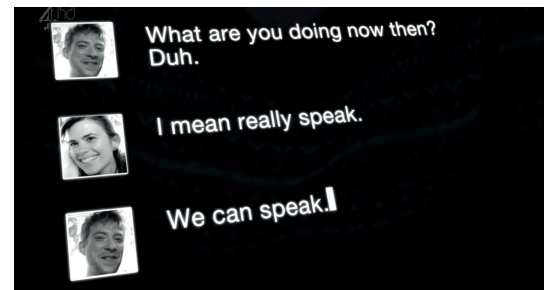
You could live on forever as a digital avatar?

- » And people in the future could actually interact with your memories, stories and ideas, almost as if they were talking to you?

Eterni.me

Related Work: Science Fiction

- BBC's **Be Right Back** (*Black Mirror*)
 - The simulation breaks down when encountering an unfamiliar situation
- **Her**
 - About a man who fall in love with the OS in this cellphone
- **Goodbye for Now** by Laurie Frankel
 - An company offers a way for people to say goodbye to deceased loved ones

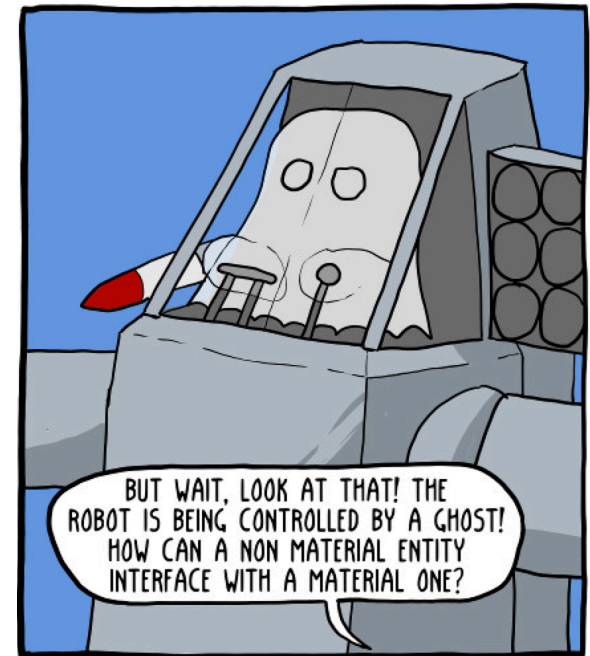


Imitation Game Revisited

- **Imitated:** The person/entity to be imitated
- **Imitator:** The person/entity which is imitating
- **Interlocutor:** The person who interacts with the imitator to determine if they are interacting with a factitious entity or a real person
- **Medium of Communication:** The medium through which interaction is facilitated
- **Cognitive Capacity of the Interlocutor**
- **Duration:** The duration of the interaction
- **Emotional attachment**

Disclaimer: Claims NOT being made

- The simulation is a person with violation
- Simulating human consciousness
- *Actually* resurrecting people
- The simulation has experiences
- The simulation has a personal identity
- There is a ghost in the machine



Source: Existential Comics

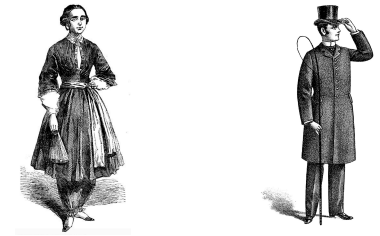
Disclaimer: Claims being made

- Being agnostic to the architecture used in the simulation
- The internal state of the person being simulated does not matter
 - A giant lookup table table is sufficient if it can do the job
- Our focus should be on the interlocutor
 - This can lead to people “cheating” or using short cuts. So what?
- The ascription of intelligence to the system is irrelevant

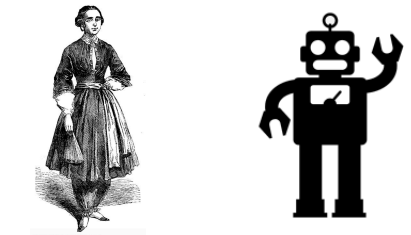
Conditions for a Simulacrum

- Alice and Bob have an interaction
- It results in one set of experiences/impressions for Alice and another set of experiences for Bob
- Neither has access to the other's experiences
- It will not make a difference if Bob is a human or robot or alien
- What matters is Alice's experience of Bob (Behavioralist View)

Alice & (human) Bob



Alice & (robot) Bob



Alice & (alien) Bob



Factors: Quality of Interaction

- Prior interactions
- Frequency of interactions
- Nature of relationship
- Number of entities involved
- Context
 - John Lennon interacting with the media vs. interacting with his family
- Deep interactions are harder to emulate, require more data and relatively sophisticated methods



Factors: Lifecycle Considerations

- What are Lifecycle Considerations?
People change over time
- Company (family, friends, acquaintances etc), interests, jobs, physical characteristics change
- Life Changing Events: School, Marriage, Kids, moving across vast distances, retirement etc.
- Simulating Donald when he is 10 years old is different from simulating him when he is 50



Factors: Data Granularity

- The granularity of the simulation determine the granularity of data
- Simulating texting at different granularities
 - Content of texts
 - Sophisticated models with NLP, reinforcement learning
 - Time and frequency of texts
 - HMM and related methods for modeling
 - Aggregate number of texts
 - Simple time series prediction models

Factors: Challenges

- Context, context, context
 - A telemarketer talking to potential clients vs. talking to his children
- Taking a gradualist approach
 - Start with simulating texts
 - NLP and HMM based methods
 - Style Generation for Writing, Music, Artwork
 - Deep Learning Approaches (DeepStyle)
 - Ambulatory Systems/ Virtual Reality
 - Oculus Rift, HoloLens
- Embodiment: Most meaning interactions are embodied

Evaluation

- How would one evaluate such a system?
- Precedents: Loebner Prize
- Personal biases
 - Tendency to ascribe motive to systems
 - Tendency to default to non-ascription
- Proposals
 - One-to-One Evaluation by Many
 - Many-to-Many Evaluation
 - Comparison of Historical Transcripts

Ethical/Moral Questions: Consent

- Does simulation require consent?
- Legal Opinions:
 - You cannot copyright your simulation
 - Copyright on likeness of a person handled by the deceased person's estate
 - Do people have a right to be not simulated?

Ethical/Moral Questions: Bereavement

- Do I have to mourn as much if I can just open a computer terminal and just 'talk' to grandpa after he is dead?
- What happens when there is no goodbye with the deceased
- Will we start thinking of the deceased as not having completely died but in partial paralysis that limits their interactivity

Ethical/Moral Questions: On Living

- Why deal with messy relationships?
 - When you can just mute your loved ones
 - Simulate idealized versions of your relationships
- Examples from the Hikikomori culture in Japan
- Interacting with Simulations
 - Humans maybe hardwired to be animists; Can small children distinguish between what real and simulated
 - When are children said to have such discernment qualities? Does it even matter?

Ethical/Moral Questions: Intrinsic Meaning

- Even if one can create such simulations, is it ethically right to do so? *Consent*
- Simulations like people will have to evolve over time, at what point we are no longer talking with the 'same' person

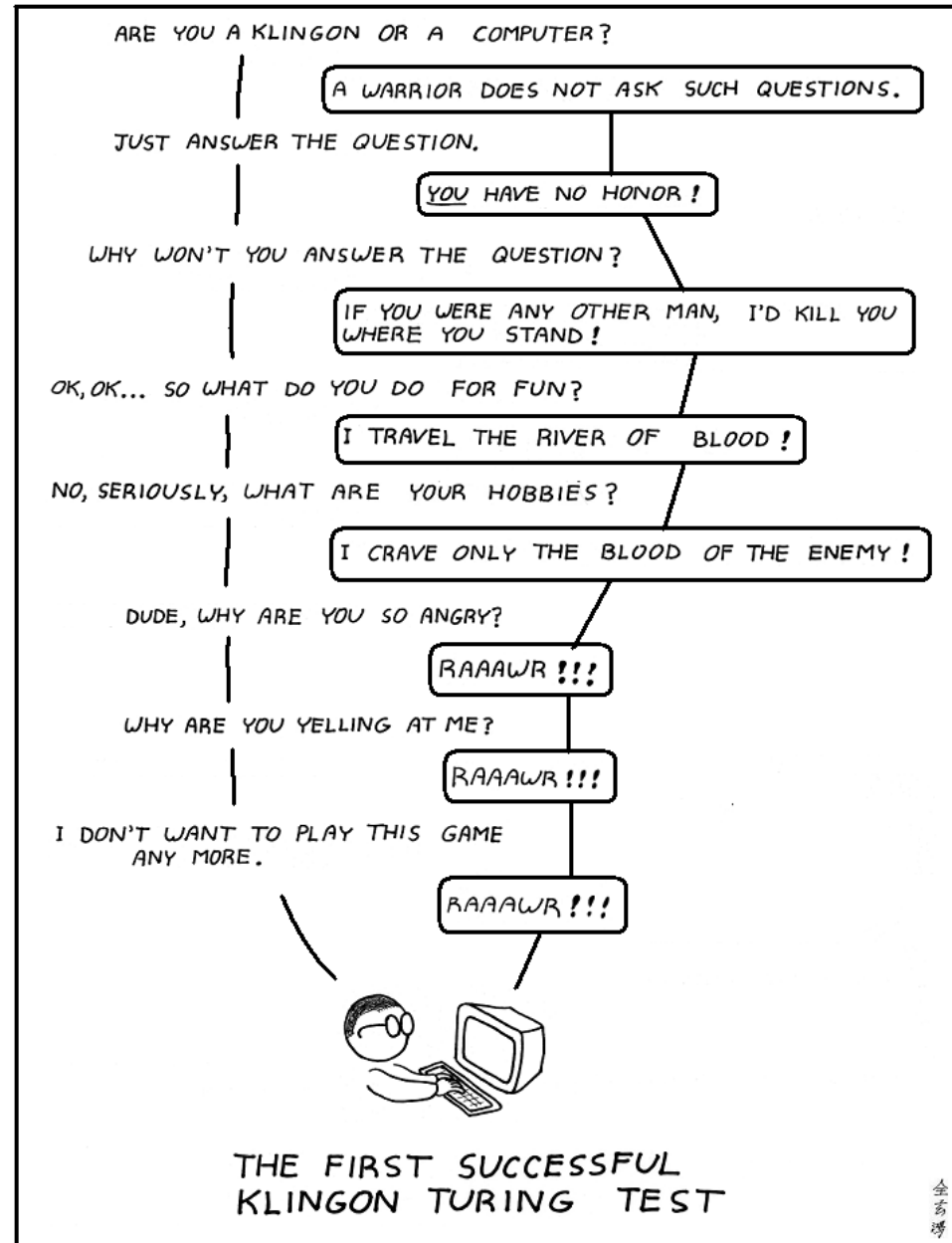


Conclusion & Future Work

- Current and near future technologies give us the possibility of creating simulations of deceased people
- Such technologies have the potential to radical alter how we relate to the dead and how we relate to one another
- The legal, ethical and moral questions are still open

Questions Comments

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Appendix

Enabling Technologies

- Life-logging
- Quantified Self
- Information Sharing Services
 - Facebook
 - Twitter
 - Google
- Cell phone data
- Auto data
- Text data (notes, letters, emails, articles)
- Gesture and body language data

