



Foto: Thomas Jösek

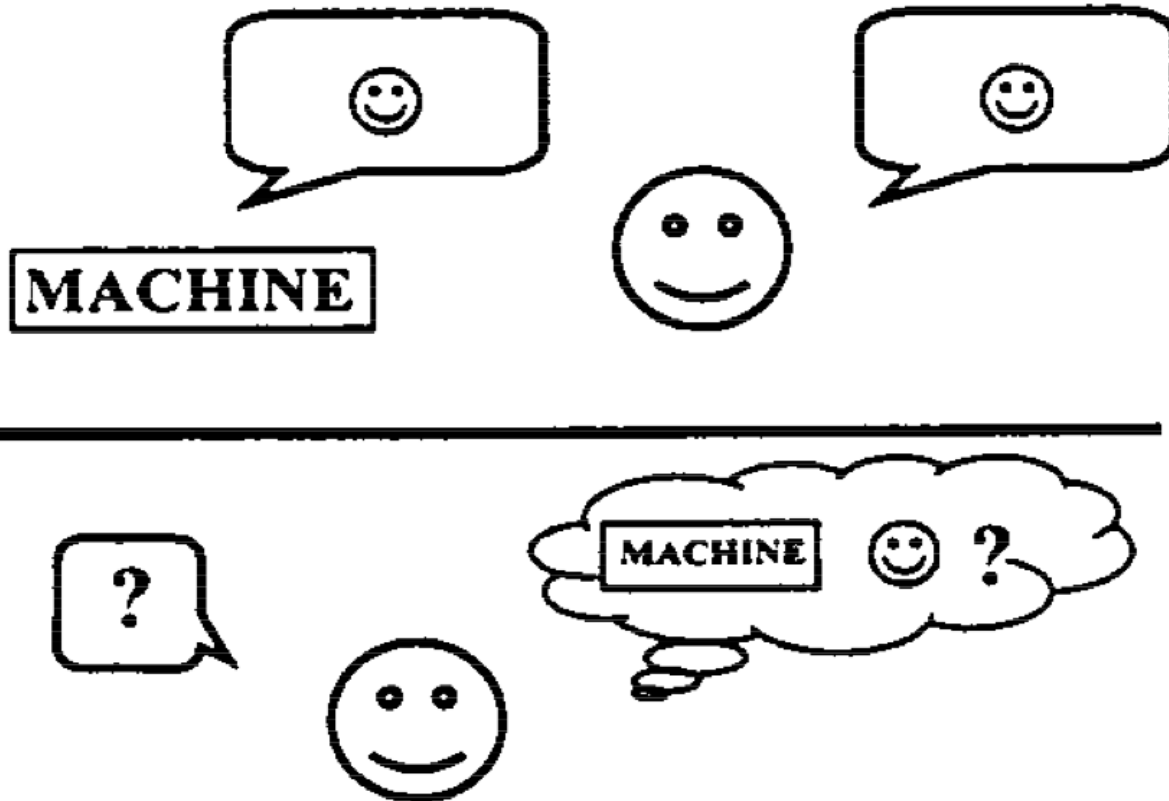
Media Transformation

Lecture Winter term 2024–25, week 4. Interactivity

Interactivity

- The quality or condition of interaction
- Can be higher or lower
- Human to human interactivity
 - communication between people
- Human to computer interactivity
 - the artefact does not desire communication
 - interactive behaviour experienced by human

The Turing test



- Alan Turing, 1950
- Testing the machine's ability to show intelligence

Saygin, A. P.; Cicekli, I.; Akman, V. (2000), "Turing Test: 50 Years Later" (PDF), *Minds and Machines*, 10 (4): 463–518

Dialogism

- Dialogue between people talking
- Dialogue with historical sources
- Dialogue with natural environment
- Text and text interpreter
- Bakhtin: literary texts are dialogical
 - intertextuality
- Forming thoughts through dialogue
 - learn what we know by saying it

Affordances

- Based on the verb “to afford” (Gibson)
- Complementarity animal—environment
- Relative to the animal
 - surface of the lake for a flea and for a dog
- Intention irrelevant
 - a tree is shelter against the rain
 - this is not the purpose or intention of the tree

In dialogue with our surroundings

- Using affordances
 - natural
 - language: potentials in concrete utterances (Linell)
- The language is part of the dialogue
- Context of interaction
- Interaction at many levels
 - with each others
 - with tools
 - with landscape...

Grounding problem

- General Problem Solver (1957)
 - could solve all problems... when they were formalised
 - symbol based solutions
- How can AI systems be connected to the world?
 - complexity of representation
- How do humans connect to the world?
 - no representation (ecological understanding)
- *Can one connect formal symbol systems to an external reality?*

Interhuman communication

- Talking to each other
- Happens in context
- Significant shared background
 - common affordances
- Face to face
 - sound, sight, smell, touch, ...
- Mediated
 - narrower in varying degree

Intercultural communication

- Less common affordances
 - language differences
 - cultural differences
- Emotional differences
 - culture and the individual
- Common languages
 - football
 - laughter
 - rituals
- Communication always possible
 - but can be hard

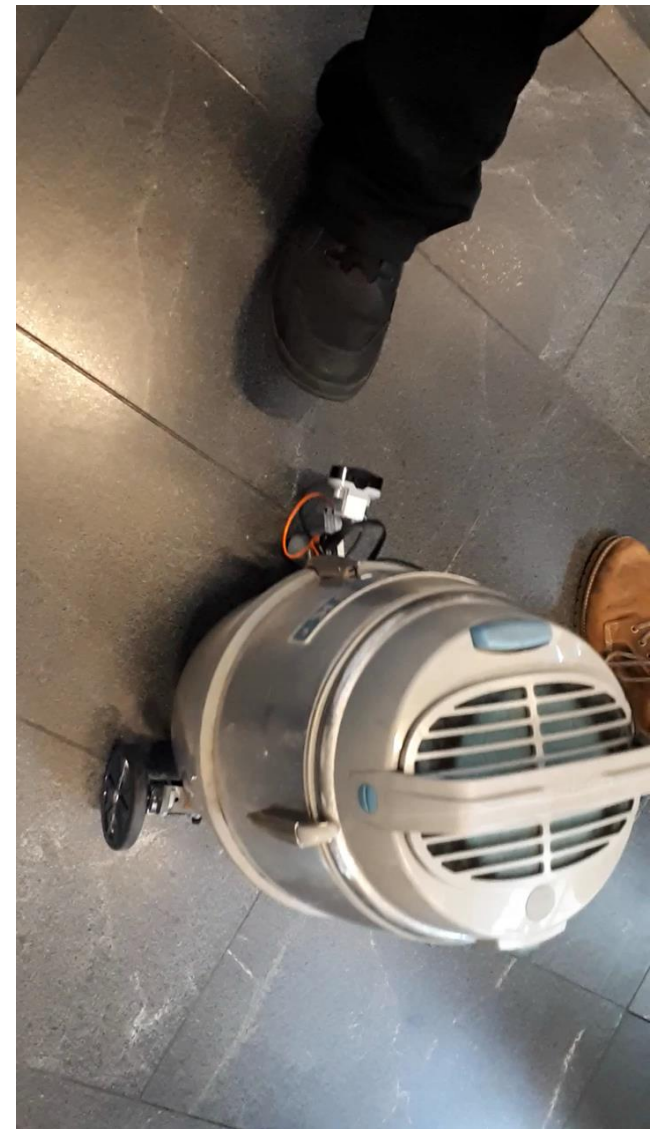
Interspecies communication

- Human to animal
- Animal to animal
- Animal to plant
- Less symbolic
 - words play a different role
- Intentionality unclear
 - does the dog want to interact with me?
 - the tree?

Robots

- Robots move in the world
 - do not need representations
- Interaction based algorithms
 - robots in the physical world
 - can use affordances
- Robots in interaction with the environment
- The foundation problem is bypassed

Christiansen, H., Hoby, M., & Lindelof, A. M. (2019). „Robot Gestalts in Staged Performances: Poster abstract.” Poster session præsenteret på 4th Digital Humanities in the Nordic Countries, Copenhagen, Danmark.



Tools and animism

- Beyond (behind) AI/robots: „simple” tools
- Auto-movement and animism

“**These technical distinctions are fully understood** by Nuaulu who have wondrous ways of **fixing malfunctioning engines**. But the combined features that give them quasi-autonomy also give them the vitality that is more than the combination of their parts, and which crosses a boundary that **places them with other biological and quasi-biological entities**. Humanly operated machines may have agency, but **engines act ‘intentionally’**. When Basil Fawlty is thrashing the car he is exacting revenge on an entity that has ‘stalled just once too often’. It has willfully disobeyed its owner and driver. We laugh because we recognize that all of us, while **fully accepting the technical reasons for mechanical failure, insist on treating the vehicle as if it were a sentient person who is deliberately contrary.**”

Ellen, R. (2016) „Tools, agency and the category of ‘living things’” in Des êtres vivants et des artefacts, Paris („Les actes”).

Animals and tools

- Interaction
 - animal—tool?
 - animal—human?
- Usability
 - for animals
 - for humans
- Intention
 - in humans
 - in animals
 - in the tool?



Communication with the dead

- Religion/mythology
- Literature
 - “Sapho speaks to me”
 - (but do I reply?)
 - model reader → author instance in text
- Talking to fictional persons
- Art
 - falling in love with a painting – or the motive?
- Virtual reality
 - talking to historical persons?

Cyberspace

- „The matrix has its roots in primitive arcade games [...] in early graphics programs and military experimentation with cranial jacks. [...] Cyberspace. A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts . . . A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the nonspace of the mind, clusters and constellations of data. Like city lights, receding. . .“
- „She was quite a visionary. She imagined us in a symbiotic relationship with the AI's, our corporate decisions made for us. Our conscious decisions, I should say. Tessier–Ashpool would be immortal, a hive, each of us units of a larger entity.”
- „Wintermute was hive mind, decision maker, effecting change in the world outside. Neuromancer was personality. Neuromancer was immortality. Marie-France must have built something into Wintermute, the compulsion that had driven the thing to free itself, to unite with Neuromancer.”

Gibson, W. (1984). *Neuromancer*. New York, Ace Books.

Swarm intelligence and symbiosis

- Bees
- Micro-organisms in human bodies
 - especially in the digestion system
- Human-horse
 - work
 - control
 - communication
- Human-reindeer
 - pastoralism
 - detailed control
 - general direction
- Ants – aphids
 - communication
 - control
- Intentionality



https://influentialpoints.com/Gallery/Aphis_viburni_viburnum_aphid.htm

Interaction and control

- Mario Luraschi:
 - <https://www.youtube.com/watch?v=9dIRV6Z8xgY>
- Kenzie Dysli und Doma Vaquera
 - <https://www.youtube.com/watch?v=uaagPXIBowo>
- Bujador, 7-year-old black lusitano stallion for sale
 - <https://www.youtube.com/watch?v=d4IBuL2Nqd8>

Humans and computers

- Tool usage
- Interactivity
- Controlling
- Being controlled
- Steering
- Being steered

Seeing through manipulation

- As programmers we can see through manipulation
 - making the world real by interacting with it (Piaget)
- Tool users
 - response
 - feedback mechanisms

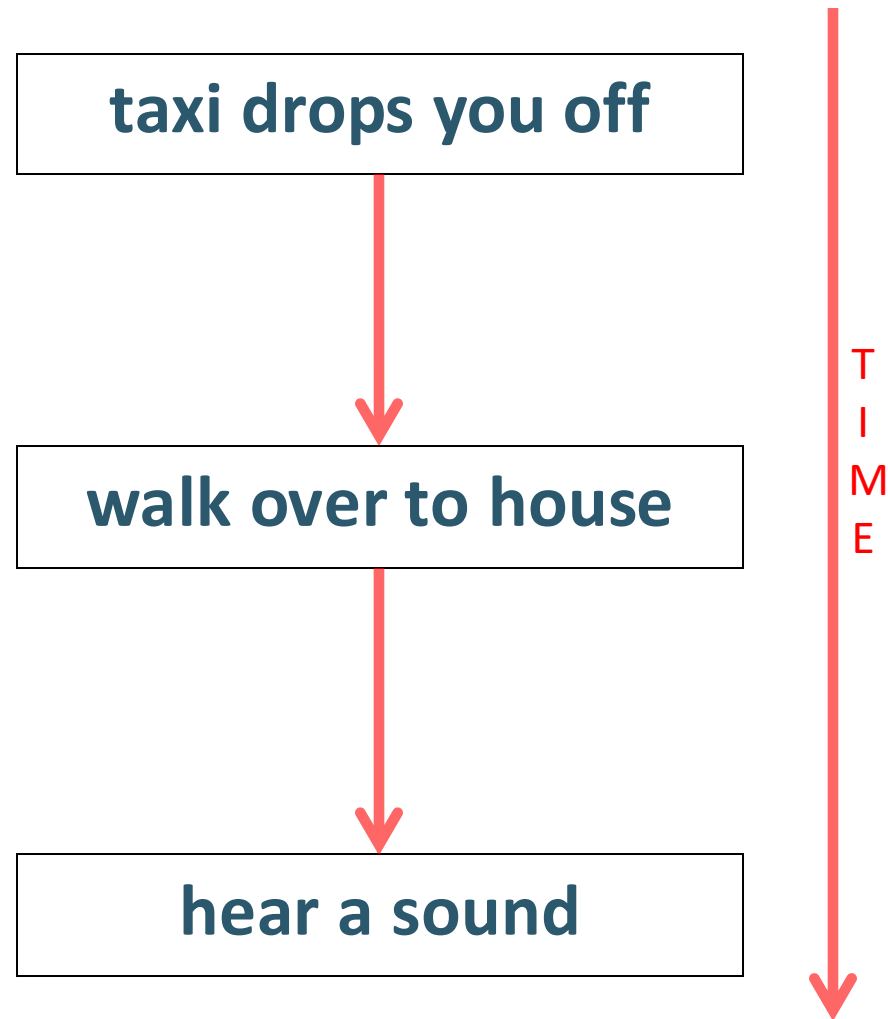
Storytelling

The taxi **drops you off** in front of a big white house. The house **looks desolated**. You **walk over** to the side of the house, through the half meter of grass. You **hear** a low humming sound from an open window.

Events

- drops you off
- (looks desolated)
- walk over
- hear a sound

*Story as a movement
through events*



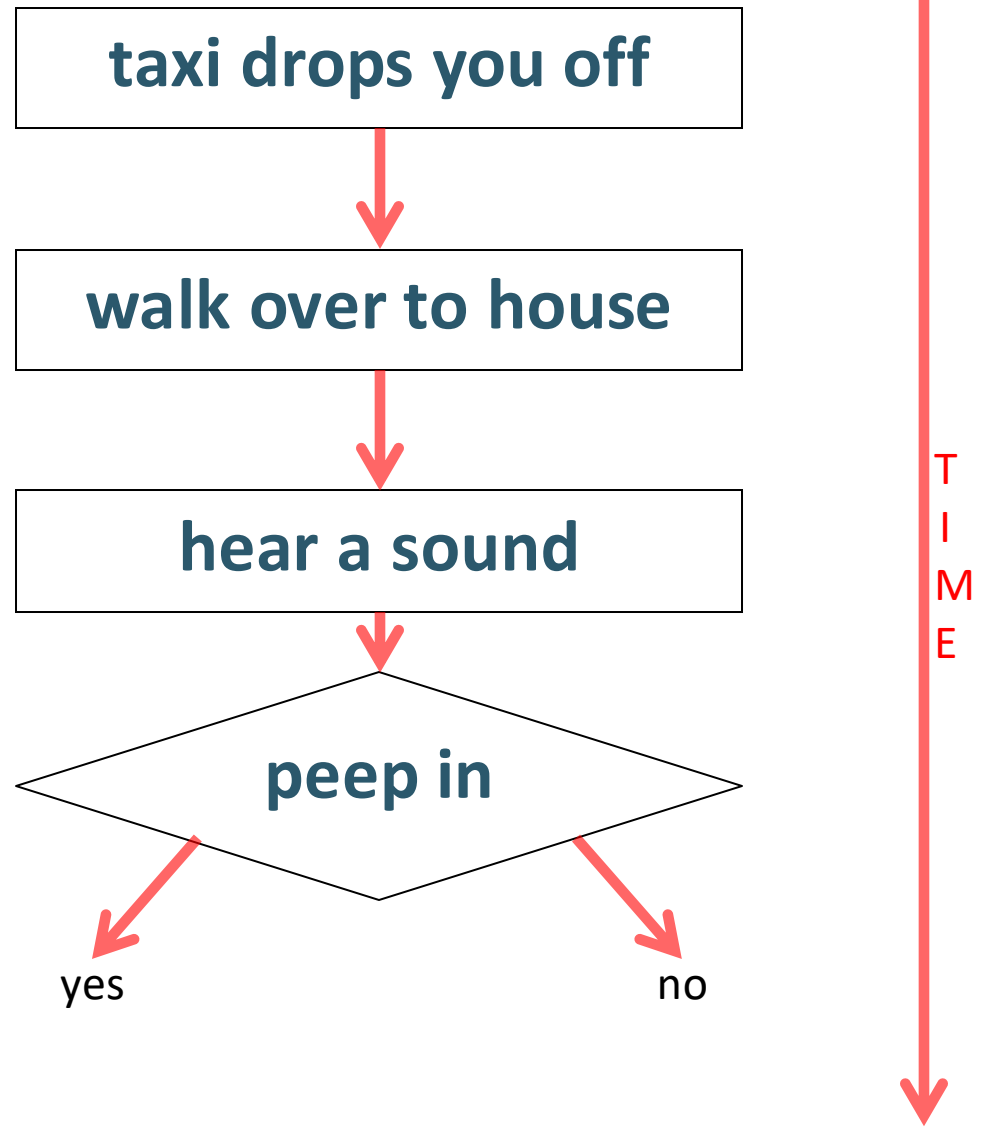
Storytelling with branches

The taxi **drops you off** in front of a big white house. The house **looks desolated**. You **walk over** to the side of the house, through the half meter of grass. You **hear** a low humming sound from an open window.

Do you **go closer** to **peep in**? (Y/N)

Branching

- drops you off
- (looks desolated)
- walk over
- hear a sound
- go closer
- peep in



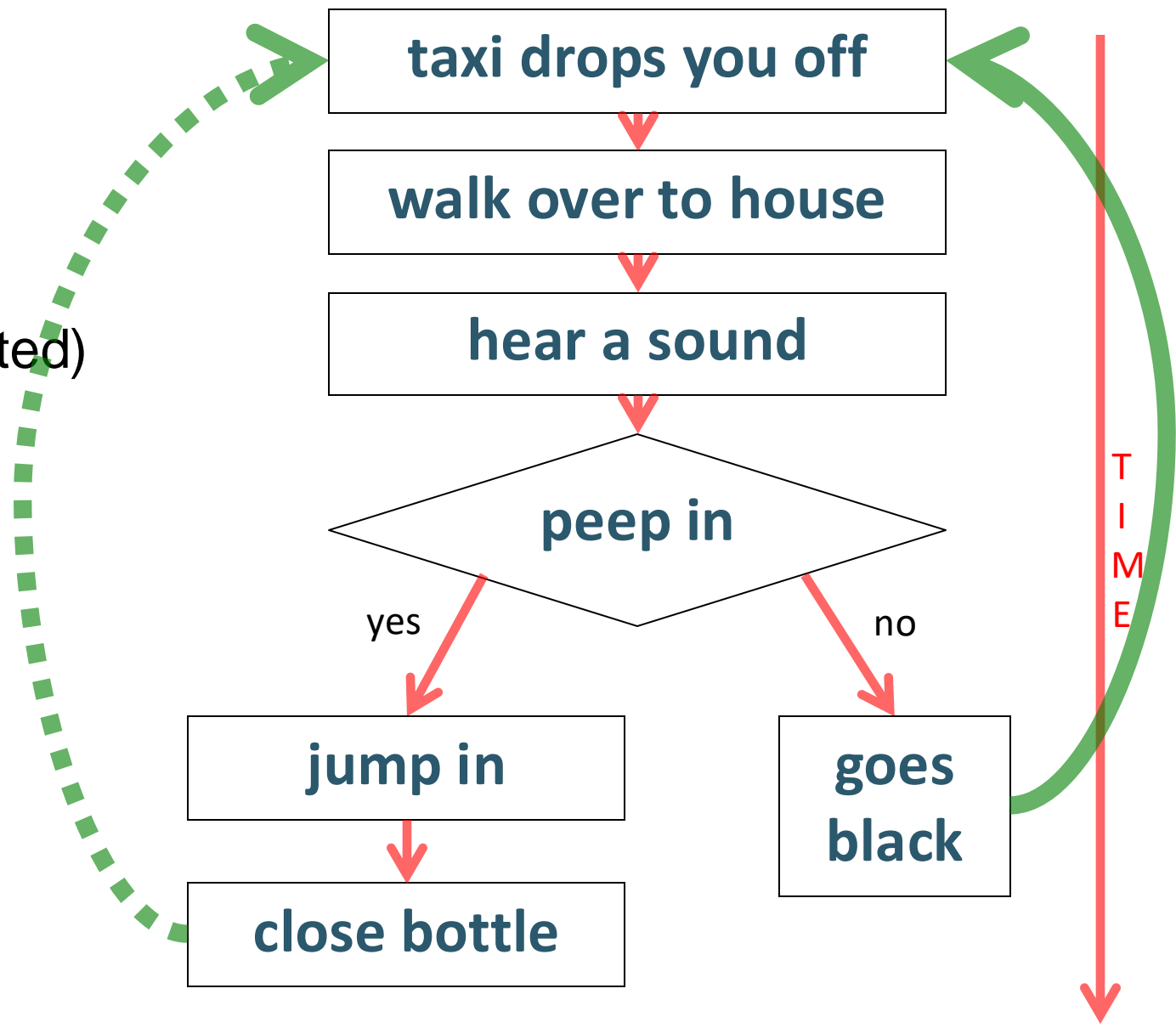
Interactive storytelling

Do you **go closer** to **peep in**? (Y/N)

- Y: You see a gas bottle with the valve open and a candle lit in the corner. You **jump in** and **close the bottle**
- N: You wait for a few minutes for the others to arrive. There is suddenly a loud noise and **everything goes black.**

Interactivity

- drops you off
- (looks desolated)
- walk over
- hear a sound
- go closer
- peep in
- jump in
- close bottle
- goes black



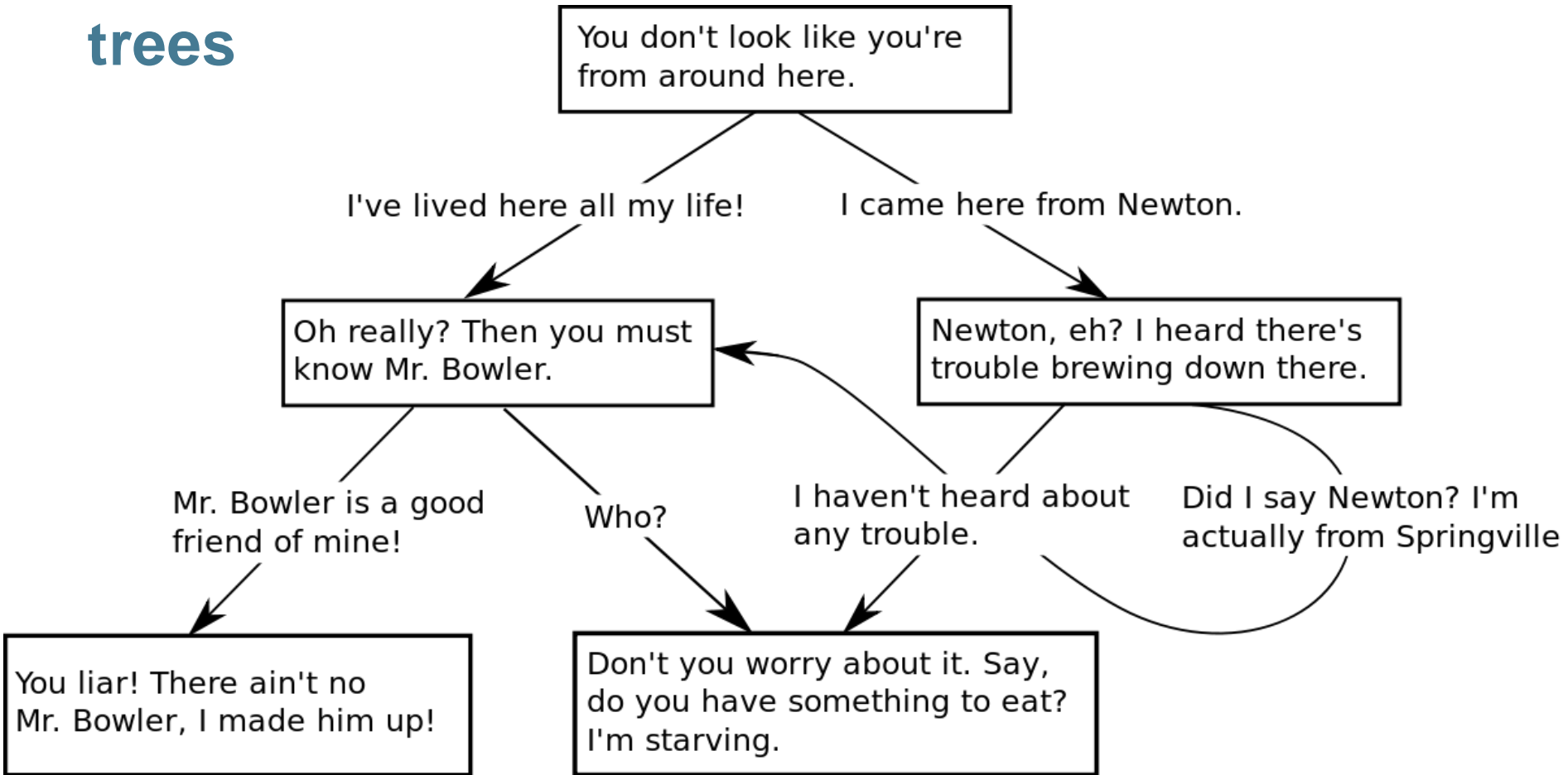
Exercise

- Create small groups
- Tell each other stories
- For each story
 - analyse how it is told
 - analyse its relationship to events
- Report back
- What would it take to make the stories interactive?

Choice

- Choose what to do
- Choose who to be
- Choose to play again
 - re-birth
- All choices are within limits
 - the human condition?

Decision trees



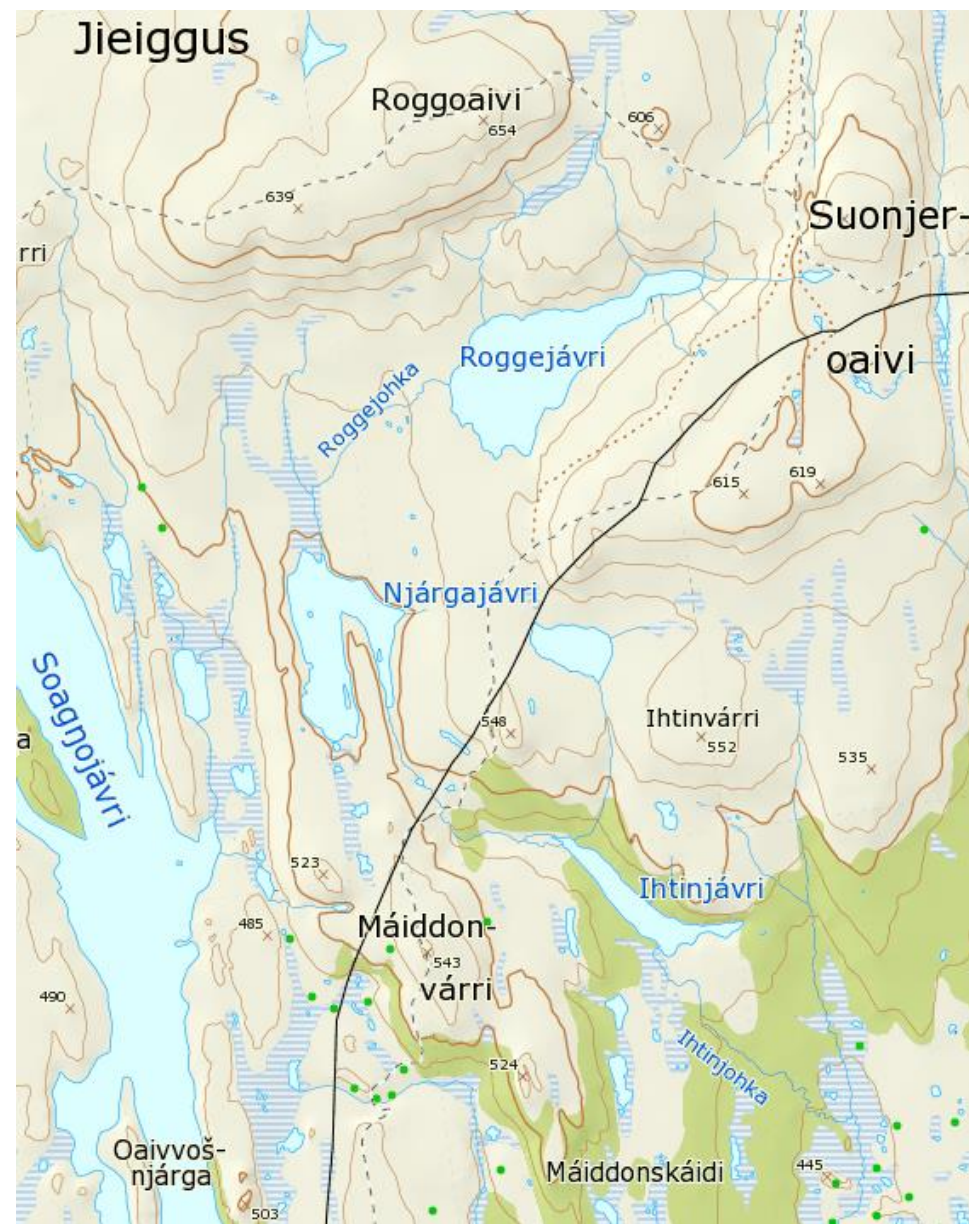
By Dcoetzee - Own work, CC0, <https://commons.wikimedia.org/w/index.php?curid=12067659>

Limitations of choice

- How many ways to the mountain?
 - can follow the path
 - or another path
 - or off path
- Continuous choice

Caspar David Friedrich. Wanderer über dem Nebelmeer, um 1817. Hamburger Kunsthalle.

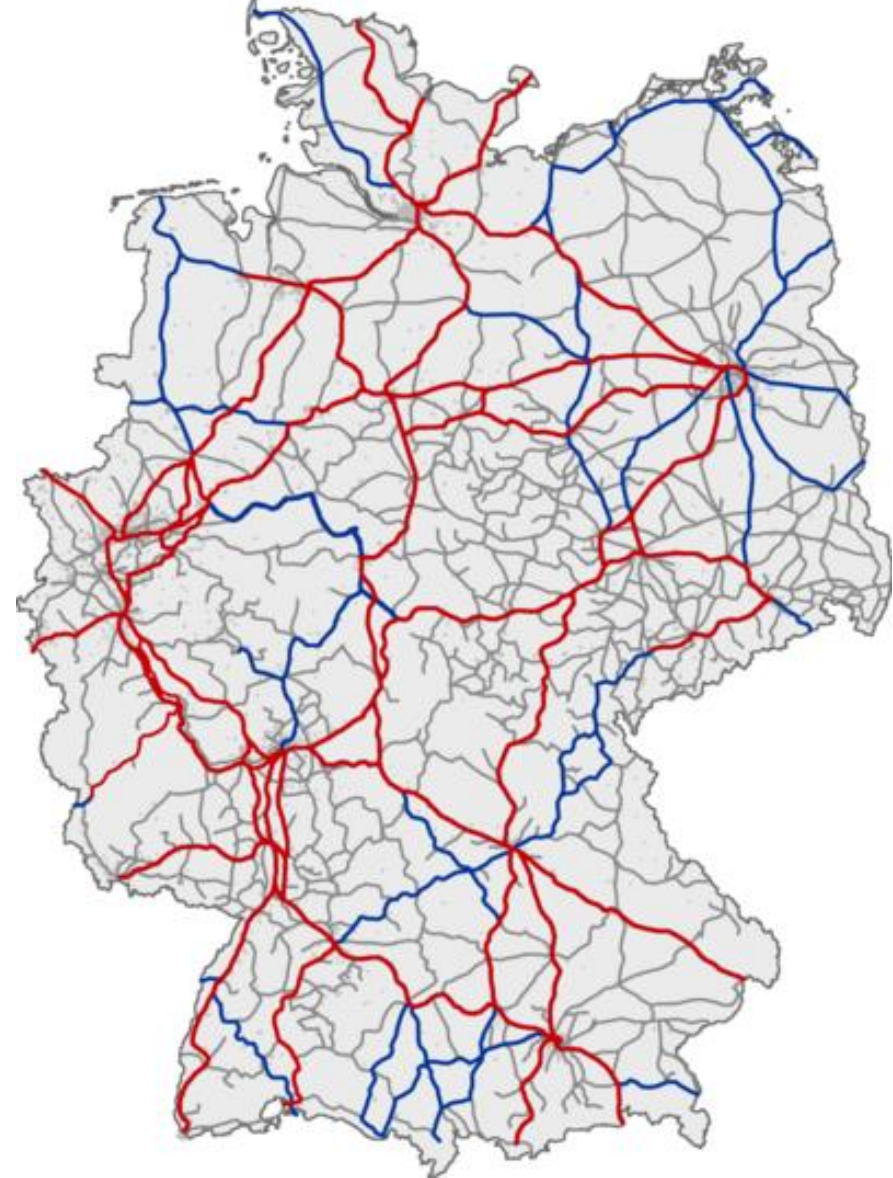
Norgeskart. <http://www.norgeskart.no/>



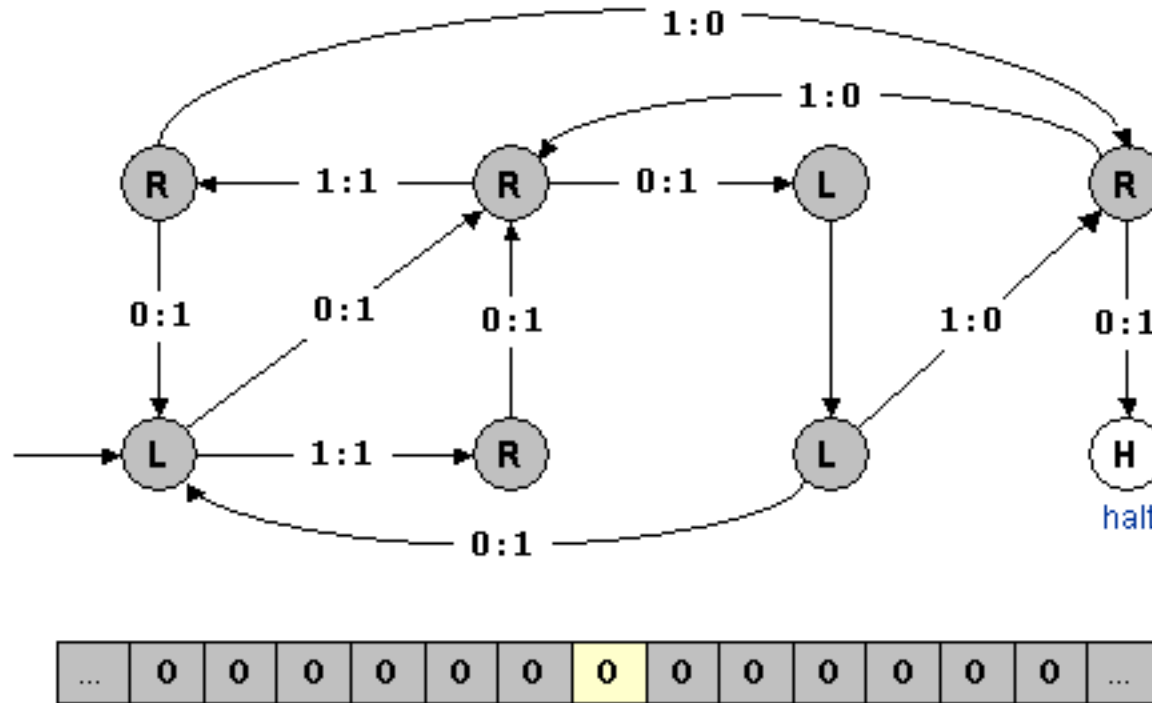
Limitations of choice

- How many train routes to Hamburg?
 - can follow one track
 - or another track
 - not off track
- Discrete choice

Bahn-Streckenkarte_Deutschland.png: Quelle derivative work: YouthOfSword (talk) - Bahn-Streckenkarte_Deutschland.png



States as networks



Robert Sedgewick and Kevin Wayne. (2000–2016). *Introduction to Programming in Java*. 5.4 Computability. <http://introcs.cs.princeton.edu/java/54computability/>