INTENTIONALITIES OF CODE: HISTORICAL PRACTICES AND DEVICES

A PHILOSOPHICAL ACCOUNT

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STRUCTURE OF THE PRESENTATION

What's in a code? How is coding?

- Definition(s) of coding/programming
- Centrality of collective intentionalities
- Historical sampling (prospects)
- Filtering
- Example of expanded assemblages
- Conclusions: range of consequences

I. DEFINITION(S) OF PROGRAMMING

- Goldstine & von Neumann, pioneer mathematicians (1947):

- « [C]oding is not a static process of translation, but rather the technique of providing a dynamic background to control the automatic evolution of a meaning » (Planning and Coding of Problems, p. 2).

I. DEFINITION(S) OF PROGRAMMING

- Newell, Shaw, Simon, logicians associated with the RAND corporation (1958)

- « [T]he appropriate way to describe a piece of problem-solving behavior is in terms of a program: a specification of what the organism will do under varying environmental circumstances in terms of certain elementary information processes it is capable of performing. This assertion has nothing to do – directly– with computers. Such programs could be written […] if computers had never existed. » (p. 153).
- Elements: set, insight, concept formation, structure, memory

I. DEFINITION(S) OF PROGRAMMING

- Miller, Galanter, and Pribram, behaviourist psychologists (Plans and the Structure of Behavior, 1960).

- A plan is, for an organism, essentially the same as a program for a computer [...] , we regard a computer program that simulates certain features of an organism's behavior as a theory about the organismic Plan that generated the behavior.
  - A plan is any hierarchical process in the organism that can control the order in which a sequence of operations is to be performed. (p.17).

- Adrian Mackenzie, cultural critique (Cutting Code, 2006)

- Programming/coding as a » neighborhood of relations », where « relations are assembled, dismantled, bundled and dispersed within and across contexts. » (p. 169).

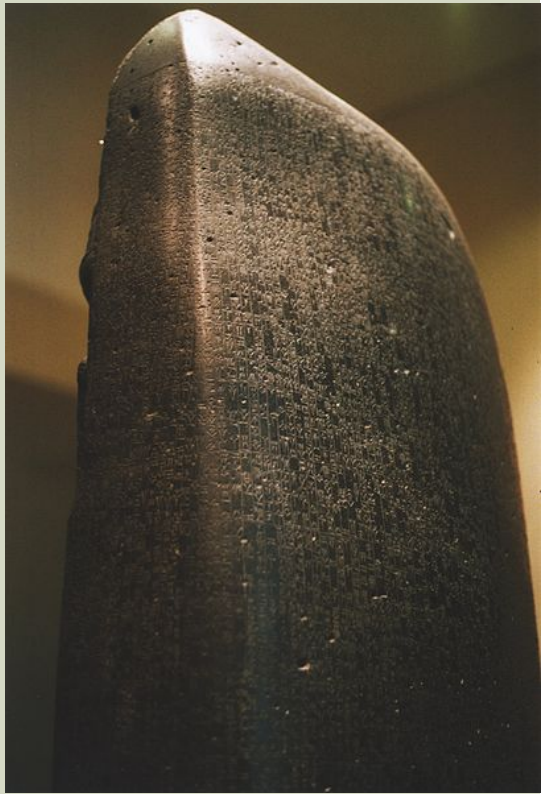
II. COLLECTIVE INTENTIONALITIES

- Michael Tomasello (A natural history of human thinking, 2014)
- Culture = Shared intentionalities = social coordination
- « [I]mportant aspects of human thinking emanate not from culture and language per se but, rather, from some deeper and more primitive forms of uniquely human social engagement. » (p, 2)
- Two evolutionary steps in human thinking:
- Cultural conventions, norms and institutions.
- Joint goals and joint attention (common ground), which created the possibility of individual roles and perspectives within that ad hoc shared world or "form of life."

III. HISTORICAL SAMPLING

- 1. To command / To control / To order

- Religion. Prayers: *Fiat voluntas tua* (speech act *and* gesture, embodiment)
- Legal codes (*Raumordnung* – Schmitt).
  - Jurisdiction.
  - Code of Hammurabi --- If-then structure
  - Religious-legal order --- Imperative structure
    - Power over life (cycles, sexuality, truth)



III. HISTORICAL SAMPLING

- 2. To calculate / To compute / To think
- Pytagorical system: numerical code that organizes art and thinking.
- Kabbalah: Sefer Yetzirah. The primitive kabbalah can be taken as the first comprehensive speculative science that took linguistic computation tools as its fulcrum.
- Abbacus (Asia, Europe and Russia), Soroban (Japan), Nepohualtzintzin (Central America).
- Khipus (Census knots in Peru).
- Leibniz: characteristica universalis → Calculus

„This very writing would be a kind of general algebra and would provide a means of reasoning through calculus, so that instead of reasoning, one could say: let's count.“ (Leibniz 1890: 26).

- Etymology: to reason – *reri,* root *re- to count (things) / Denken - Ding

III. HISTORICAL SAMPLING

Khipus:

Inca bookeeping method

III. HISTORICAL SAMPLING

- 5. To order / to discipline

- Rule for Monasteries (ca. 530-545) – Benedict of Nurcia
  - to provide religious communities with a set of practices that would order the community and structure the calendar, in accordance with Christian rituals. The Rule included praying eight times a day, comprising the Divine Office: Matins (sometimes called Vigil or Nocturne), Laud, Prime, Terce, Sext, None, Vespers, Compline.

- Spiritual exercises (1548) – Ignatius of Loyola (Jesuists)
  - « To conquer oneself and order life »
  - Achievement of an epiphany – mystical experience.

III. HISTORICAL SAMPLING

- 6. To contemplate / to meditate / to worship

- Hero's aeropile (first steam engine, completely unproductive)

- Early Greek fountains and mobiles

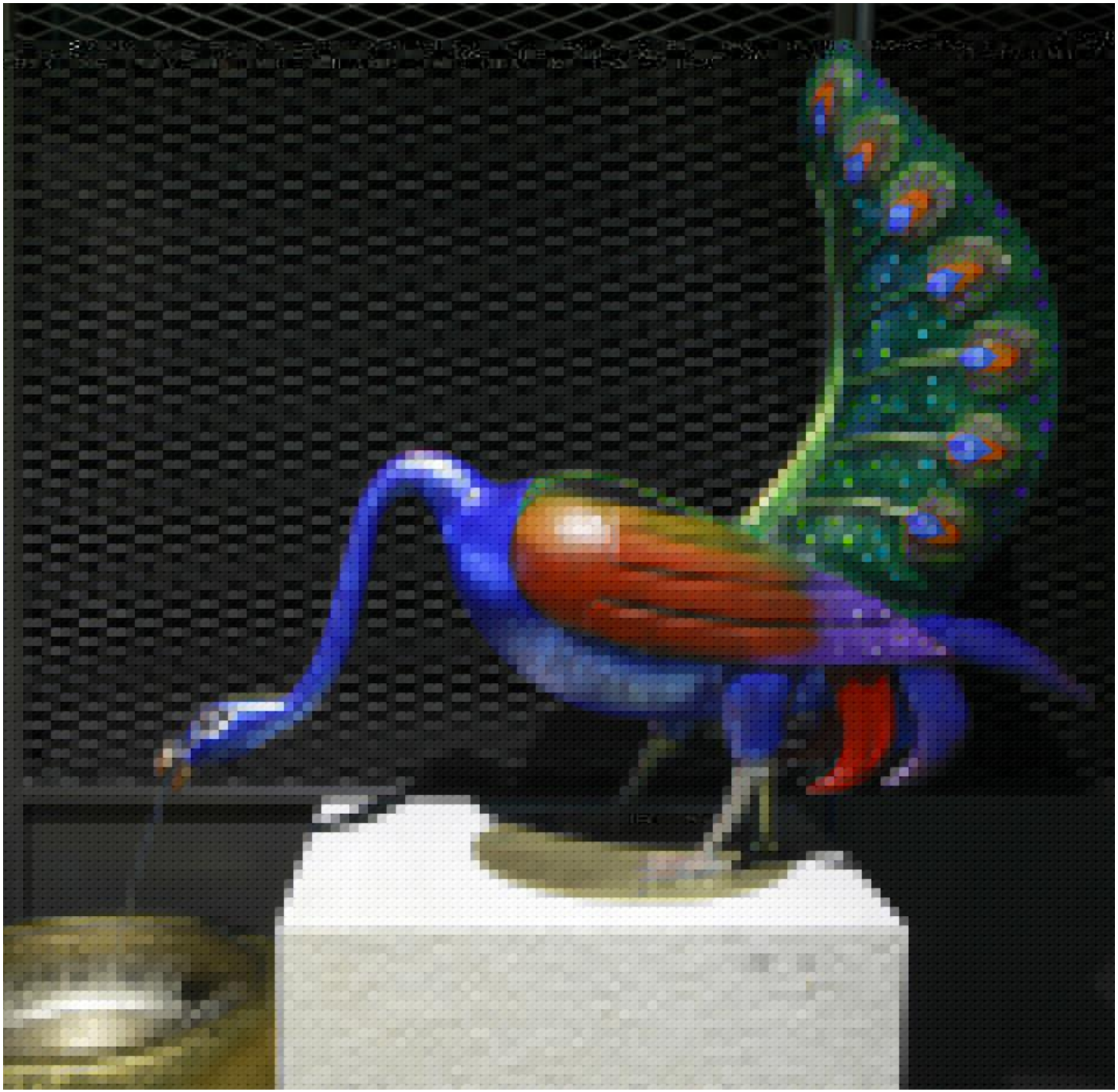
- Tibetan wind-powered prayer wheels

III. HISTORICAL SAMPLING

- 7. To predict / to forecast / to extrapolate
- Quadrivium, lunar divination, zodiac, interpretation of comets.
- Astronomical tables (Al-Kwarizmi)
- Robert FitzRoy's « forecasts » (1854-1860)
  - Weather reports, wind tables.

III. HISTORICAL SAMPLING

- 8. To structure / to coordinate / to enable
- Game's rules
- Protocols: social etiquette, diplomacy, international relations.
- A queue, traffic lights, bureaucracy.



III. HISTORICAL SAMPLING

9. To impress / to show off / to amuse

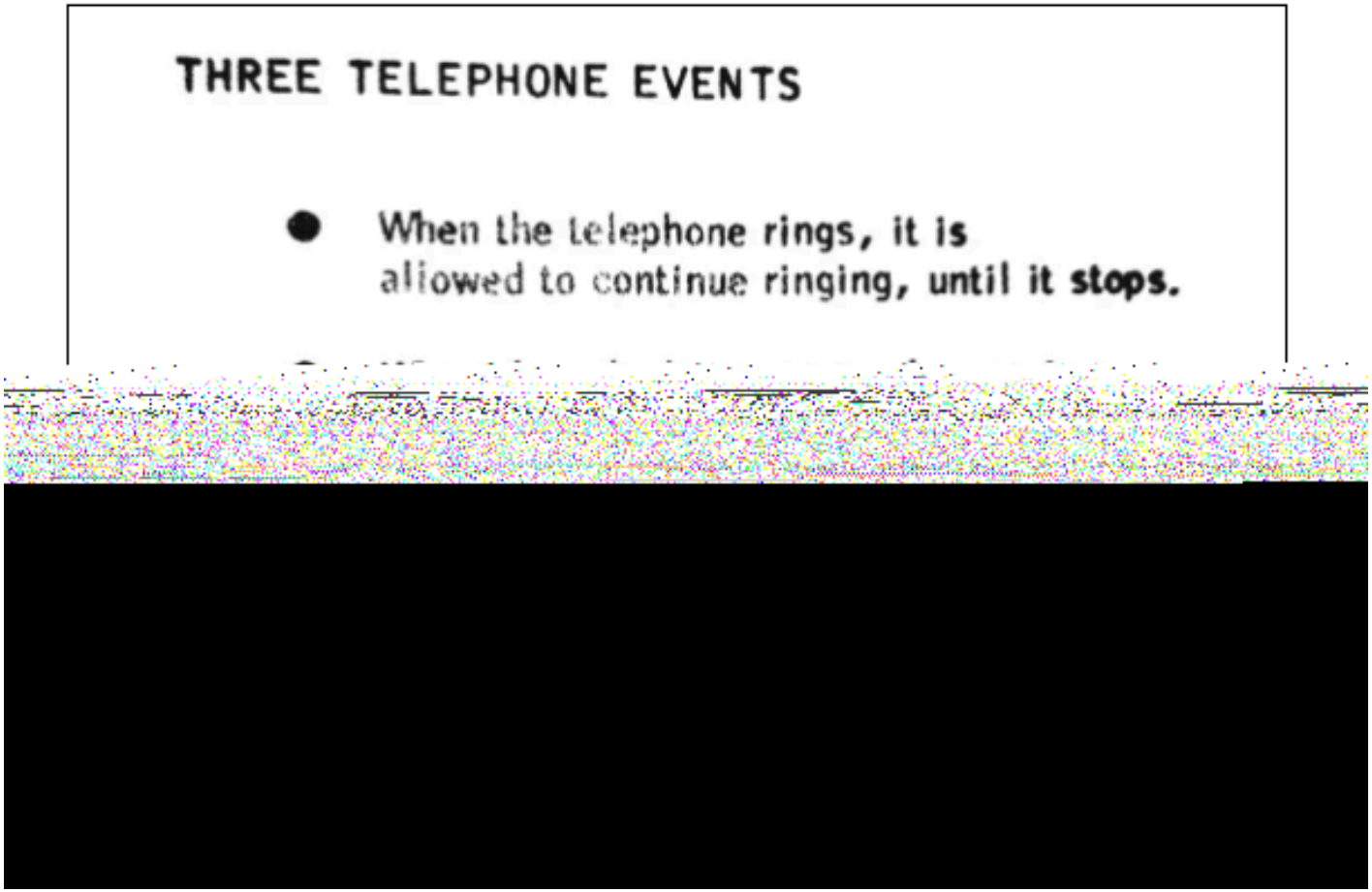
Automata in the Middle Ages

Al-Jazari's mechanical marvels (reconstruction)

III. HISTORICAL SAMPLING

- 10. To disorder / te deconstruct / to regenerate

- Carnival (an event)
- Narratives: a book, a poem
- Works of art
  - Example: John Cage 4’33’
  - Example: George Brecht: Three telephone events



III. HISTORICAL SAMPLING

George Brecht

Performance piece

1961

IV. FILTERING

- Coding ≠ action ≠ single intentions
  - A single individual is never the subject of a coding process.
  - Roles (coder, decoder, hacker…) are never stable, nor one-directional.
  - An action's course cannot be predicted from knowledge of the actor's intent, nor can the course be inferred from observation of the outcome.
  - Coding is a collective process of repeated interactions + recurring interpretations.

  - Artificial Intelligence Research: « There are few physical activities that are a necessary part of performing the action of turning on a light. Depending on the context, vastly different patterns of behavior can be classified as the same action. For example, turning on a light usually involves flipping a light switch, but in some circumstances it may involve tightening the light bulb (in the basement) or hitting the wall (in an old house). Although we have knowledge about how the action can be performed, this does not define what the action is. The key defining characteristic of turning on the light seems to be that the agent is performing some activity which will cause the light, which was off when the action started, to become on when the action ends. An important side effect of this definition is that we could recognize an observed pattern of activity as "turning on the light" even if we had never seen or thought about that pattern previously. » (James Allen 1984: 126).

IV. FILTERING

- Plans - associate intentions with action sequences.
- Scripts - associate actions sequences with typical situations (always as partial lists of tasks).
- Coding may or may not imply plans and/or scripts, but they always imply shared knowledge (part of collective intentionality)
  - « If one intends to buy bread, for instance, the knowledge of which bakers are open and which are shut on that day of the week will enter into the generation of one's plan of action in a definite way; one's knowledge of local topography (and perhaps of map-reading) will guide one's locomotion to the selected shop; one's knowledge of linguistic grammar and of the reciprocal roles of shopkeeper and customer will be needed to generate that part of the action-plan concerned with speaking to the baker, and one's financial competence will guide and monitor the exchange of coins over the shop counter. » (Boden 1973: 28)
- Keying, i.e. framing for an interpretation (Goffman 1986)

IV. FILTERING

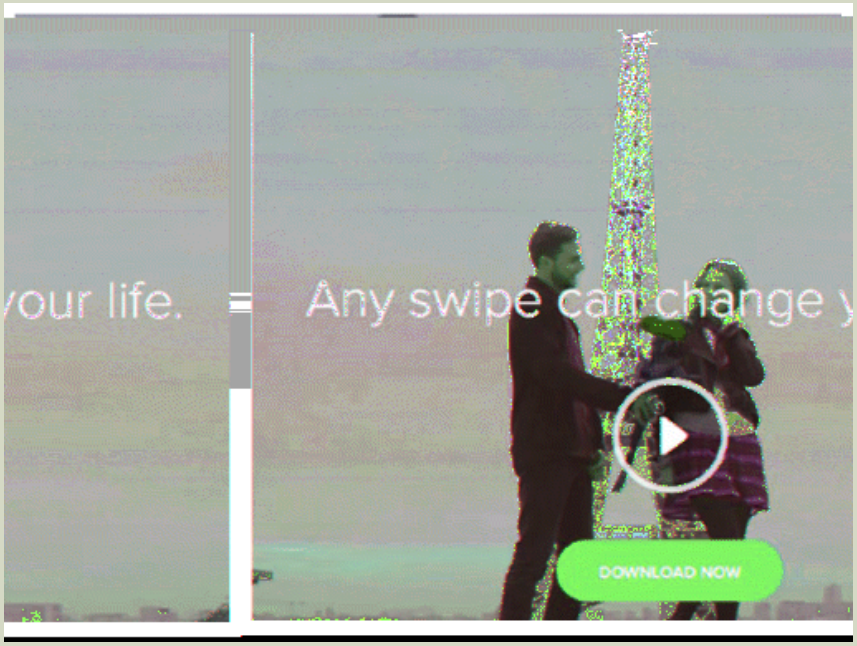
- To describe a plan implies mostly a post hoc representation (imagined projections, recalled reconstructions).
  - « Although plans presuppose the embodied practices and changing circumstances of situated action, the efficiency of plans as representations comes precisely from the fact that they do not represent those practices and circumstances in all of their concrete detail. » (Suchman 2007: 72).

- To describe a code entails post hoc interpretations, but also ad hoc recurrences of the coding process.
  - Example in a clinic, defining tasks: « Ad hoc considerations are invariably relevant considerations in deciding the fit between what could be read from the clinic folders and what the coder inserted into the coding sheet. No matter how definitely and elaborately instructions had been written, and despite the fact that strict actuarial coding rules could be formulated for every item, and with which folder contents could be mapped into the coding sheet, insofar as the claim had to be advanced that Coding Sheet entries reported real events of the clinic's activities, then in every instance, and for every item, "etcetera » "unless," "let it pass" and "factum valet" accompanied the coder's grasp of the coding instructions as ways of analyzing actual folder contents. » (Garfinkel 1967: 21).

V. EXAMPLE

- Garnfinkel: « Some rules of correct decision making that jurors respect » (1967)
  - Becoming a juror:
  - Jurors feel called to modify the rules used in daily life
  - They introduce a « verdict » into the world, which modifies it.
  - They operate around this faculty, interpreting facts, and very often producing first the outcome, and then the racionality to led to that decision. In other words, jurors produce verdicts, not truths, that have a given importance in the system where they appear.

V. EXAMPLE



- Producing a « match » in Tinder
  - The algorithm introduces a « judgment » into the world (a couple might fit together, perceived « ugliness » Wygant 2014, Bosker 2015), not a truth.
  - The algorithm does not impose its reality, people relate through it.
  - Awareness and perception of agency.

CONCLUSIONS

- Historical reassessments:
  - Vs. Illusion of the individual, code is a collective and recurring process of signifying, inscribing and interpreting.
  - Code is not a mathematical, but a social function. (It does not only implies writing a line to be read by a machine –software/hardware– but a complex process of meaning assignment and interpretation).
  - Example: program of automation
    - Slavery
    - Simplification or de-complexing (ex. photography)
    - Patience as waste of time. Time is money (Franklin)
    - Tag-triggered social processes (stygma, prejudices, denominations, titles)
  - Creativity, sensitivity, caring and the production of truth are coded ways of doing things, and not essential human features.
  - We are always projecting meaning to contingent processes. But which meaning?
  - Coding is a social technology, which brings with itself a worldview. That worldview has power effects.