COMPLEXITY AND PHILOSOPHY

A NON-REDUCTIONIST APPROACH TO ETHICS

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AIMS

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1. Present and challenge the idea of “simple ethics”
2. Present a possible alternative
3. Evaluate its implications

TOPICS

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1. A game
2. From reduction to systems theory
3. Complexity theory
4. Complexity ethics
5. Discussion

1. A GAME

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FROM THE BEST TO THE WORST

Please consider the following story and put the characters in a **moral hierarchy** considering their behavior. Argument your decision.

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1. A GAME

- We are in Venice, and thanks to a **bridge** people can freely move to and from the mainland.
- **Francesca** lives in Venice. **Marco,** her boyfriend, lives in Mestre, on the mainland.
- An earthquake **destroys the bridge;** most of the boats sink.
- Francesca decides that she wants to **cross the sea** to stay with her boyfriend.
- She goes to the port looking for one of the few remaining ships, but **no boatman wants to help** her...
- ...besides one, **Alvise:** he accepts to bring her to Mestre, but in exchange for **a night with her.**
- Francesca **asks advice** to **Agnese,** her mother; she says that she should **decide on her own,** and no matter the final choice, **she will support her.**
- Francesca **accepts** Alvise's offer, **spends a night** with him an the day after **leaves for Mestre.**

"The world without Ponte della Libertà would be an island"

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1. A GAME

- In Mestre she meets **Alessandro,** her boyfriend's friend. He says that Marco **moved to the Alps,** and Francesca doesn't have **any money** for the trip.
- Alessandro **offers her a job** so that she can earn the money she needs.
- After a couple of weeks Marco, the boyfriend, **gets some news** about Francesca: the boatman, the hard choice, the need to earn some money...
- He discovers also that Francesca now **has to live with Alessandro,** working for him.
- So, quite angry, he travels to Mestre, has a row with Alessandro, **punches him in the face** and takes Francesca with him to the mountains.

Venice, Mestre and the Alps

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THE CHARACTERS

Francesca, the girl
Marco, the boyfriend
Alvise, the boatman
Agnese, the mother
Alessandro, friend of Marco

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WHAT ARE WE DOING?

Relying on the evidence we have, we are **breaking up a complex problem into smaller, simpler ones.** We try to identify:
1. the morally significant **characters;**
2. the morally relevant **properties** of their actions.
Then we are comparing them with **some abstract principle** of justice or of fairness or more in general of good. Finally, we compare the characters **one to another,** in order to build our classification. As a last step, we draw from evidence again to **justify our choice.**

This is a **Cartesian approach** to a moral deliberation.
(R. Descartes, 1637, Discours de la Méthode, pars III)

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1. A GAME

This works only **under certain conditions:**

- We **trust the account** as comprehensive and unbiased, believing in fact in the possibility of objective access to phenomena;
- We assume the story **as a closed system,** with no input from or output to the real world;
- We regard **motivations as not accessible** and we don't care about them, or we just assume as true our hypotheses on them;
- We assume the existence of some **universal values,** valid for every character in the same way.

...de facto, reducing the world to an abstract (probably unfit and surely arbitrary) **approximation.**

Again: Venice, Mestre and the Alps

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Does it seem the same place?

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...BUT WHAT IF:

There are other **morally relevant properties?**

- Francesca is 15 years old
- Agnese is drunk when Francesca asks for her advice
- Alvise is Francesca's father
- "Spend a night" means "go to the theater and then have a pizza"
- Alessandro is a pimp and "offers a job" means "makes her prostitute"
- ...

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...AND IF:

There are other **morally significant stakeholders?**

A mother with a sick children also looking for a ride to the Hospital in Mestre;
Other people needing a job in Mestre;
A pantheon of half-squib gods offended by certain actions;
...

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...AND IF:

The stakeholders have **different, conflicting principles?**

Agnese prizes autonomy and is an **old school radical feminist,** always confronted with the need to act as such;

Marco values **beneficence** at a point that justifies even **strong paternalism;**

Alessandro is a **straightforward libertarian;**

...

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PROBLEMS

It seems that **breaking up a complex problem** to simple ones, solving them and then assembling the “atomic solutions”, forces us to rely on a **oversimplified picture** (like the horrible sketch I have drawn a few slides ago). Shall we rely on this as our only way to make moral judgments, or it is possible to i**magine a different way?**

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2. FROM REDUCTION TO SYSTEMS THEORY

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2. FROM REDUCTION TO SYSTEMS THEORY

Newtonian Science:

- A **simple** paradigm (few key principles)
- Heavily relying on **reductionism** *(Heylighen, 1990)*
- **Ontologically** grounded on:
  - Matter
  - Space
  - Time
  - Forces/natural laws
- **Correspondentist** epistemology *(as in X Files' famous poster, "the truth is out there") (Turkin, 1990)*
- Human agency exist only as the separate ontological category of **"mind"**
- At best, the notion of **purposeful action** is reduced to the utilitarian ideas of **"rational choice"** and **"maximisation of utility** (which in this context is the only way to universalize "good").

All neat and nice. Well, at least until Heisenberg's uncertainty principle and quantum mechanics. *(Feyerabend, 1975)*

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2. FROM REDUCTION TO SYSTEMS THEORY

Holism and emergentism:

- The tendency of a whole to be **more than the sum** of its parts, presenting **emergent properties**
  - Properties that are **of the whole,** but **not of its components**
- It happens that a lot of properties **that actually matter** to us turn out to be emergent:
  - Beauty of a picture
  - The property to pump blood of the heart
  - (Probably) the conscience
  - The driveability of a car
  - ...

(Smuts, 1926)

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2. FROM REDUCTION TO SYSTEMS THEORY

Jacopo Tintoretto, La creazione degli animali, 1550

Some of its pixels, 2018

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BUT STILL...

Although intuitively appealing, holism was missing a **solid scientific foundation,** referring more to mystical traditions rather than to mathematical models or experimental evidence.

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2. FROM REDUCTION TO SYSTEMS THEORY

General system theory *(von Bertalanffy, 1973)*:

- Considers a given entity as a **system**
  - Which is **open** (exchanges input/output with others)
  - But is **separated** from others by a border
  - Tends to **couple** with other systems, building **networks** of information/energy/matter
  - When a certain network displays a **coherent functioning**, it can be considered as a **supersystem** composed by **subsystems**
- **Grounded** in biology and mathematical models
- Provides a **scientific background** to the notion of emergent properties
- Relies on a **"black boxes ontology"**, *(Bunge, 1963)* i.e:
  - The building blocks of reality are **abstract relations,** not material particles
  - The relevant property of a system is not its **substratus,** but the way it **functions**

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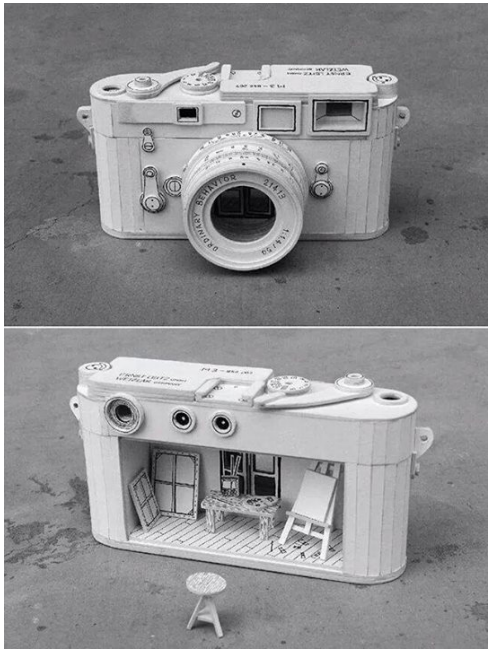
2. FROM REDUCTION TO SYSTEMS THEORY

An advertising campaign questioning the concept of "black boxes"



Terry Prachett's "iconograph", a photo camera working thanks to an imp trained as a painter

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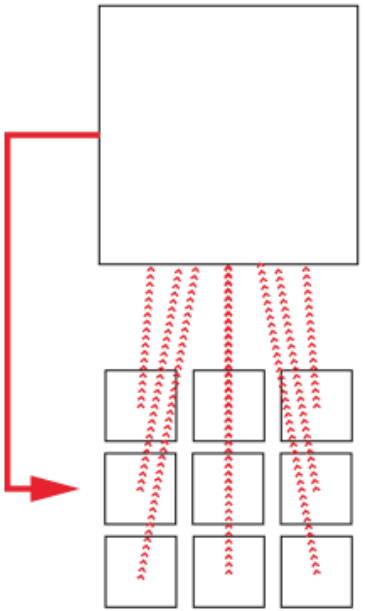
2. FROM REDUCTION TO SYSTEMS THEORY

Bidirectional causation

- Subsystems determine (some of) the properties of the supersystem they are part of
  - **Upward causation**
- Supersystems determine (some of) the properties of the subsystems they contain
  - **Downward causation**

Because of this interdependence, the "atomic" properties are **less important** than the properties, the relations and the state of **the systems.** *(Campbell, 1974)*

Thus general system theory **does not renounce to reduction/analysis,** but it joins it with **emergence/holism.**



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CONSEQUENCES!

If this is how the things are, **knowledge** is de facto:

- Local
- Depending on the relations of a system
- Subjective
- "Merely a tool used by an intelligent agent to help it achieve its personal goals"

(Popper, 1945; Heilighen & Joslyn, 2001)

Therefore, **how we build our own model** of a system (cognitive and social processes) is more important than **how a certain system actually is.**

→ the structure of a system is not given, but developed adaptively by the system in its interactions.

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3. COMPLEXITY THEORY

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A RADICAL ALTERNATIVE

Aims to **overcome** the modernist (Newtonian/Cartesian) paradigm.

Rooted in:

- Non-linear dynamics/statistical mechanics (as a model)
- Computer science (as a tool for modeling)
- Biological evolution (as a model)
- Social systems (as an empirical context for testing theories)

(Waldrop, 1992; Holland, 1996)

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3. COMPLEXITY THEORY

Complexity Theory:

- Focuses on the **"edge of chaos"** (systems that are not just deterministic neither only probabilistic) *(Langton, 1990)*
- Relies on the notion of **complex adaptive systems**
  - Multi-agent
  - Black box-like
  - Acting **locally** by **blind variation** to **preserve local fitness**
  - Intrinsically **uncertain** about the **remote effects** of an action
  - Often **conflicting** one with the other

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MUTUAL ADAPTATION

The order that we see around us is nothing but the **“global (or supersystemic) fitness”** resulting from endless iterations of of self-organization cycles caused by mutual competition aimed to **local fitness**.

→ Organization is an **emergent property** of supersystems.

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3. COMPLEXITY THEORY

An example:

- The local fitness on the system **"cat"** is to **eat as much mice as possible** in order to survive
- The local fitness of the system **"mouse"** is to **survive without being eaten** by a cat
- Both these systems are part of a supersystem with **constrained resources** (a barn, for instance)
- The supersystem stays balanced **as long as the cats eat enough mice** to keep their number low (otherwise they would finish the food and starve to death) but not too much **to extinguish them** (otherwise they will be the ones that starve to death)

- If we **open** the supersystem, including **more mice food** (or a farmer from Vicenza), the entire supersystem needs to find a new condition of **global fitness.**

(In)famous culinary traditions in Vicenza

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FITNESS INTERDEPENDENCE

As well known in ecosystems theories, (and as seen in the example) often the **global fitness** relies on **sub-optimal local fitness** conditions. Hence **local (systemic) complexity** (i.e: the ability to play many different strategies) becomes a **key instrument** to answer to a complex (supersystemic) environment. *(Kauffman, 1995; Dawkins, 1976)*

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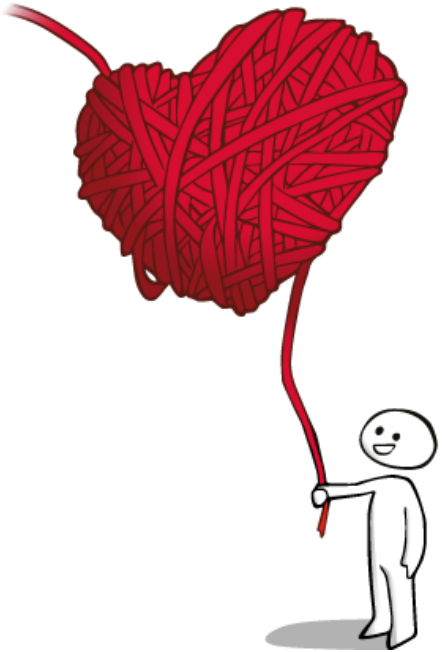
3. COMPLEXITY THEORY

An example:

- The local fitness of an organ procurement organization (OPO) is to have **as much donors as possible**
- Hence it lobbies to pass a new bill introducing **opt-out organ donation**
- But this happens in an impoverished society with a **deep mistrust** and a **high taxation,** where people strongly believes that “the State wants to squeeze you like a lemon”
- And actually the rate of donors **drops down**
- Finally, the OPO accepts a **suboptimal local fitness** (opt-in donation), but this “call to responsibility” feeds a **positive feedback cycle,** and the donor rate rises.

(Emmanouil K. Symvoulakis et al, 2013; Alejandra Zúñiga-Fajuri, 2015)



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HUMAN INTENTIONALITY & BLIND VARIATION

On a certain level, it might seem that **human agency** displays such features that we would describe as **“intentional”** rather than **“random attempts at something.”** We go in a certain direction because **we know** that taking a different one will likely **result in a failure.**
In fact, this means nothing but having an **internal representation of our supersystem,** where we keep killing countless hypotheses to select the best ones, rather than killing ourselves “out here”.

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4. COMPLEXITY AND ETHICS

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3. COMPLEXITY AND ETHICS

“Doing good”:

- Principlism relies on **fixed principles** considered to be objective → “act according to these principles”
- Utilitarianism relies on the notions of **“rational choice”** and **“objective happiness”** → “pursue the increase of happiness”
- Natural law ethics rely on **non-realistic, optimistic** and **positivistic** notions of men and human agency → “do not violate natural laws”
- Virtue ethics relies on notions such as **“purpose”** and **“objective good”** and **“objective value”** → “act in a virtuous manner”
- Kantian ethics relies on the notion of an **objective and absolute moral law,** true in every situation → “act so that if your action is generalized it is still good”

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“DO THE EXACTLY (AND UNIVERSALLY) RIGHT THING”

... Has been the **key tenet** of moral philosophy, assuming that **there is such a possibility,** and that an **external fixed principle** is the solution.

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FROM A COMPLEXITY PERSPECTIVE

- Considering knowledge as **imperfect and local** and considering the **impossibility to foresee effectively the global consequences** of a local action, there is **no room for objective principles.**
- Every action potentially has moral implications, thus requires an **ethical deliberation**
- To do so we must premise that **every deliberation** we might make **has only a local valence**
- And then we can assume **“doing good”** as **“improving the global fitness of a supersystem with the least possible damage to its subsystems”.**

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TWOFOLD ETHICS

This **deflationary approach** to ethics still allows some sort of **foundationalism,** along with the relativistic definition of "doing good", **without falling in contradiction.**

- Relativistic: **"improving the global fitness of a supersystem with the least possible damage to its subsystems".**
- Foundationalistic: **"complexity, intended as the number of inter- and intra- systemic relations is a universal value because it is what a system needs to keep existing, (assuming existence as a good thing)".**

The foundationalistic definition is also what justifies the second part of the relativistic definition.

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5. DISCUSSION

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SUMMARIZING AND DISCUSSION POINTS

- We played a game to **understand the limits** of a **reductionist** approach to ethics
- We understood the **theoretical background** behind reductionist ethics and explored possible **alternatives:**
  - **Holism/emergentism** – lack of scientific foundation
  - **General system theory** – misses an explanation for competition and hierarchic chaos in subsystems
  - **Complexity theory** – integrates some gaps; seems ontologically solid and epistemologically useful
- We explored a couple of the features of a **deflationary, complexity centered ethics,** elaborating both a **foundational** and a **relativistic** definition of good.

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THANKS FOR YOUR TIME.

AND IF YOU GO TO VICENZA, DO LEAVE YOUR CAT AT HOME.

To download this presentation: https://goo.gl/jiLygV

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