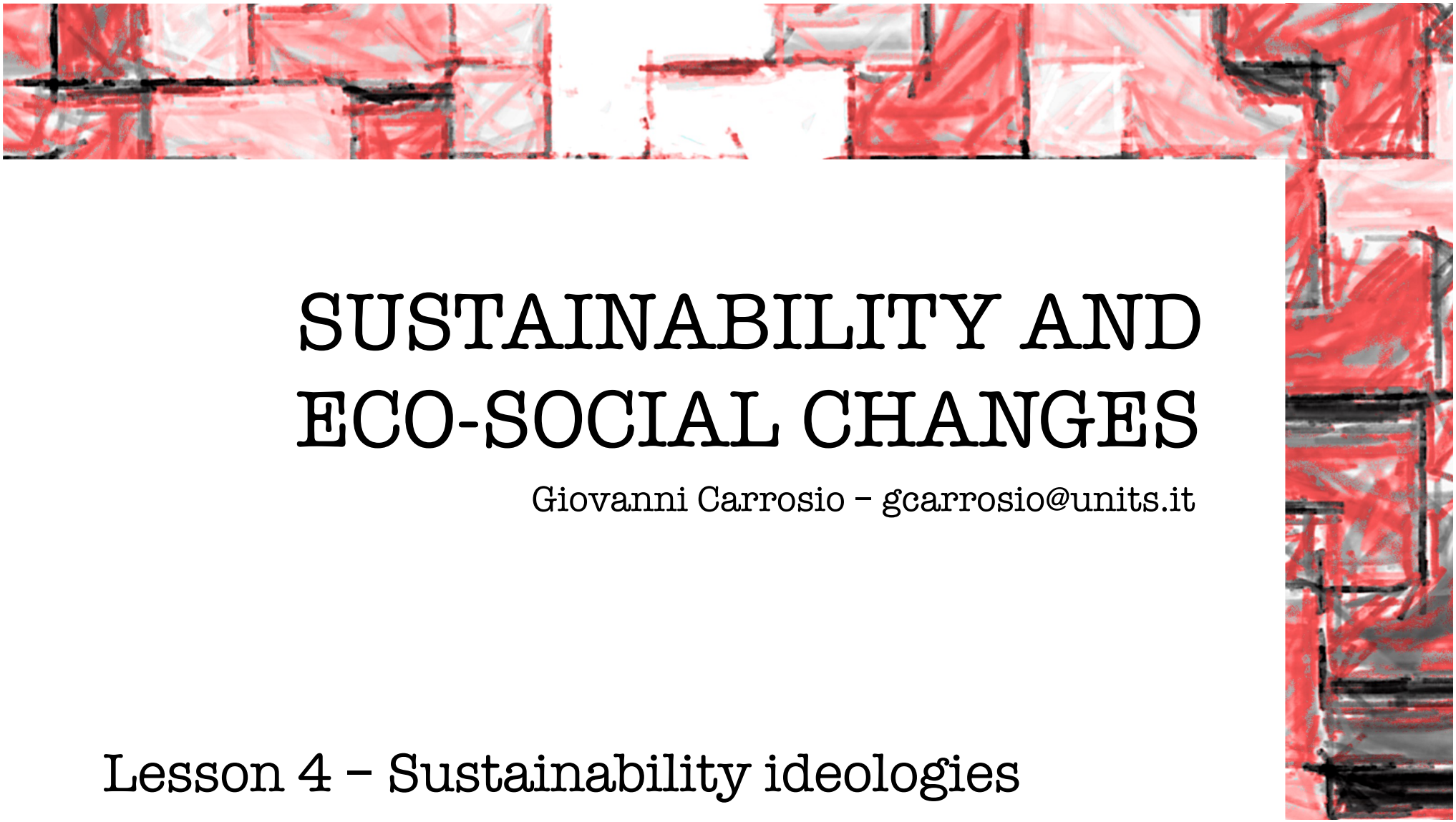


SUSTAINABILITY AND ECO-SOCIAL CHANGES

Giovanni Carrosio – gcarrosio@units.it

Lesson 4 – Sustainability ideologies

The Fundamental Question

How much natural capital can we replace with human-made capital?

Your answer to this question determines everything else:

1. What you think sustainability means
2. What kind of economy you want
3. Which technologies you support
4. Which policies you vote for
5. Which future you are building

Four Answers → Four Sustainabilities

	VERY WEAK	WEAK	STRONG	VERY STRONG
Answer to the question	YES — perfectly substitutable	PARTLY — manage by substitutability	MOSTLY NO — protect what cannot be replaced	ABSOLUTELY NO — nature is non-substitutable
Cause of unsustainability	Regulations block free enterprise	Deficit of modernisation	Capitalist accumulation	Instrumental rationality itself
Ethics	Individual rights and interests	Intergenerational equity	Collective interests = ecosystem balance	Nature has intrinsic value
Path to sustainability	Maximise GDP + technological innovation	Decouple growth from resource depletion	Redistribute wealth + commons management	Scale down and simplify society
Indicator	GDP	Genuine Progress Indicator	Inclusive Development Index	Ecological Footprint
Ideology	Transhumanism / post-naturalism	Sustainable development	Eco-socialism	Degrowth / Deep ecology

When Answers Become Ideologies

An ideology is a coherent system of beliefs that organises how a group sees the world, defines who belongs and who is the enemy, tells its followers what to do and what to sacrifice, and competes with other ideologies for political power (and to influence how public policies are shaped)

Defines a community	Techno-optimists, green modernisers, eco-socialists, deep ecologists. People identify with their model.
Names an enemy	VW: regulators. W: old technology. S: capitalists. VS: the modern worldview itself.
Prescribes sacrifice	VW: give up regulations. W: give up fossil fuels. S: give up profit-driven growth. VS: give up human centrality.
Competes for power	Parties, movements, lobbies, media. Every environmental debate is a battle between these four ideologies.

VERY WEAK

Technology Will Save Us

Answer to the question: "Yes — nature is perfectly substitutable by technology"

Theory

Natural capital can be fully replaced by human-made capital. If bees die, build robots. If forests are cut, create synthetic materials. The only obstacle to sustainability is insufficient innovation. GDP growth is the measure of progress.

As ideology: techno-optimism becomes identity. Critics of technology are “enemies of progress.” Doubt = obstruction. The knowledge regime rewards this position with patents, funding, and media attention.

Julian Simon, Ray Kurzweil, Bjorn Lomborg

In the real world

Policies: Deregulation, tech R&D subsidies, fracking permits

Products: Robot bees, geoengineering, lab-grown meat as full substitute

Actors: Walmart (robot bee patent), Silicon Valley, libertarian parties

Almond Valley: *Elena / AgriDrone. “The drones solve it.”*

WEAK

Modernise, but Carefully

Answer to the question: "Partly — some resources can be replaced, but manage carefully"

Theory

Some natural capital is replaceable, but critical resources must be protected. Growth can continue if decoupled from resource depletion. Intergenerational equity: don't leave future generations worse off.

As ideology: this is the dominant position in mainstream politics. It promises change without disruption. Its power lies in appearing reasonable and centrist. Critics say it is a dangerous illusion.

Brundtland Report (1987), Ecological Modernisation Theory, Anthony Giddens

In the real world

Policies: EU Green Deal, carbon trading, circular economy, electric car subsidies

Products: Electric cars, green bonds, certified organic, smart meters

Actors: UN, EU, World Bank, social democrats, mainstream green parties

Almond Valley: *Marco's compromise: drones + ecological measures.*

STRONG

Redistribute and Protect

Answer to the question: "Mostly no — protect what cannot be replaced"

Theory

The root cause of unsustainability is capitalist accumulation. Nature is predominantly non-substitutable. The solution: redistribute wealth, manage commons collectively, fit the economy within ecological limits.

As ideology: eco-socialism says environmental crisis and inequality are the same crisis. The enemy is the economic system, not "humanity." It demands structural change, not green gadgets.

Kate Raworth's Doughnut sits here: meet everyone's needs (social floor) within planetary limits (ecological ceiling). Growth is not the goal. Thriving within limits is.

James O'Connor, Kate Raworth, Elinor Ostrom, Herman Daly

In the real world

Policies: Commons management, land reform, food sovereignty, energy as public good

Products: CSA, seed banks, cooperatives, repair cafés, public bike-sharing

Actors: La Via Campesina, Raworth, Ostrom, municipalist movements

Almond Valley: *Teresa's ecological plan. Silvano's cooperative.*

VERY STRONG

Scale Down, Simplify, Respect

Answer to the question: "Absolutely no — nature is non-substitutable and has intrinsic value"

Theory

The deepest cause is instrumental rationality itself: the belief that nature exists to serve humans. Nature has intrinsic value independent of its usefulness. The solution: radically reduce the economy and simplify society.

As ideology: degrowth and deep ecology challenge the entire modern project. This makes them the most radical — and the most marginalised. You cannot win an election by saying “we need less.”

Arne Næss, Serge Latouche, Ivan Illich, Donna Haraway

In the real world

Policies: Rights of Nature (Ecuador, NZ), degrowth policies, rewilding

Products: Permaculture, voluntary simplicity, zero-waste communities

Actors: Extinction Rebellion, indigenous movements, Laudato Si’

Almond Valley: *Father Luigi. The bee’s perspective.*

Which Technology for Which Sustainability?

Each sustainability model produces and promotes a specific kind of technology. This is not accidental — it is structural:

VERY WEAK	Patentable, corporate, complex, irreversible *Robot bees, geoengineering, CCS, GMO patents*
WEAK	Green label, industrial governance, mixed profile *Electric cars, nuclear, smart meters, carbon trading*
STRONG	Cooperative, public, commons-based, distributed *Community energy, seed banks, public transport, CSA*
VERY STRONG	Convivial, low-tech, reversible, resilient *Bicycle, permaculture, repair café, rewilding*

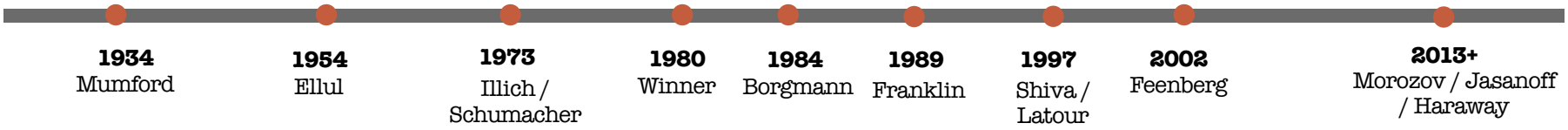
But how do we know which model a technology belongs to? We need a test.

Six Questions to Decode Any Technology

1. Dependency or autonomy? *Franklin / Borgmann*	**Locks you in** ↔	**Sets you free**
2. Creates needs or responds? *Ellul*	**Invents demand** ↔	**Serves real needs**
3. Solves or displaces? *Morozov*	**Moves problem elsewhere** ↔	**Addresses root cause**
4. Concentrates or distributes? *Winner / Shiva*	**Few control many** ↔	**Many share control**
5. More complex or simpler? *Illich / Schumacher*	**More fragile** ↔	**More resilient**
6. Irreversible or reversible? *Haraway*	**No way back** ↔	**Adjustable**

Technologies that cluster LEFT = Very Weak / Weak. Technologies that cluster RIGHT = Strong / Very Strong.

A Timeline of Critical Thinking on Technology



The shared question: technology is not neutral. It carries power. But who has the power, and how can it be changed?

THE FOUNDERS (1930s–1970s)

Mumford	Polytechnics (democratic) vs. monotechnics (authoritarian)
Ellul	Technique has its own autonomous logic: efficiency colonises everything
Illich	Convivial tools (serve you) vs. industrial tools (you serve them)
Schumacher	"Small is Beautiful": appropriate technology for human-scale communities

CRITICAL THEORY (1980s–2000s)

Winner	"Do artifacts have politics?" Yes. Bridges can be racist.
Borgmann	Device paradigm: technology hides how it works, makes users passive
Franklin	Holistic (artisan controls all) vs. prescriptive (worker follows orders)
Feenberg	Technology can be redesigned democratically. Design is a political choice.

TODAY (2000s–present)

Morozov	Solutionism: tech "solutions" that ignore root causes
Jasanoff	Sociotechnical imaginaries shape which futures seem possible
Shiva	Seed sovereignty, biopiracy, monocultures of the mind
Latour / Haraway	Objects have agency. Sympoiesis: making-together, not alone

The Founders: Technology Has Its Own Logic

Jacques Ellul (1912–2004)

La Technique, 1954

Technology is not a set of tools. It is a system — with its own logic: efficiency, growth, expansion. This system does not care about human values. It just optimises. Once this logic takes over, it colonises everything: education, health, politics, even religion.

Key concept: the autonomy of technique

Lewis Mumford (1895–1990)

The Myth of the Machine, 1967–70

Two kinds of technology: polytechnics (diverse, democratic, human-scale) and monotechnics (centralised, authoritarian, gigantic). The pyramid is a monotechnic: not because stone is authoritarian, but because of the social system that built it.

Key concept: polytechnic vs. monotechnic

Ivan Illich (1926–2002)

Tools for Conviviality, 1973

Every tool has a threshold. Below it, the tool serves you. Above it, you serve the tool. A bicycle saves time. But past a certain speed, a car consumes more time (working to pay for it, sitting in traffic) than it saves. Society must choose convivial tools that expand freedom.

Key concept: convivial vs. industrial tools

E.F. Schumacher (1911–1977)

Small is Beautiful, 1973

The right technology is one that fits the scale, the resources, and the needs of the community. Big technology is not better — it is just bigger. He proposed "intermediate technology": powerful enough to improve life, simple enough to be controlled locally.

Key concept: intermediate / appropriate technology

What they share: technology follows its own logic, and beyond a certain scale or speed, it stops serving humans and starts dominating them.

Critical Theory: Technology Embodies Power

Langdon Winner (1944–)

Do Artifacts Have Politics?, 1980

Technical objects are not neutral. They carry political choices inside their design. The low bridges on Long Island excluded buses (= excluded poor people and Black people). The politics is in the object, not just in the user.

Key concept: the politics of artifacts

Albert Borgmann (1937–)

Technology and the Character of Contemporary Life, 1984

Modern technology hides how it works. A thermostat gives you warmth but eliminates the skill of making fire, the ritual, the community around the hearth. Technology turns citizens into consumers: passive, disconnected from the process.

Key concept: the device paradigm

Ursula Franklin (1921–2016)

The Real World of Technology, 1989

Holistic technologies: the worker controls the whole process (a potter making a pot). Prescriptive technologies: the worker follows instructions for one small step (an assembly line). Modern technology is increasingly prescriptive: it reduces autonomy and skill.

Key concept: holistic vs. prescriptive technology

Andrew Feenberg (1943–)

Transforming Technology, 2002

Technology is not destiny. It is the result of design choices, and those choices can be changed. If technology is political, then it can also be democratised. Citizens can demand a say in how technologies are designed, governed, and deployed.

Key concept: democratic rationalisation of technology

What they share: technology carries politics in its design. But Feenberg adds a crucial point: if the politics can be designed in, it can also be redesigned.

Today: Solutionism, Imaginaries, and Sovereignty

Evgeny Morozov (1984–)

To Save Everything, Click Here, 2013

Technological solutionism: the belief that every complex problem has a clean technological fix. This depoliticises problems (poverty becomes a "data problem") and concentrates power in tech companies. The robot bee is a perfect example: a tech fix for a political problem.

Key concept: technological solutionism

Sheila Jasanoff (1944–)

The Ethics of Invention, 2016

Societies imagine their future through technology. These "sociotechnical imaginaries" shape which technologies get funded and which problems are visible. The robot bee imaginary makes ecological restoration invisible — because it does not fit the narrative.

Key concept: sociotechnical imaginaries

Vandana Shiva (1952–)

Biopiracy, 1997; Stolen Harvest, 2000

Corporations steal traditional knowledge and patent it (biopiracy). Patented seeds create dependency and destroy biodiversity. The fight for seed sovereignty is a fight for autonomy. "Monocultures of the mind": the belief that there is only one way to farm, one kind of knowledge.

Key concept: seed sovereignty / monocultures of the mind

Donna Haraway (1944–) / Bruno Latour (1947–2022)

Staying with the Trouble, 2016 / Science in Action, 1987

Haraway: sympoiesis — making-together. Living systems create each other; machines don't. Latour: objects are actors. The robot bee is not just a tool — it reshapes the entire network of relationships between farmers, corporations, ecosystems, and institutions.

Key concepts: sympoiesis / actor-network theory

What they share: technology is embedded in global power structures. Whose imaginary? Whose sovereignty? Whose future?

The Governance Principle

The same physical technology can belong to different sustainability models depending on who owns it, who controls it, and how it is governed.

Agrivoltaics	Corporate-owned	→	Cooperative-owned	***Ownership***
Biogas	Industrial scale	→	Small farm	***Scale***
Water meters	Corporate data platform	→	Public data, community governed	***Governance***
Renewable energy	Multinational's wind farm on community land	→	Community energy cooperative	***Power***

Feenberg (2002): if politics can be designed into technology, it can also be redesigned. Technology is not destiny — it is a political choice.

Policies: Where Ideologies Meet Reality

Public policies are always contradictory, because they are produced by governments where different sustainability ideologies compete. In the same country, you can find:

Subsidies for fossil fuel extraction	vs.	Carbon taxes on fossil fuel use
Tax breaks for real estate developers	vs.	Social housing built with ecological materials
Subsidising low-cost airlines	vs.	Investing in free public transport
Allowing corporations to patent seeds	vs.	Protecting farmers' right to save and exchange seeds

The same government does both. The taxonomy of four sustainabilities lets you see which ideology is behind each policy — and whose interests it serves.

From Theory to Practice

We have built a complete arc:

1	**One question**	How much natural capital can we replace?
2	**Four answers**	VW, W, S, VS — four sustainability models
3	**Four ideologies**	Each defines a community, names an enemy, prescribes action
4	**Different types of technology**	Each ideology produces and promotes specific technologies
5	**Now: four types of policy**	Every real-world policy serves one of these ideologies

The exercise tests whether you can decode which ideology hides behind a policy — using the taxonomy we built together.

Exercise: Decode the Ideology Behind the Policy

You have 64 policies — each one based on a real technology. For each policy, classify it: VW, W, S, or VS. For trap cases, explain your reasoning.

1. **Ask the fundamental question**
   What does this policy assume about the substitutability of nature? Can the natural resource be replaced (VW)? Managed carefully (W)? Must be protected (S)? Has intrinsic value (VS)?

2. **Identify who benefits**
   Does the policy benefit corporations (VW/W), communities (S), or the ecosystem itself (VS)? Follow the money and the power.

3. **Watch the trap cases**
   The same technology can produce different policies. Compare: agrivoltaics cooperative-owned (S) vs. corporate-owned (W). Same panels — different ideology. The policy determines the model, not the technology.