

Bridging the Natural vs. Social Science Divide

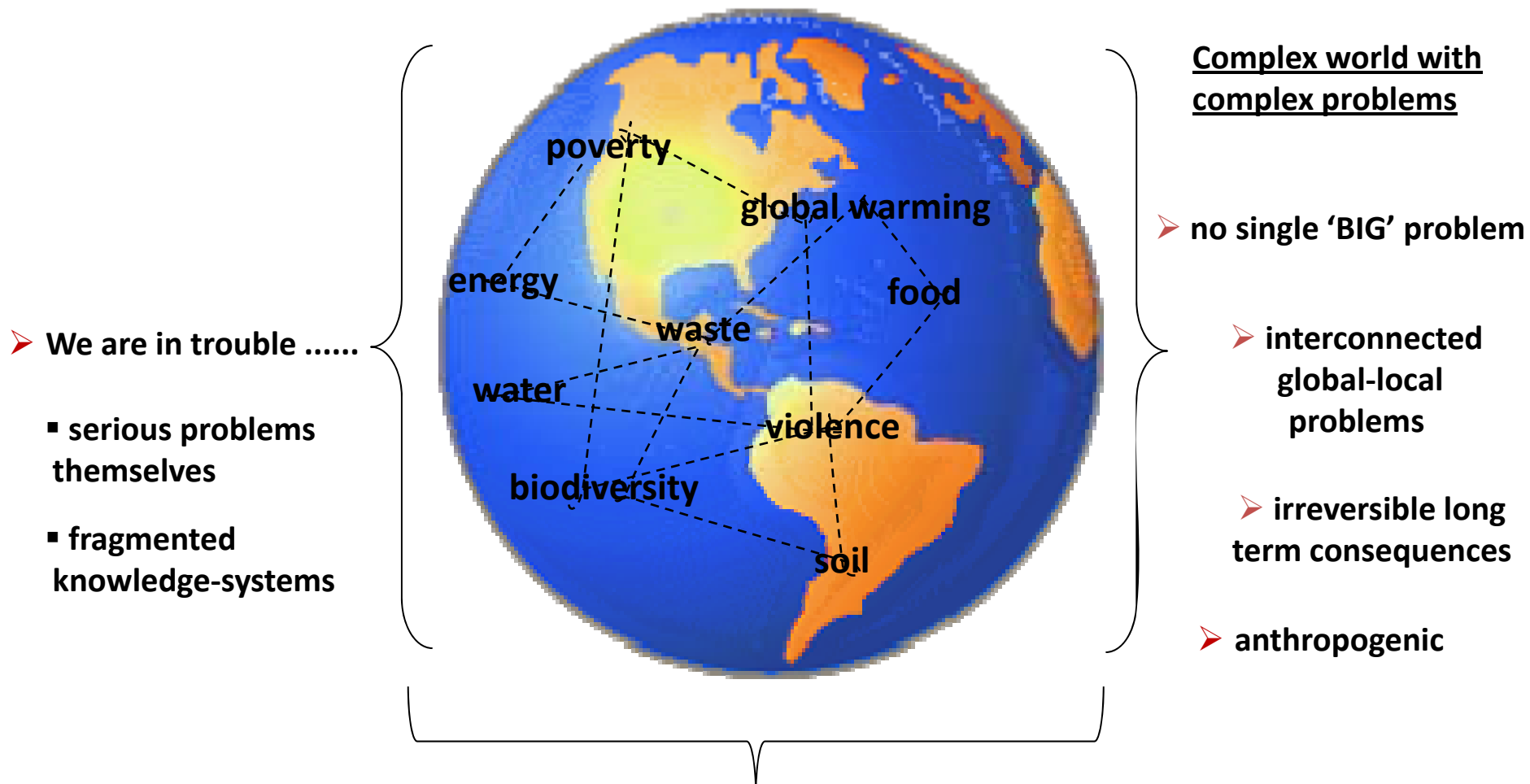
Why deconstructing and reconstructing the 'Social' is important

John van Breda

Structure of presentation

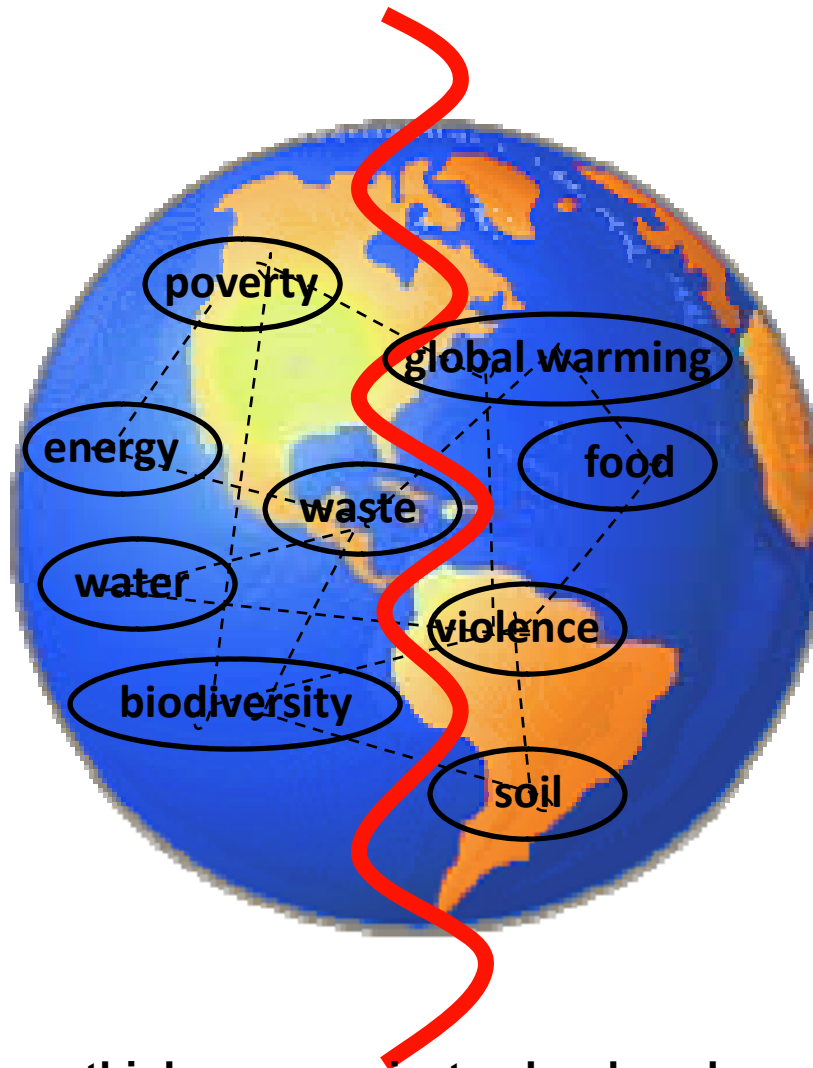
1. Planetary crisis and the challenge for transdisciplinary dialogue
2. The disciplinary divide (salient points)
 - the natural sciences
 - the social sciences
3. Bridging the disciplinary divide = paradigm shift (Bruno Latour)
 - ideological level
 - ontological level
 - epistemological level
 - methodological level
4. Conclusion
5. Discussion

Planetary Crises
'Polycrisis' – E. Morin



Trans-disciplinary Challenge ???

Natural



- Reductionism
- Singularisation
- Separation

Social

Question: How do we think, communicate, develop shared understanding *across* disciplinary boundaries when for more than three centuries fundamental differences emerged over how we have conceptualised / used:

'NATURE' ↔ **'SCIENCE'** ↔ **'SOCIETY'**

Modernity

[Galileo; Newton; Descartes]

Natural Sciences

physics

chemistry

biology

Social Sciences

economics

psychology

sociology

Nature (res extensa)

- 'hard' facts
- observable
- measurable
- known objectively

EXPLANATION

Society (res cogitans)

- 'soft' issues
- human values
- human needs
- human interests
- human senses

INTERPRETATION

Consequences

-
-
-
-

Consequences (contd)

- **Ontological:** the 'natural' vs. the 'social' = two fundamentally **different** worlds / realities
Nature = universal laws [gravity ; thermodynamics]
- **Epistemological:** two fundamentally different worlds which can only be known in equally **different** ways:
Nature = **EXPLANATION** vs. Society = **INTERPRETATION**
[CP Snow: "Two Cultures"]
- **Methodological:** **Scientific explanation = reductionism** *explanans* → *explanandum*
[building blocks; atoms → cell; brain functions; emotions; social behaviour]
- **Goal: absolute certainty = objective knowledge** of *explanans* = free from the senses; is more 'real' or 'material' than *explanandum*

THE 'TRUTH' LIES BENEATH THE SURFACE

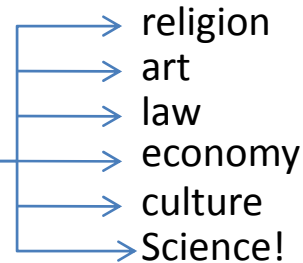
- **Objectivity:** is "blind sight, seeing without inference, interpretation, or intelligence ... to be 'objective' is to aspire to knowledge that bears no trace of the knower – i.e. knowledge unmarked by prejudice, or skill, fantasy, or judgement, wishing or striving Objectivity filters out the noise that undermines certainty"
[Lorraine Daston & Peter Galison, 2007]
- **Knowledge = Power:** objective knowledge of the laws of nature gives us control **over** Nature
'Freedom' **from** Nature [technoscience]

Consequences (contd)

'Social Sciences' **imitating** the Natural Sciences [Comte / Durkheim]

➤ The '**social**' = **explanans**: the 'social' is imagined as a 'substance' – *sui generis* – some-thing which can explain other phenomena [**explanandum**]

➤ '**Social laws**', '**forces**', '**relations**', '**factors**'



➤ **Positivist Social Science**: goes to great lengths to demonstrate the 'existence' / 'presence' of these social 'laws' and 'forces' through various mathematical / statistical methods [quantitative social 'science']

➤ **Social explanation as critique**: object / phenomenon (explanandum) which is explained 'socially' is not what it appears to be / it is merely a representation / signifier of a 'deeper' or more 'material' social reality [**explanans**] / giving rise to various social theories of 'false consciousness', 'ideology' etc. [e.g. Marxism]

➤ 'Social Science' **as imitator** of Natural Science has failed to bridge the disciplinary divide – on the contrary, its failed attempts to provide 'social' explanations of all the other spheres of life, and especially Science, only served to **reinforce / deepen the disciplinary divide** between Social and Natural Sciences.

➤ **NB QUESTION**: faced with the **polycrisis**, how do we **communicate** and develop a **shared language** across this divide if the 'social' is understood in this way? [social = substance / explanans which can explain other things]

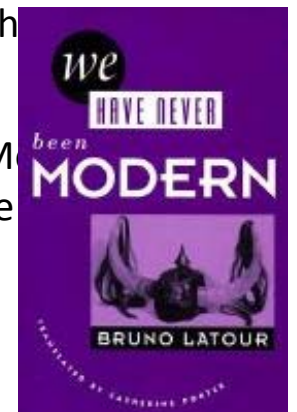
Bridging the Disciplinary Divide = Paradigm Shift

Bruno Latour

... building shared understanding *between, across* and even *beyond* disciplinary boundaries implies a radical re-think on **all levels** of how we think of 'Nature', 'Science' and 'Society'

Ideological level:

- Should we believe the grand narrative of Modernity, that our technoscience has made us 'independent' and 'free' *from* Nature and Society?
- Does the polycrisis not tell us a radically different story? That is, that *our future on the planet has become more (not less) entangled with Nature.*
- *If so, how* do we respond to the **ideology** of Modernity? How do we deal with the **(un)intended consequences** of our own domination and transformation of Nature? **Can we dominate our domination?**
- If we can no longer feed ourselves the story of Modernity, then which way do we turn?
 - Do we go back to **Pre-Modernity**? Is this really possible?
- If not, should we rather look towards **Post-modernity** and join the **deconstructionists** in their relentless deconstruction of both the subject and object? Is this possible / desirable?
 - However, if it becomes clear the **Post-modern project** is the radical / logical extension of Modernity's subject vs. object separation, and is therefore a **symptom**, rather than solution, to the Modernity, where does this lead us to?
- **One** possibility is to acknowledge our '**non-modernity**', that is: that we have never been 'Modern' – that we will always be dependent / attached to Nature [notwithstanding all the achievements of technoscience]



Ontological level:

We need to make at least three moves, simultaneously

➤ **1st Move:** the ‘social’ = *explanandum* / social ≠ *explanans*

i.e. the ‘social’ is not a some-thing, a substance [*sui generis*] which explains other phenomena / the ‘social’ *does not do the explaining* / the ‘social’ is *that* which needs to be explained

“The adjective ‘social’ codes not a substance, nor a domain of reality (i.e. by opposition for instance to the ‘natural’ or the ‘technical’ or the ‘economic’), but a **way of tying together** heterogeneous bundles, or **translating** some type of entities into another (translation being the opposite of substitution” (Latour, 1988; Callon, 1986).

➤ “the ‘social’ is not the name of any one link in a chain, nor even that of the chain, but it is that of the **chaining** itself. A laboratory discovery, a piece of technology, a work of art, indeed a living being such as an earthworm are ‘social’ in the sense that whenever they **deeply modify (or translate) what they are tied to**” [Latour, 2007]

➤ “there is **no independent** domain of the ‘social’ as opposed to the ‘law’, ‘religion’, ‘science’, ‘technology’ etc. ... it makes a huge lasting difference whether **connections** are made **legally**, **scientifically**, **religiously**, **politically**, **technically** or **ecologically**. It is the adverb that designates a really major **ontological nuance** even though there is no substantive definition to be given: the social is not a domain, it is a **type of relation**. The whole attention should shift to **modes of relations**, or **modes of existence**” [Latour: 2007]

Ontological level:

➤ **2nd Move: the 'social' belongs to both humans *and* non-humans**

If the 'social' is no longer a separate domain of reality, but rather that which does the connecting / tying together of all the different domains of reality, then it follows that the 'social' belongs to both humans and non-humans:

- the 'social' is no longer exclusively a 'human' phenomenon or reality
- instead it becomes possible to speak of the '**sociality**' of not only **human-human** relations, but also **human–non-human** and even **non-human–non-human** relations

To understand this better it is important to distinguish between: '**intermediaries**' and '**mediators**'

“An **intermediary** is what **transports** meaning or force **without transformation**: defining its inputs is enough to define its outputs. For all practical purposes, an intermediary can be taken as a **black box**, even it is internally made of many parts.

Mediators, on the other hand, their input is never a good predictor of their output; their **specificity** has to be taken into account every time. **Mediators transform, translate, distorts** the meaning or elements they are supposed to carry. No matter how *simple* a mediator may look, it may become *complex*; it may lead in *multiple directions* which will *modify* all the contradictory accounts attributed to its role” [Latour, 2005]

Ontological Level (contd)

➤ **3rd Move**: stop applying the method and logic of **reductio ad absurdum** – i.e. to see how much we can **deduct, reduce or deconstruct from** the **things** around us, until we are left with only:

- ❑ Fundamental ‘building blocks’ [positivism]
- ❑ ‘Nothing’ but different ‘discourses’ / ‘texts’ [deconstructionism]
- ❑ ‘Relational / emergent properties’ [systems theory]

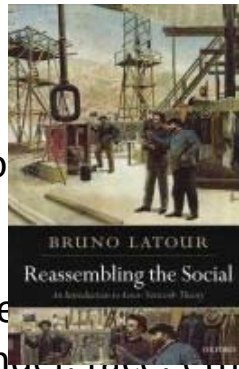
.... **instead**, we should do the direct opposite – i.e. applying a **logic of addition to things** by allowing ‘things’ to resume center stage in our thinking (philosophy) and by allowing them to **accumulate, attract** and **gather** as much as possible.....

➤ in so doing, the notion of ‘thick’ (Geertz) social networks between **people–things, things–people** and **things–things** emerges, postulating an image of a ‘**real**’ or ‘**objective**’ world in the sense that it can **object to, resist** or **change** our ideas, interpretations and especially our audacious post-modern attempts to deconstruct, or empty it out

Epistemological level:

➤ Applying the **logic of addition** and accumulation, our task of ‘understanding’ the ‘social’ becomes one of ‘**tracing**’ and ‘**inscribing**’ the ‘**thick**’ (Geertz) or fine-grain processes of ‘network-formation’ between human *and* non-human actors / mediators as they continuously interact to create and re-create their world

[Latour: **Re-assembling the Social**’]



➤ In other words, to say something has been **constructed**’ is to try and understand all the detailed transactions of **agency** that went into *between* things–people; people–people; things–things [vs. reductionism and deconstructionism]

➤ However, in so doing, we need to be **careful** as we approach this dynamic process with our **existing social/sociological categories** [class, gender, race, ethnicity, rural, urban etc.], because when interacting and creating networks the actors / mediators can assume **more than one identity and role** at the same time – in this dynamic process actors / mediators **can be A and non-A simultaneously** [quantum level]

➤ **Reminder:** we are **not** trying to give a **positivist ‘social’ explanation** of the work of the actors / mediators – therefore, we cannot merely force the actors / mediators *into* our existing conceptual categories / we should allow actors to **imagine** [practical metaphysics] and **act-out** their worlds, before ‘arresting’ them with our *a priori* sociological categories [neo-Kantianism]

➤ In this way, a **dynamic ‘social’ world** emerges, in which people are **not merely acting upon / translating their** world – they are also, at the same time, **being ‘mediated’, being assembled** and **being transformed by things**

➤ We – **researchers** – are not ‘above’ this process of assembling and mediation. We are also actors, participating in the very same network-creating processes we are studying, simultaneously **mediating** and **being mediated** by what we study

Methodological level:

- Our **non-modernity**, the fact that we (society) have never been ‘free’ from Nature, but have instead become even **more entangled / dependent / attached to** Nature, indeed has far-reaching methodological implications
- Similarly, our changed **ontology** in which the ‘social’ is no longer reduced to **humans** only, but is extended to also include **non-humans**, has equally far-reaching methodological implications, opening up new possibilities of a genuine **trans-disciplinary dialogue** between the natural and social sciences when collaborating in search of sustainable solutions of the complex planetary crises
- If there are **no more ‘two worlds’ or ‘two cultures’**, absolutely different and separate from each other, and if giving a ‘social’ account of the mediation and networking between humans and non-humans means explaining its **social construction** [vs. de-construction] then we put ourselves in a completely different position to bridge the seemingly ‘reified’ disciplinary divide
- For example, applying the **logic of addition** enables us to imagine an **ethnomethodology** (Garfinkel) of **soil** in which earthworms [oxygenation], micro-organisms [bacteria], plants [fine root-systems], farmers [farming practices], yield [ha], food [security], land [use], [in]organic matter etc. are all treated **equally as actors / mediators**, who are continuously in a process of **assembling** and **translating** each other – thereby constructing the ‘**sociality**’ of soil.

Methodological level (contd.)

- In other words, soil is no longer being seen as an inert medium merely for upholding plants and to be studied by 'soil scientists' only. On contrary, if the **sociality of soil** becomes our object of study, then it allows for soil scientists, economists, philosophers, micro-biologists, planners etc. to assemble and undertake inter-disciplinary studies and research projects
- in fact, the more we apply the **logic of addition** to soil and allow it to **accumulate, assemble and tie together** as many as possible humans and non-humans **in and around** it, the more we are in a position to see soil **becoming a res publica** [*matter of public concern*] which takes us **beyond** the boundaries of academia and inter-disciplinary studies, and **more towards trans-disciplinary studies**
- Similarly, when applying the same **logic of addition** to all other current **res publicae** such as **water, climate, energy, waste, poverty, biodiversity** etc. we start seeing many different **publics** emerging and forming – around which humans and non-humans are assembling and being tied together by numerous 'relations' or 'connectors' reaffirming our dependence / attachment to Nature

Methodological level (contd.)

➤ To understand how **'things'** become **'matters of public concern'** it helps to look back into the **etymology** of the word "Thing" [English]; "Ding" [German]; "Althing" [Icelandic]; "Thin" [Old High German] which originally designated a certain type of **archaic assembly** where people were gathered in **natural sites and around the matters of concern** to them, to debate these, to make decisions etc.



Thingvellir - the Plain of the National Assembly or Althing, derives its name from the open-air legislative assembly, the forerunner of the Icelandic Parliament, established here in 930AD. Chieftains in Iceland gathered in a natural amphitheatre (where the continental fault lines meet) and formed the world's first parliament, the Althing. The meeting was called the Thingvellir ("parliament plains"), and over the next 300 years representatives journeyed here once a year to elect leaders, argue cases and settle disputes.

➤ "The point about reviving this old etymology is that we don't assemble because we agree, look alike, feel good, are socially compatible or wish to fuse together, but because we are brought by **divisive matters of concern** into some neutral, isolated place in order to come to some sort of provisional makeshift (dis)agreement. If the "Ding" designates both those **who** assemble because they are concerned as well as **what** causes their concerns and divisions, it should become the **center of our attention**. [Latour, *Making Things Public*, 2005, p.23]

Methodological level (contd.)

➤ ... if these **divisive matters of public concern** are indeed becoming the **center of our attention**, then it is important to highlight a few aspects about them – especially when communicating and learning **across the disciplinary divide** is at stake:

1. **Social harmony**, or sharing in some or other common ground [values-systems], is **not a prerequisite** for public-formation to happen.
2. Instead, if we are brought together by our **concerns** over the **(un)intended consequences of what divides** us, then it is reasonable and realistic to expect **high levels of contestation** to exist over the exact nature of the problems we are facing and how to understand and know them – in other words, high levels of ontological and epistemological disagreements.
3. Such contestation may create strong impressions of ‘**uncertainty**’ and ‘**unpredictability**’ which is problematic for the positivist scientific attitude that sees certainty, replicability and predictability as being integral to what ‘science’ is all about – this poses a real challenge for trans-disciplinary dialogue and the question is how do the participants / stakeholders in such dialogue intend dealing with this perceived and/or real uncertainty / unpredictability?
4. When Science (natural and social sciences) have agreed on **strategies** and **processes** on how to engage with the unpredictability of the *res publicae*, then the focus shifts to the many different practical ways ‘**public spaces**’ are being organised so as **to give voice to the things** around which **publics** is being formed.

Methodological level (contd.)

➤ These 'public spaces' can also be referred to as “ ‘**atmospheres of democracy**’. ‘Atmospheres’ is a concept borrowed from Peter Sloterdijk that focuses on the **invisible** and **palpable** of what a space is. ‘**Public spaces**’, is our way to talk about and mention **where** it is housed, **how** it is lit, its **architecture**, **how** people are organised, **where** they sit, **how** they bring issues [to the table] It is about the different **techniques of representation**” [Latour, 2007]

➤ To be sure, we are talking about the ‘**commons**’ and how to represent the multiple ways in which humans and non-humans are continuously being assembled in different **modes, places, spaces, sites** both **inside** and **outside** of state structures

➤ Key in this, is the challenge of how to represent the **non-separability** of the ‘**commons**’

▪ How do we **represent non-human things** that are **connecting** us, but having to **compete** with the many different **human voices and interests**?

▪ How do we ensure that the **techniques of representation** employed / deployed by humans do **not exclude** the **voices of non-humans** and, in so doing, repeat the ‘natural’ vs. ‘social’ separation of the ‘commons’?

Methodological level (contd.)

- “An actor is whatever makes a difference. **Imagine we have river represented here.** Rivers make a difference, especially now where the politics of water is very important. It makes sense to say that rivers are important **political actors**. On two conditions: one of them is that the river has to be made **to speak through plenty of techniques of representation**. The question is: ‘**how to make a river speak**’ and ‘what is the **speech** of the river’? And the second one is ‘what is the **role** played by the **river speech** where people in charge of **water management** talk about it?’
- Compared to these two important matters the question such as ‘**is the river a real actor?**’ is an **uninteresting** one. Distinguishing living from non-living entities was interesting for **pre-revolutionary Kantianism** in the 18th Century, but we are now living in the 21st Century. Now the **interesting** question is ‘**how can we represent all the non-humans?**’. Humans are attached to plenty of things. To seek to distinguish between humans and other entities was something very respectable, but is **now longer topical**. In the *matters of concern* of the 21st Century it is useless to tell humans from non-humans in them. They are things we need to **assemble around** in order to **solve cohabitation** with. And this is a very important **political question**. *To separate between humans and non-humans will not solve this question.* ” [Latour, 2005].

Conclusion

Descartes: Res extensa Res cogitans
 [natural] vs. [social]

Latour: **Res publicae**
 [naturalsocial]

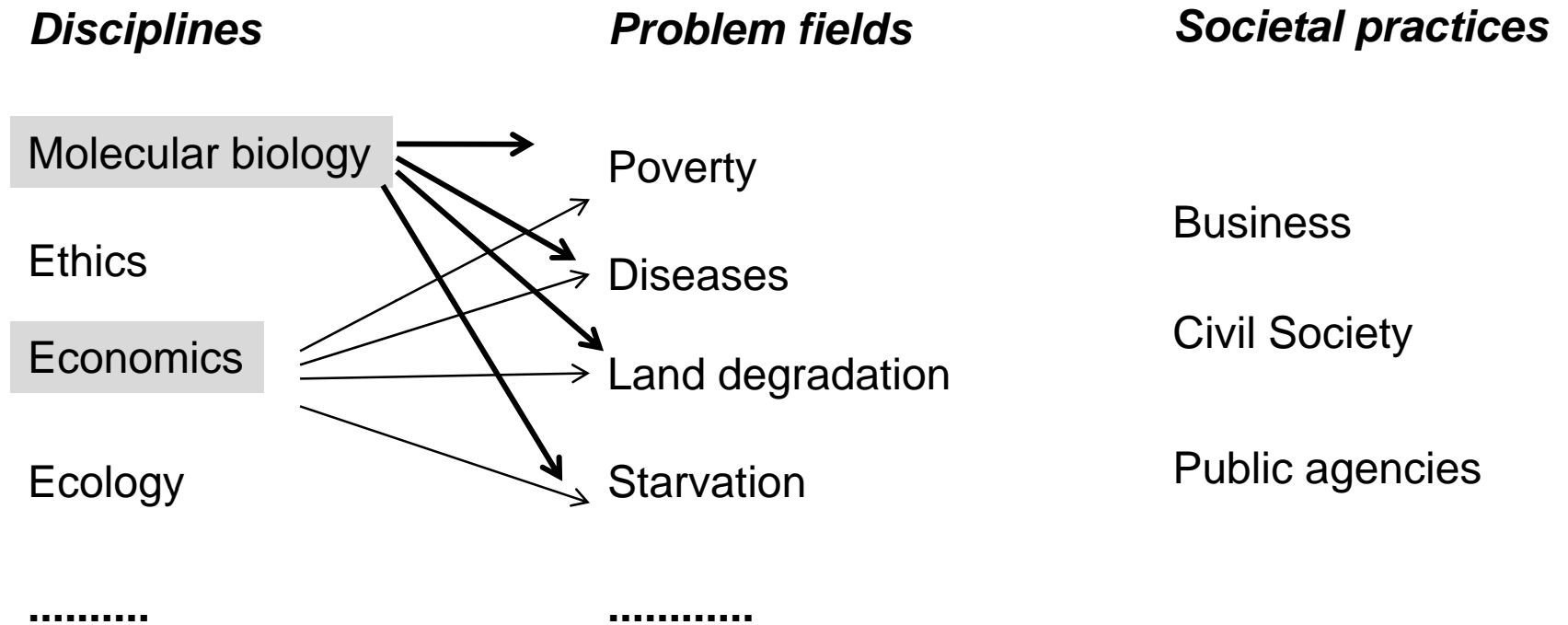
..... our work as **socialnatural scientists or transdisciplinarians** is only just beginning!

Polycrisis

- ✓ **IPCC – Global Warming:** 70% increase in GHG emissions between 1970 and 2004 2deg, 3deg, 4deg ???
- ✓ **Stern Report – Poverty:** poorer countries will suffer “first and most” from the consequences of global warming even though they have “contributed least” to global warming.
- ✓ **Global economic crisis:** will exacerbate this suffering as the global economy shrinks and up to 90% of the value of list companies is lost.
- ✓ **ILO – Unemployment:** number of unemployed in developing countries could rise by end of 2009 by between 18 and 51 million people over 2007 levels
- ✓ **Food Crisis:** when food prices rose by almost 60% during the first half of 2008, the number of people living in poverty increased by between 130 and 155 million.
- ✓ **IEA - Peak Oil:** demand for oil will increase by 45% by 2030 without any evidence that it will be possible to find this amount of oil as peak oil sets in across the world’s oil fields, thus further undermining traditional drivers of economic recovery.
- ✓ **MEA – Ecosystem services:** 15 out of 24 key eco-system services are degraded or used unsustainably, often with negative consequences for the poor – 1.3 billion people live in ecologically fragile environments located mainly in developing countries, half of whom are the rural poor.
- ✓ **Population – urbanisation:** 6 billion to 8 billion by 2030, a massive urbanisation wave is underway that has already pushed us across the 50% urbanised mark - unprecedented expansion and creation of new cities – African and Asian cities will absorb the additional two billion people even though they are the least equipped to handle this challenge



Problem framing in basic research (mostly disciplinary)

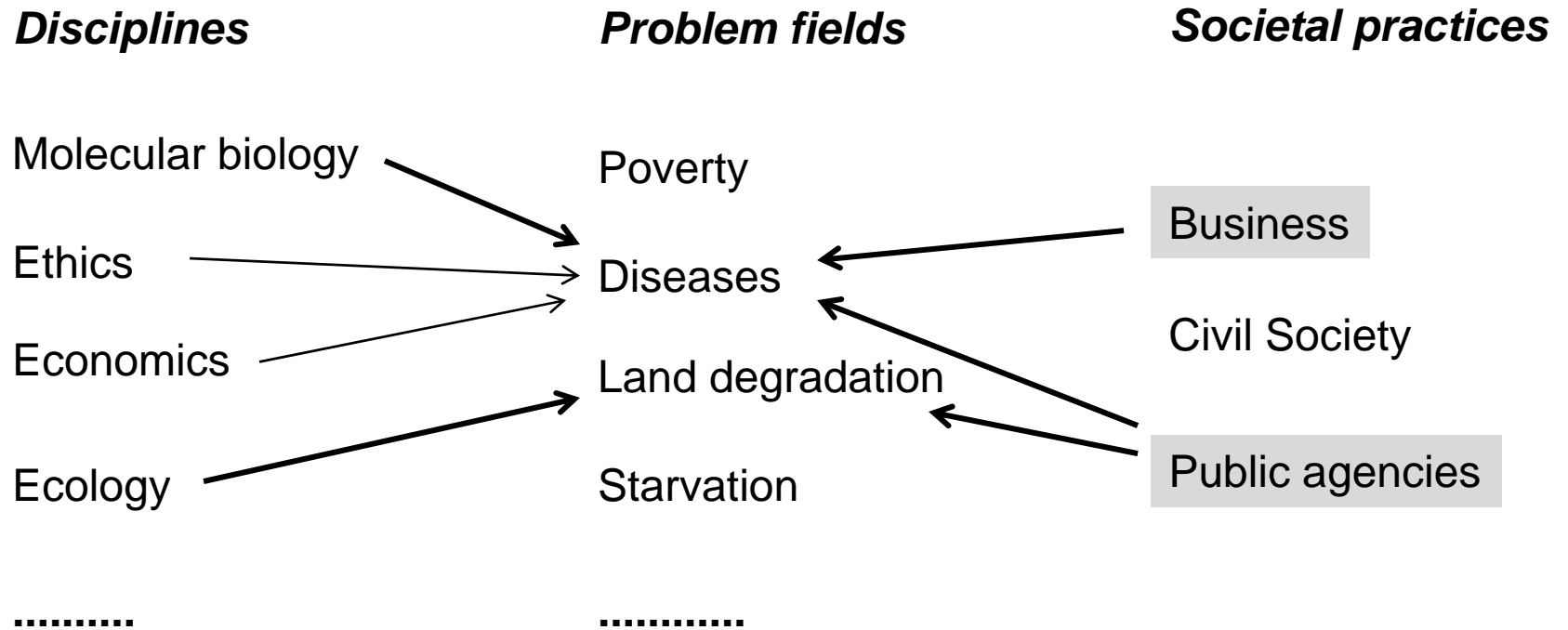


Problem/Problemsolving: describing and explaining processes by general models

Fig. 1 – Identifying and structuring problems in basic research

(Hirsch Hadorn et al. 2006: 123)

Problem framing in applied research (mostly inter- and multidisciplinary)

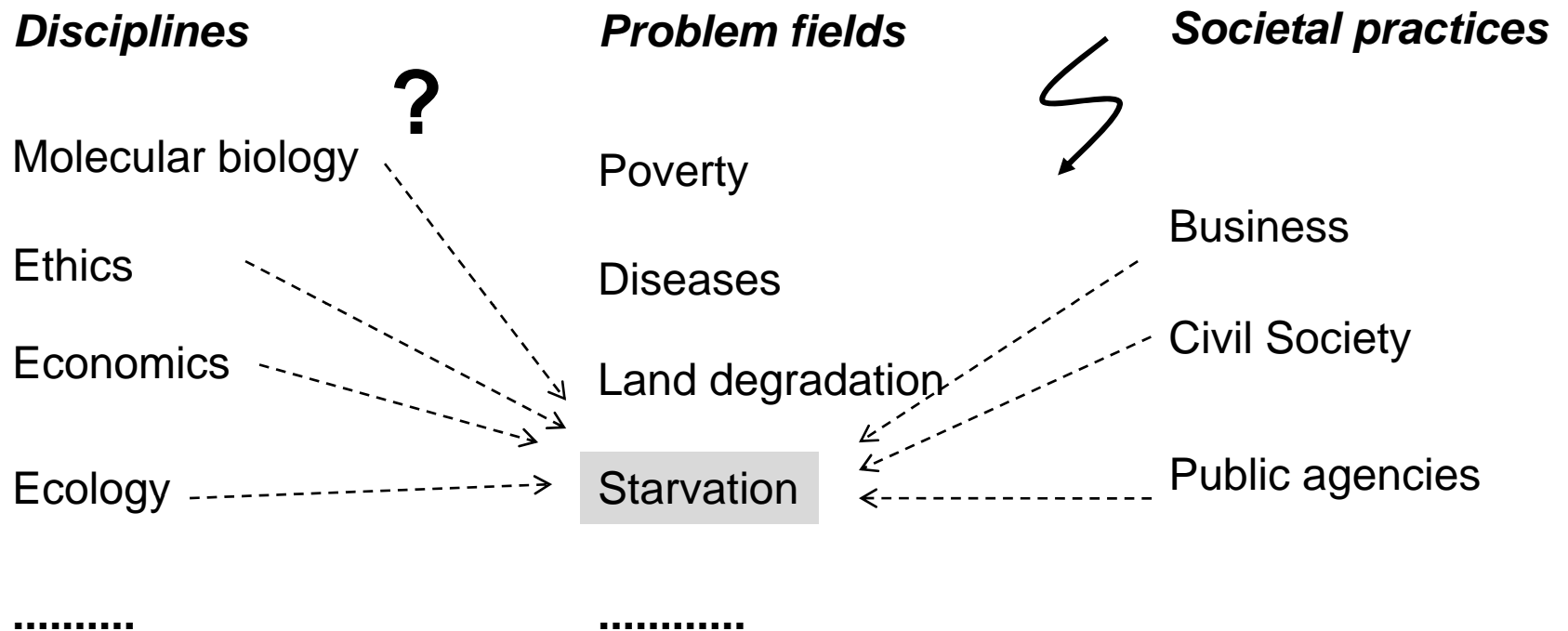


Problem/Problemsolving: describing and explaining the variability of processes in a problem field and developing measures to improve practices of clients

Fig. 2 – Identifying and structuring problems in applied research

Problem framing in transdisciplinary research

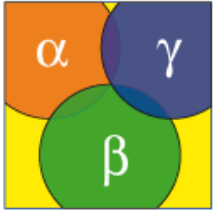

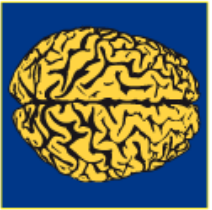

(always interdisciplinary but with disciplinary elements)



Problem/Problemsolving: understanding the complexity of issues and considering related practices with regard to the common good and the precautionary principle

Fig. 3 – Identifying and structuring problems in transdisciplinary research

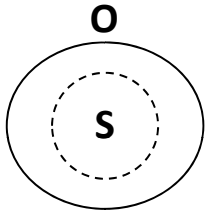
(Hirsch Hadorn et al. 2006: 123)

Case Study Methods	The Four Types of Knowledge Integration			
	Disciplines 	Systems 	Modes of Thought 	Interests 
1 Case representation (including case projection)				
Formative Scenario Analysis	XX	X	X	
System Dynamics	XX	X		
Material Flux Analysis	X	XX		
2 Case evaluation				
Multi-Attribute Utility Theory	X	X		X
Integrated Risk Management	X	X		
Life Cycle Assessment	X	XX		
Bio-Ecological Potential Analysis		XX	X	
3 Case transformation				
Area Development Negotiations		X	X	XX
Future Workshops			XX	X
4 Case study team methods				
Experiential Case Encounter			XX	X
Synthesis Moderation			X	X

Ontological / Epistemological Shifts

Illustrations:

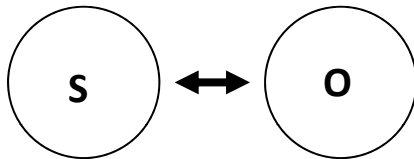
➤ Pre-modernity



= Absorption

[animism]

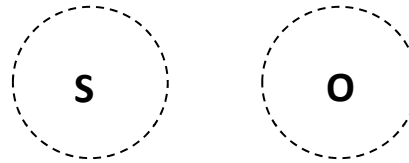
➤ Modernity



= Severance

[domination]

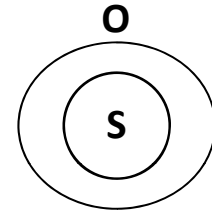
➤ Post-modernity



= Abolition

[deconstruction]

➤ “Non-modernity”



= Affirmation

[mediation/
agency]