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A perspectivist approach to knowledge asymmetries

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“Perspective is one of the component parts of reality. Far from being a disturbance of its fabric, it is its organizing element. ... Every life is a point of view directed upon the universe. Strictly speaking, what one sees, no other can. ... Reality happens to be, like a landscape, possessed of an infinite number of perspectives, all equally veracious and authentic. The sole false perspective is that which claims to be the only one there is.”

José Ortega y Gasset, 1961 [1923], *The theme of our time*



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Encompassing Knowledge Asymmetries

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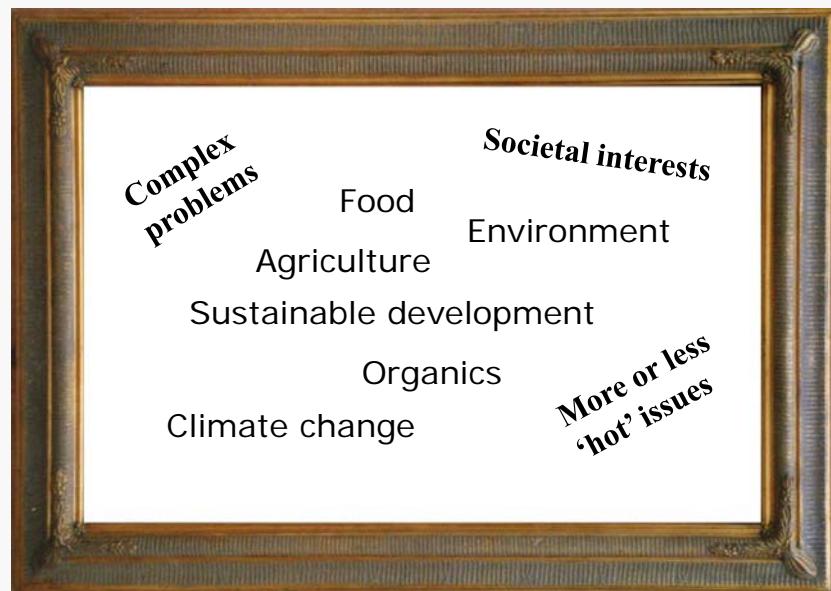
Question on the notion of knowledge asymmetries

Where do knowledge asymmetries come from?

- Knowledge and knowledge asymmetries are founded in cognition and learning
- I focus on the particular and important form of cognition and learning called science (in the broad continental sense)

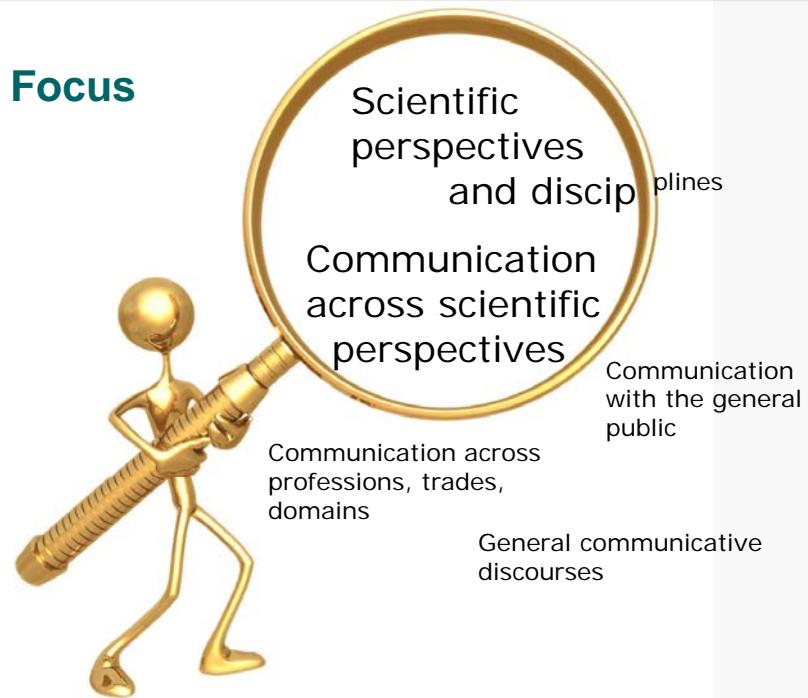
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Context



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Focus



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A map of the presentation

A perspectivist approach
- what does that mean?

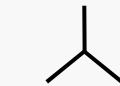
A scientific discipline, e.g.,
is a certain perspective on
the world with a certain
observational field

||

Scientific knowledge is based
on and framed in perspectives

||

To encompass knowledge
asymmetries we need to
encompass the knowledge
generating perspectives



A semiotic and cognitive
understanding of scientific
perspectives

Examples: Nature quality
Sustainability

Different forms of knowledge
asymmetries make communication
across perspectives difficult

Tools: Analysing the role of values,
Different kinds of science
Structures of complementarity
Knowledge in a perspectivist view
Polyocular communication

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A scientific discipline is a differentiated and refined perspective on an observational field

Scientific perspective

Concepts and logic
Theories and models
Examples
Instruments
Questions and problems

Observational field

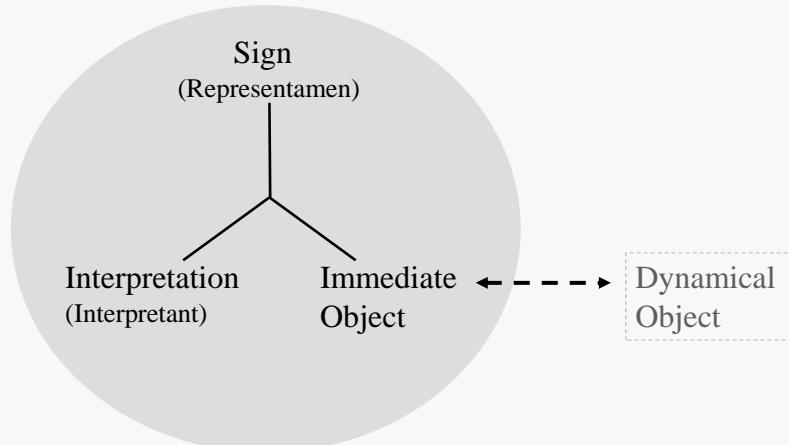
Focus
Delimitation
Aspects
Phenomena



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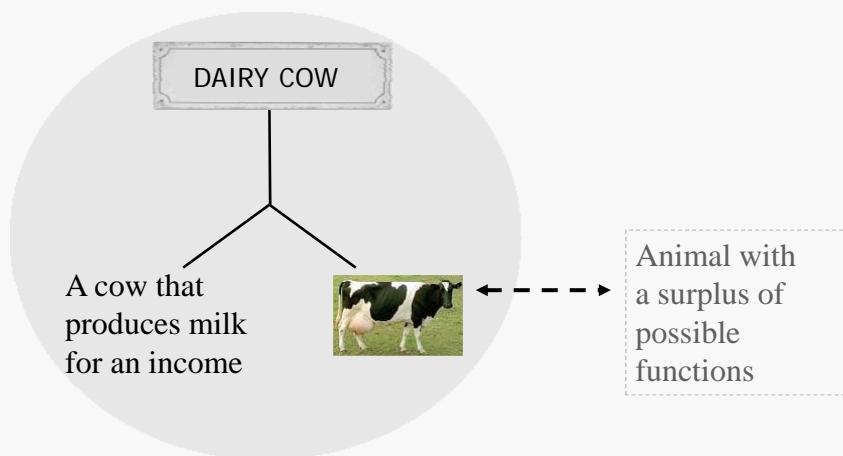
How does science represent?

Charles S. Peirce's semiotics: the triadic sign



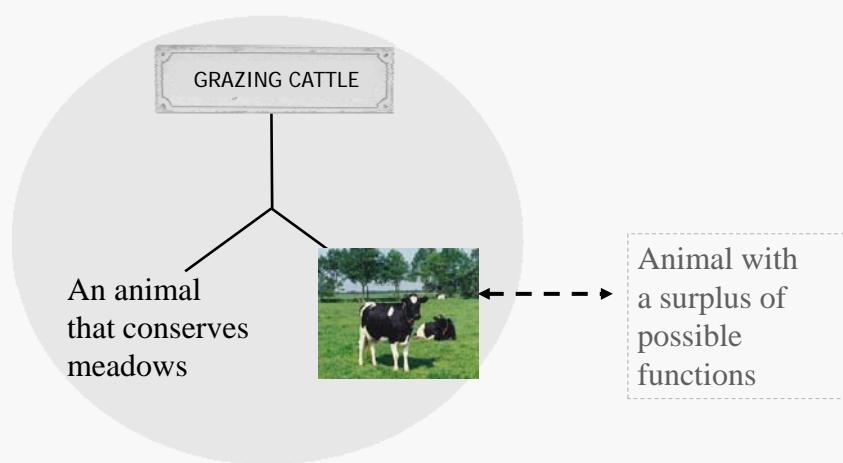
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What do we mean by “cow”?



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What do we mean by “cow”?



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Are we observing the same thing? Two conditions for cognition

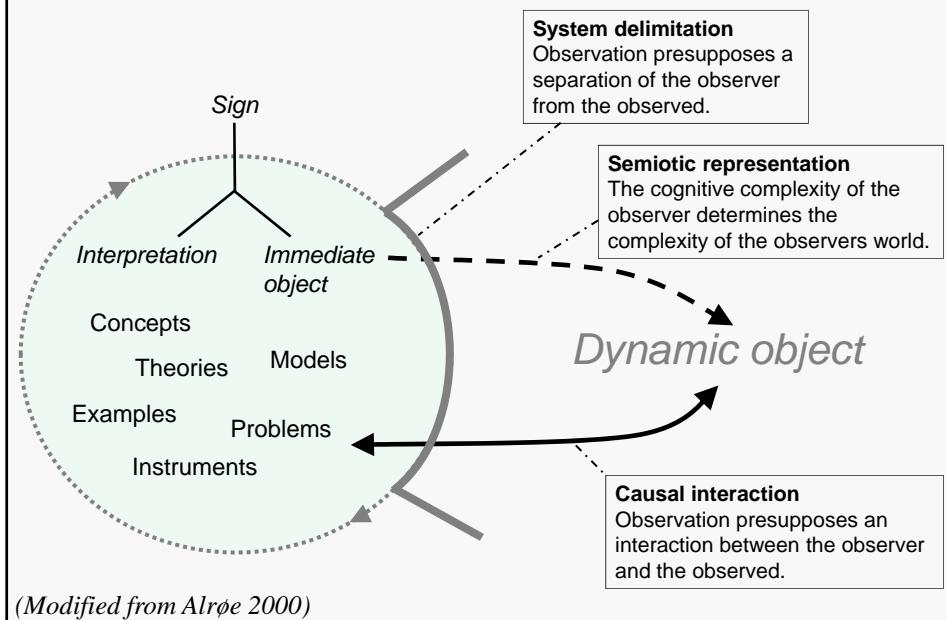
1. What we see depends on how we see it – and the same thing may therefore be seen in different ways.
 - Any cognition is necessarily a reduction since it is based on a specific context.
 - Any dynamical object has a surplus of possibilities for cognition – there is no complete cognition.

2. We cannot be sure that we see the same thing – even though we say we do.
 - A name or a description creates different interpretations or understandings of different immediate objects for different people – or for different perspectives.
 - Immediate objects do refer to dynamical ‘objects in themselves’, and dynamical objects ‘strike back’ in our interaction with them.
 - But none of the immediate objects as they are represented in the various perspectives is the same as the dynamical object in itself.

(Alrøe and Noe 2008)

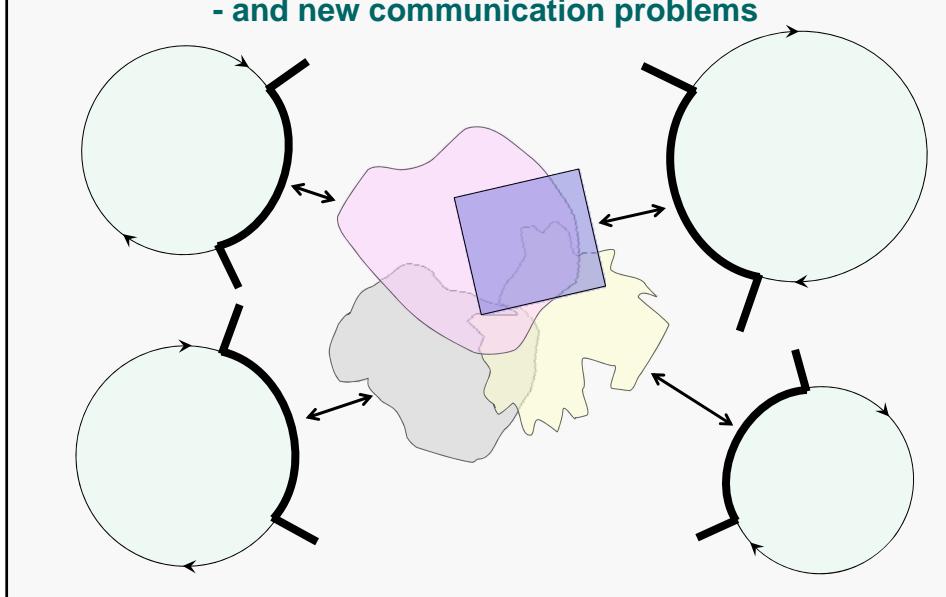
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A cognitive model of a scientific perspective



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The differentiation and specialisation of science creates strong monoocular knowledge - and new communication problems



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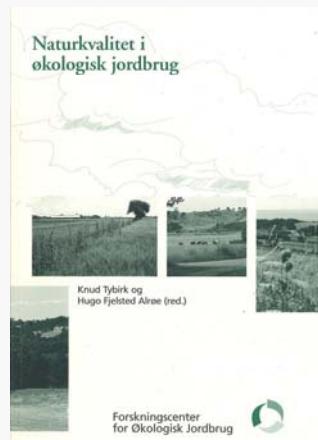
Incompatible perspectives: Example 1 Nature quality

How to do research in
nature quality?

What is good nature?

Does organic agriculture have a special
conception of nature?

How do 'natural-history-biologists' and
'ecology-biologists' understand nature
quality?



(Knowledge synthesis, 2001)

Crossdisciplinary research on nature quality

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**1: Knowledge synthesis that clarified different
perceptions of nature quality** [link](#)

2: Research project with four scientific perspectives:

- Natural history biological perspective (WP 3)
- ecological soil biology perspective (WP 4)
- geographical land use perspective (WP 2)
- sociological nature experience perspective (WP 5)

**How to handle the (very) different perspectives in the
project?**

- Cross-cuttings between different WP/perspectives based on shared study areas and shared data – but still problematic communication (<http://orgprints.org/3921>)
- Scientific article with a multiperspectival analysis of considerations and interests from three different perspectives on nature: Culturalist, Naturalist and Ecologist – interesting but difficult to carry out ...
(Tybirk, Alrøe and Frederiksen 2004)

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Distinctive concepts of nature

“Nature as that which is not human”

Controlled, ordered culturally formed nature



The culturalists good nature

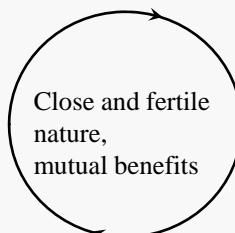
Untouched, original, naturally formed nature



The naturalists good nature

“Nature as an allied”
“Humans as part of nature”

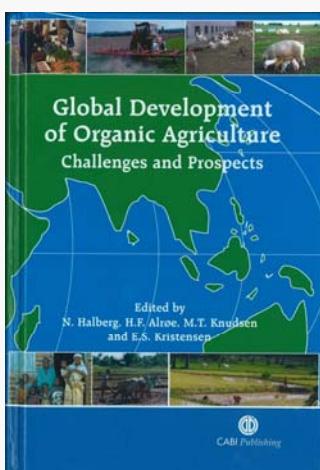
Ecosystemic concepts of nature



The ecologists good nature

Incompatible perspectives: Example 2 Globalisation and sustainable development

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CABI Publishing, 2006
(Based on international knowledge synthesis)

1. Growth without borders	2. Growth within limits	3. Growth and ecological injustice
Globalisation is not a problem, on the contrary: globalization provides new opportunities for the market.	The economic system is dependent on a fragile ecological system with limits to growth.	Development and efficiency are not solutions, but causes of social and ecological problems due to commercialisation of hitherto commons.

(Byrne, Glover and Alrøe 2006, p. 54)

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How can organic agriculture meet the challenges of globalization and sustainable development? Multiperspectival conclusions

	1. Growth without borders	2. Growth within limits	3. Growth and ecological injustice
Focus	Market solutions	Ecological system limits	Individuals and local communities
Relevant discipline	Neo-classical and environmental economics	Ecological economics	Political ecology
Characteristic concepts	Free trade, internalizing external costs	Sustainable scale, finite ecosphere, functional integrity	Ecological justice, fairness with regard to the common environment
How may certified organic agriculture meet the challenges of globalization?	Develop globally recognized principles and regionally adapted standards; create a space for organic agriculture in free trade institutions, e.g. the 'green box' in WTO	Enforce principles of ecology and sustainability in the organic certification standards to resist ill effects of market pressures	Include ecological justice in the organic certification standards to resist ill effects of e.g. distant trade, corporate involvement and large-scale cash-cropping
How can certified organic agriculture offer a solution?	Provide alternative products in the market and increase consumer choices	Provide means to promote sustainability in non-localized food systems with global trade	Provide means to promote ecological justice in non-localized food systems; create alliance with fair trade
How can non-certified organic agriculture offer a solution?	Through institutional protection of vital local primary production systems and markets	Provide a more sustainable strategy to development of local agriculture in low-income countries	Provide local food systems that promote ecological justice; institutional support for their further development

(Halberg, Alrøe and Kristensen 2006, p. 346)

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Other examples of conflicting perspectives from my context

Another within sustainability: Functional integrity vs. resource sufficiency

Perceptions of animal welfare: Natural behaviour vs. clinical health.
Individual vs. production system focus

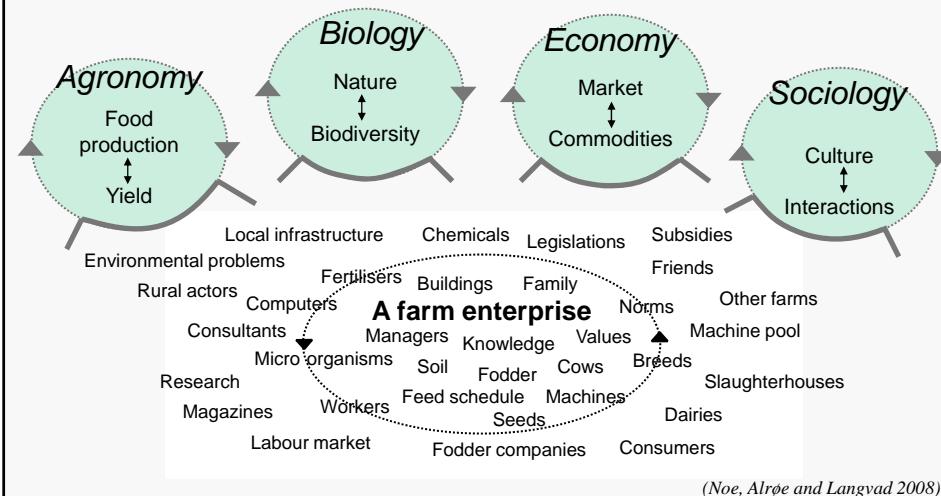
Perceptions of soil quality: Specific soil attributes vs. soil qualities in relation to productivity, environment and human health

Understanding organics: What is organics and what makes it move:
market vs. meaningful alternative vs. protest

Multifunctional agriculture: Functional differentiation as a prerequisite and a barrier for multifunctionality.
Economics as a hegemonic perspective.

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Crossdisciplinary research on multifunctional agriculture



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General problems in crossdisciplinary research (and in the use of science in democratic debate and public decision making)

- There is a fundamental and increasing heterogeneity of scientific perspectives due to functional differentiation
- The perspectives are often valuable in themselves and not reducible to other perspectives
- Fundamental concepts are understood differently in different perspectives
- Logics, problems and agendas are contested in crossdisciplinary work
- Hegemony: often a dominating perspective transforms research communication and results into its own image

**We lack tools to handle this heterogeneity of scientific perspectives and the problems connected with it!
And this applies as well to knowledge asymmetries.**

Tools to understand and handle conflicting scientific perspectives and the connected knowledge asymmetries – some ideas and suggestions

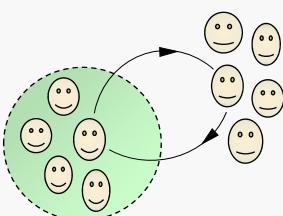
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- I. Analysing the role of values in knowledge and knowledge asymmetries
- II. Distinguishing 'bad science' from 'different science' through common criteria for good science
- III. Analysing the relations between different kinds of science on a cognitive basis
- IV. Exploring the structure of complementarity
- V. Mapping types of knowledge and learning from a perspectivist view of science
- VI. Implementing second order polyocular observation and communication processes in cross-disciplinary work

Analysing the role of values in science, and in knowledge asymmetries

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Decide on values to be employed in ...



Reveal the values embedded in ...

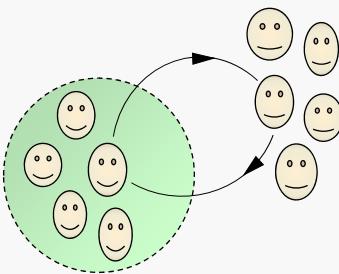
- identification of problems
- design of methods and experiments
- model assumptions
- use of value-laden concepts (such as sustainability and nature quality)

Values are deeply embedded in research practice

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II Distinguishing 'bad science' from 'different science' through common criteria for good science

Relevance
Value inquiry
Participation
Transparency

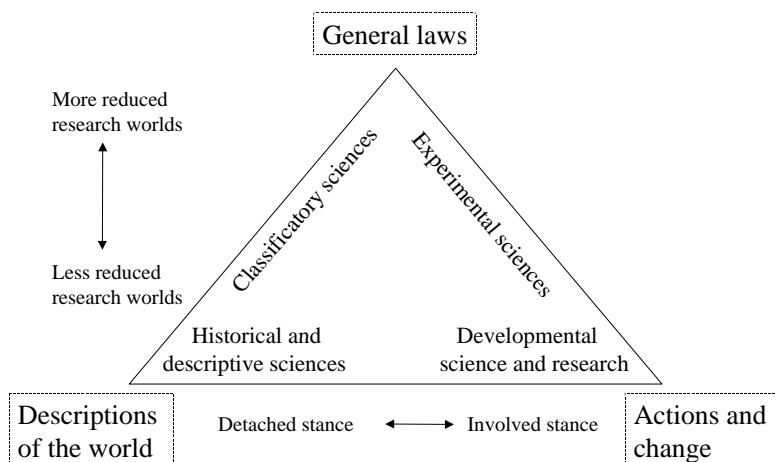


Reflexive objectivity

Communicating the cognitive context
– observational
– intentional
– societal

(Alrøe and Kristensen 2002)

III Different kinds of science: the two dimensions²⁴ of reduction and detachment

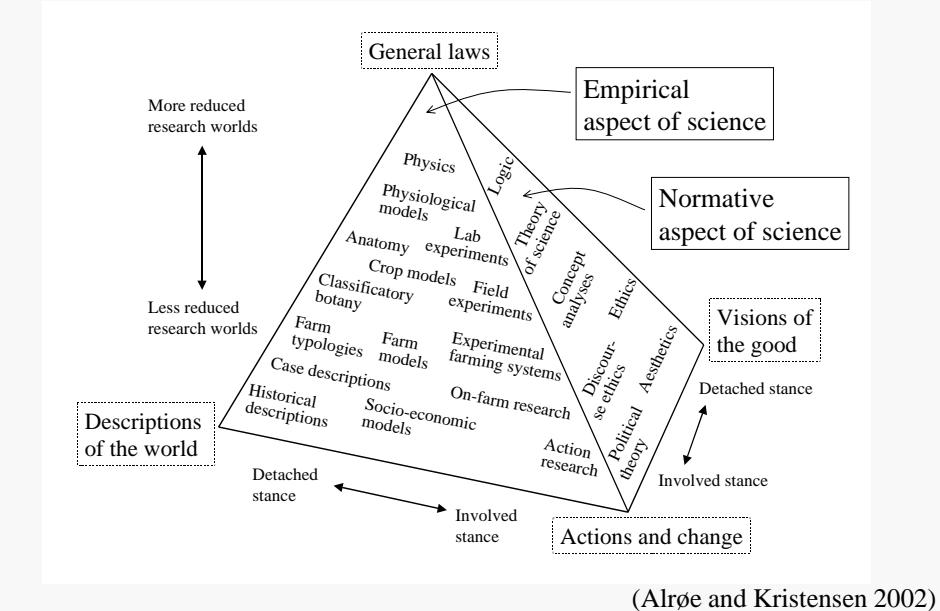


(Alrøe and Kristensen 2002)

III

Different kinds of science: two kinds of cognitive interest, empirical and normative

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(Alrøe and Kristensen 2002)

IV

The structure of complementarities

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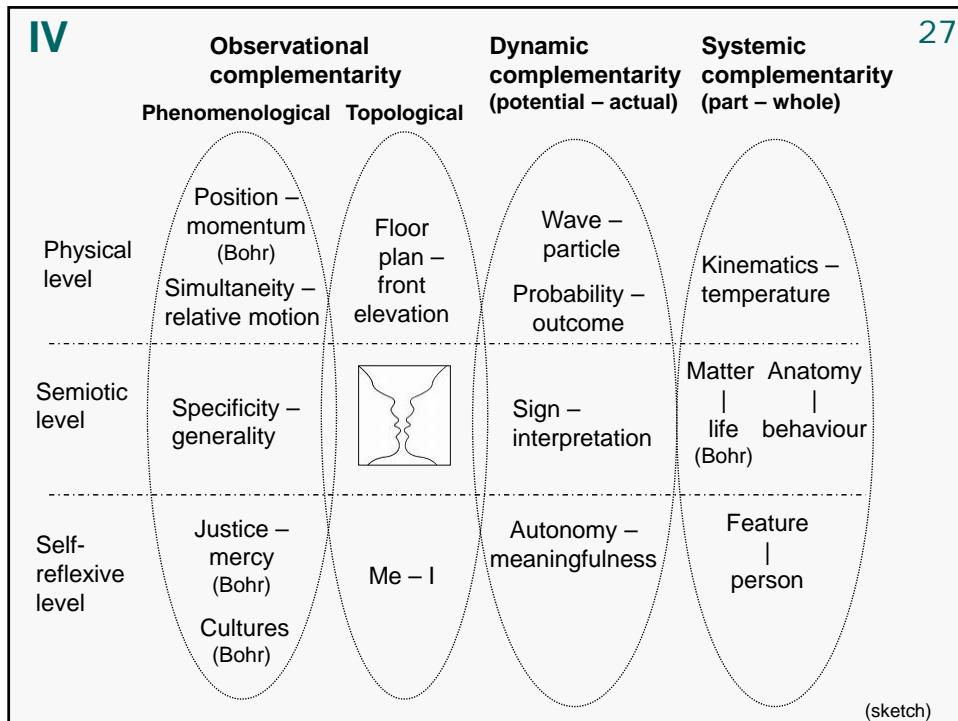
A different tool to understand knowledge asymmetries is to analyse the ways in which scientific perspectives are mutually incompatible – in other words, where they are complementary.

This follows Niels Bohrs own idea that the principle of complementarity is a general principle and not restricted to quantum physics.

So far as the structure of complementarities can be mapped, this can be used to identify fundamental knowledge asymmetries.

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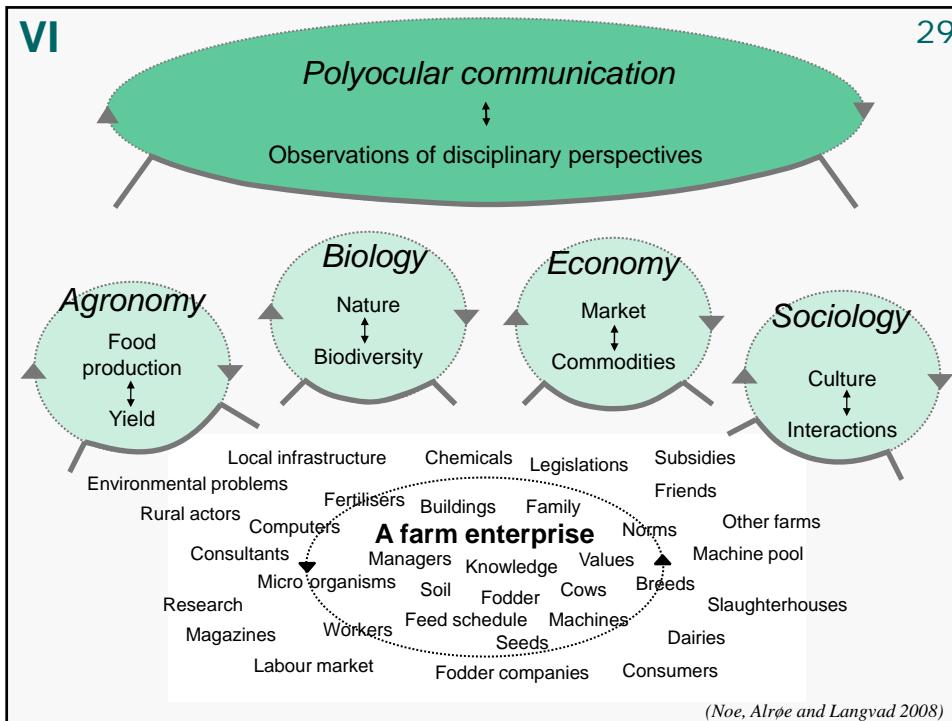
Types of knowledge, disagreements and learning – based on a perspectivist view of science

	Type of knowledge and expertise		Type of disagreement	Type of system learning process
1. Within a perspective	Embodied and tacit knowledge. Paradigm. Contributory expertise.	Orthodox knowledge.	Converging disagreement.	Socializing. Reproducing and refining. Normal science.
2. Transgressing a perspective		Heterodox knowledge.	Diverging disagreement.	Differentiation of science. Scientific revolution.
3. Between perspectives (of first order)	Acontextual knowledge. Interactional expertise.		Unconnected 'blind' disagreement. Communication failure.	'Learning the language.' Hegemony. Boundary-work.
4. In a second order perspective	Contextualised knowledge. Reflexive expertise.		Perspectival disagreement.	Second order polyocular communication.

(Alrøe and Noe 2010)

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Polyocular or multiperspectival communication

Disciplinary specialised perspectives offer a consistent, effective and precise knowledge in context of a sharply delimited research world.

Polyocular communication can unfold a multidimensional space of understanding based on second order observations of specialised perspectives.
(Including observation and communication of the cognitive context)

Polyocular communication can only happen with reference to a shared dynamic object that, it is agreed, can be observed in different ways.

(Noe, Alrøe and Langvad 2008)

Some conclusions

The differentiation of scientific perspectives play a decisive role in creating knowledge asymmetries.

We need to find ways and tools to represent and handle these perspectively based knowledge asymmetries

- in crossdisciplinary science
- and in the use of scientific knowledge in education, business development, democratic debate and political decisions

In particular, second order observation and polyocular communication seems to be a promising way to handle communicational problems across perspectives

Thank you for your attention!

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(with publications for download)

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