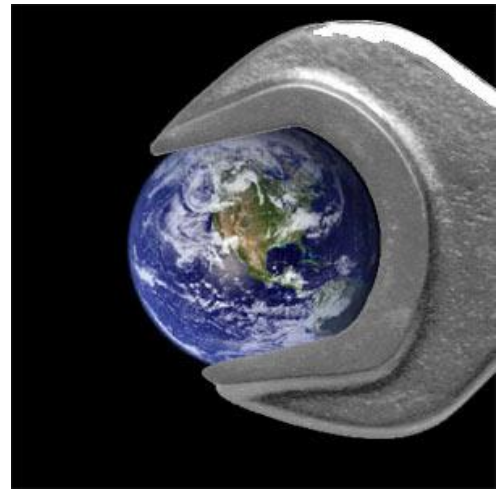
Scientific knowledge and linguistic framing

The case of geoengineering



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Overview

- The LINGCLIM project: a brief introduction
- The notions of frame and framing
- Geoengineering and suggested frames
- A text linguistic study of geoengineering in a framing perspective

The LINGCLIM project: a brief introduction

Overarching hypothesis:

- Linguistic representations (language) influence which knowledge structures and connotations that are activated and which inferences that are drawn by people

Objective:

- To generate new and integrated knowledge about the role of language in climate discourse through developing an innovative multidisciplinary methodology including an **opinion survey [autumn 2013]** and a **psychological experiment [spring 2014]** in addition to comprehensive **linguistic and discursive analyses**

The notions of frame and framing

- Used within several social science disciplines and linguistics

- In the various disciplines, frames and framing are used about concepts and theoretical approaches related to **how individuals and groups organize, perceive and communicate about the world**.

- Social science disciplines such as media science and psychology deal primarily with **framing**, i.e., a process

- Implies a **strategic** selection of features for a particular purpose.

- Examples:
- **Psychology**: Attitude/perception studies related to framing and reframing of climate/environmental discourse (Corner et al., 2013; Feinberg & Willer, 2013)

- **Media**: Studies of discursive constructions of climate change in the press (Weingart et al., 2000)

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- In linguistics, the main focus is often on **frames**

- The aim is to describe objects and events in terms of typical or specific features

- Examples: Discourse/metaphor studies of climate change (Koteyko et al., 2010) and of geoengineering (Nerlich & Jaspal, 2012)

Framing and geoengineering

- So far, mainly **technical** and **socioeconomic** issues dealt with

- Fewer discourses related to public concerns than for other novel technologies (e.g. nanotechnology) (Bellamy et al., 2012)

Bellamy et al: (2012): contextual framing, e.g. instrumental framing conditions:

- **Expert-analytic** (e.g. computer modelling, economic assessments, expert reviews)

- **Participatory-deliberative** (e.g. surveys, focus groups, deliberative workshops)

Geoengineering and suggested frames

Broad framing perspectives:

- economics, risk, politics, environmental ethics (Keith, 2000)

- technological progress, risk, regulation (Weaver et al., 2009)

Specific frames:

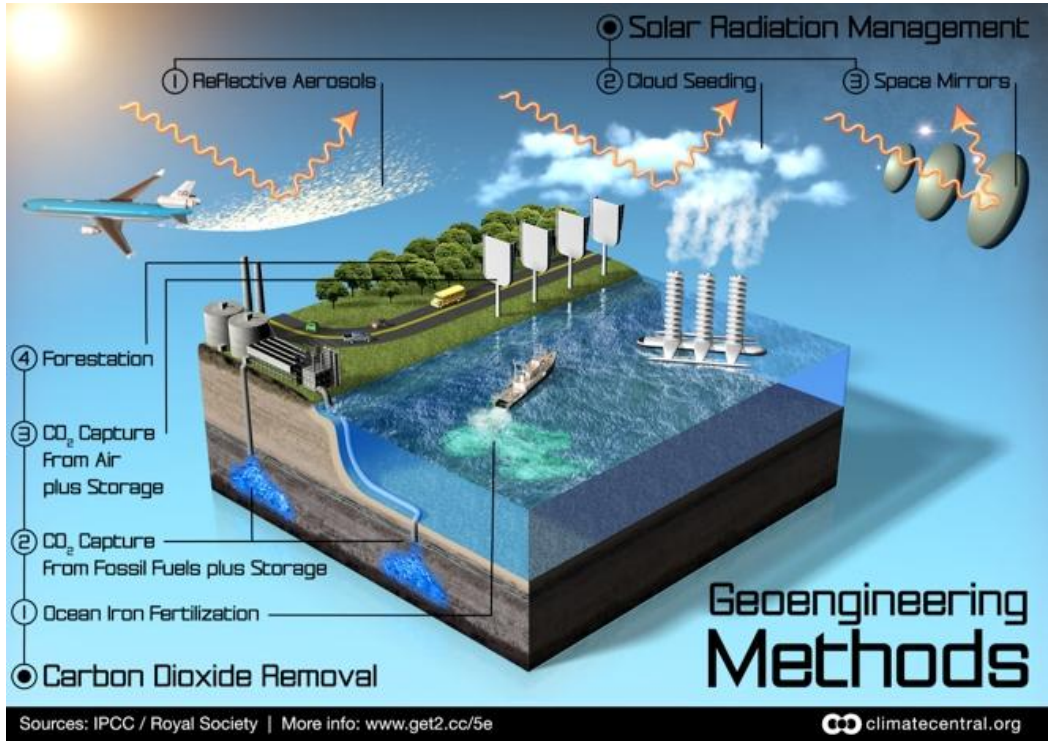
- plan B (UK Royal Society, 2009; Nerlich & Jaspal, 2012)

Framing and text linguistic analysis

- “Despite its omnipresence across the social sciences and humanities, nowhere is there a general statement of framing theory that shows exactly how frames become embedded within and **make themselves manifest in a text**,…” (Entman, 1993: 51).

Geoengineering techniques

- Solar radiation management (SRD)
- Carbon dioxide removal (CDR)



Study: One experiment - six news texts

- Ocean iron fertilization (OIF), a CDR expriment

- *Nature* article ”Deep carbon export from a Southern Ocean iron-fertilized diatom bloom” (Smetacek et al., 2012)

- Important novelty feature of the experiment: the **recording of what happens to the fertilized biomass** as it sinks deep into the ocean

The six news texts

News source	Title
Scientific American	Controversial Spewed Iron Experiment Succeeds as Carbon Sink
New York Times	A Way to Trap Carbon Deep in the Ocean
Washington Post	Could plankton help us tackle climate change?
Guardian	Dumping iron at sea can bury carbon for centuries, study shows
Daily Mail	Could dumping iron in the oceans cure climate change? First 'geo-engineering' trial is hailed a success
BBC	Climate ocean tech fix 'can work', research suggests

Framing elements investigated

- (i) Headline
- (ii) Linguistic context of the keyword *geoengineering*
- (iii) Sources
- (iv) Statements about the importance of OIF as a CDR technique in a temporal perspective

(i) The headlines

News source	Title
Scientific American	**Experiment**, *controversial, success*
New York Times	Trap carbon
Washington Post	Help us tackle climate change?
Guardian	**Study**; bury carbon *for centuries*
Daily Mail	**Trial**; *cure* climate change? *success*
BBC	**Research**; *tech fix*, *can work*

(ii) Linguistic context of *geoengineering*

DM:

- First '**geo-engineering**' trial is hailed a success

BBC:

- This has since become the most researched of all the proposed "**geoengineering**" approaches - technical fixes for climate change.

NYT:

- Still, it could eventually be a useful **geoengineering** technique for alleviating climate change, he [Smetacek] suggested.

WP:

- As carbon emissions keep rising each year, with no end in sight, scientists have begun dreaming up all sorts of zany **geoengineering** schemes for slowing down the rate at which the planet's heating up.

GUA:

- **Geoengineering** – technologies aimed at alleviating global warming – are controversial, with critics warning of unintended environmental side effects or encouraging complacency in global deals to cut carbon emissions.

GUA:

- But Prof Victor Smetacek, at the Alfred Wegener Institute for Polar and Marine Research in Germany, who led the new research, said: "The time has come to differentiate: some **geoengineering** techniques are more dangerous than others. Doing nothing is probably the worst option."

(iii) The sources

Focus on the **science**:

- "We had **instruments** that we could deploy right down to the seafloor, which is at 3,800m depth," said Victor Smetacek, lead researcher on the new paper. (BBC)

- "While **the experiment** was going on, we saw the stocks start to sink -- they went down very fast," he [Smetacek] said. (NYT)

- “Such controlled iron fertilization **experiments** in the ocean enable us to test hypotheses and quantify processes that cannot be studied in laboratory experiments. The results improve our understanding of processes in the ocean relevant to climate change” says Smetacek. (DM)

Corner et al. (2012: 462):

- "[i]t is impossible to eliminate framing effects altogether−**even a presentation that just 'stuck to the science'** and did not introduce any social or ethical questions whatsoever **would actually contain a very strong framing**: that geoengineering is simply a scientific issue, with no broader societal implications"

Focus on **other aspects**:

- Prof John Shepherd, chair of the [2009 Royal Society] report [on geoengineering], said on Wednesday: "It is important that we continue to research these technologies but **governance** of this research is vital to protect the oceans, wider environment and public interests." (GUA)

- What's more, some scientists are still worried about the consequences of **artificially mucking with** ocean ecology in this way.(WP)

- "This is not a solution - **the first thing we need to do is reduce emissions**, that's absolutely essential," he [Smetacek] said. (BBC)

(iv) The time aspect

Positive:

…for centuries…

- NYT, WP, GUA (headline), DM, BBC

Negative:

- But such fallen carbon only resides in the deep for a few centuries at best. (SA)

- "The ocean's capacity for carbon sequestration in low-iron regions is just a fraction of anthropogenic CO_2 emissions, and such sequestration is not permanent — it lasts only for decades to centuries," said Ken Buesseler, at the Woods Hole Oceanographic Institution in the US. (GUA, body)

Main frame exploited by the six texts

Frame	Scientific progress	Messing with the planet	Plan B
Text	NYT, WP, DM, BBC	SA, GUA	GUA

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