



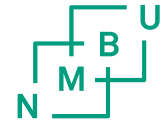
Non-linear systems – the institutional challenge

By Arild Vatn

Department of Environment and Development Studies
Norwegian University of Life Sciences

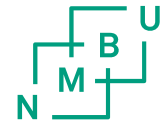
The Herrenhausen Systemic Inquiry: “Governing the Anthropocene: Cyper-Systemic Possibilities”. Hannover, July 30-31, 2015

1. Introduction



- In this talk I will focus at the role of institutions in governance of non-linear systems – given the challenges of the anthropocene
- I will undertake a discussion of the potential of institutions in influencing human action
- I will ‘evaluate’ present (environmental) policies from the perspective of understanding (environmental) problems as non-linear
- I will present a few ideas regarding institutions for a sustainable economy given a non-linear ‘natural’ and ‘social’ world

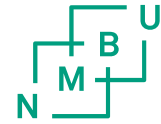
2. Institutions



- Institutions are human constructs. They can be seen as **common ‘rules’**
- I more specifically define institutions as *the **conventions, norms and formally sanctioned rules** of a society. They provide **expectations, stability and meaning** essential to human existence and **coordination**. Institutions **support certain values, and produce and protect specific interests***
- Institutions are to a large extent **internalized** – ‘embodied’. (different to North who see them only as external constraints. Note the difference between ‘classical’ and ‘new’ institutional economics)

2. Institutions (cont.)

The role of institutions

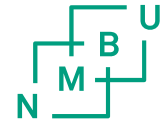


- Institutions influence **perception** as well as defining a basis for human **action** and **interaction**
- Types of institutions
 - **Conventions**: Waste is of different categories
 - **Norms**: You must sort waste
 - **Legal regulations**: You must sort waste, or else you will be fined

(Ostrom: The language of institutions (**ADICO**))
- Institutions define what is right or proper action. They are **rationality contexts**

2. Institutions (cont.)

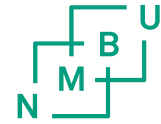
Institutions as rationality contexts



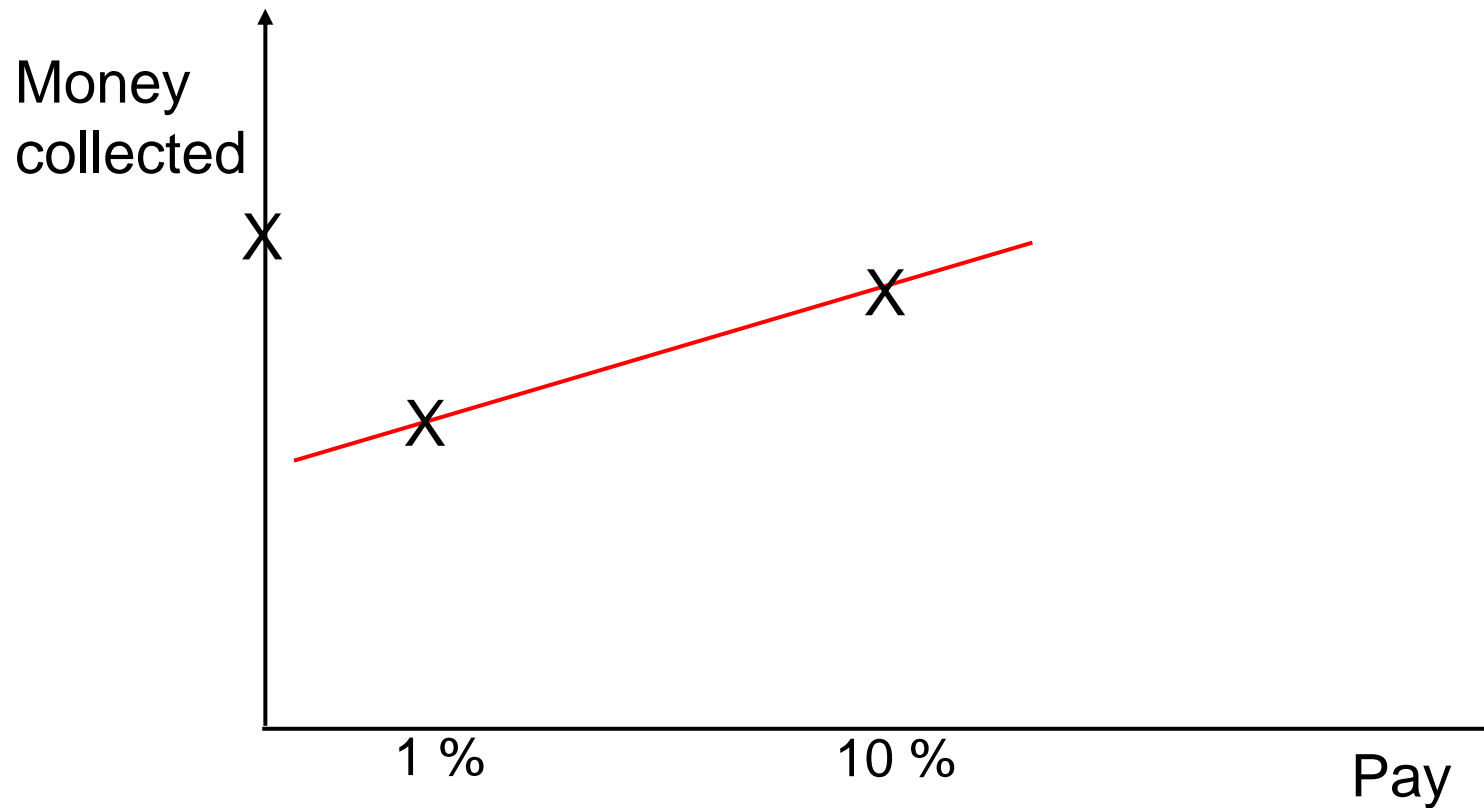
- **Plural rationality:**
 - **Individual rationality:** What is best for the individual (**I rationality**)
 - **Social rationality:** What is best for the ‘group’ (**We rationality**)
- The **institutional context** – e.g., the market or the community – influence what rationality is expected/found logical – e.g., competition vs. cooperation

2. Institutions (cont.)

Institutions and rationality – an illustration



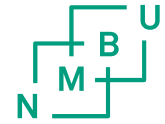
- Paying for charity



Source: Gneezy and Rustichini 2000

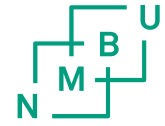
2. Institutions (cont.)

Institutions, conflict and coordination

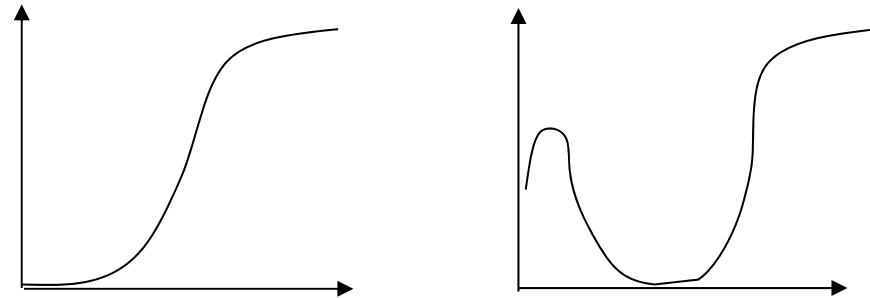


- Institutions define or affect:
 1. Rights to resources
 2. Transaction costs (costs of interaction/coordination)
 3. Perceptions
 4. Motivation (rationality)
- This way they influence
 - What problems/challenges may appear
 - How we perceive them
 - How easy it is to handle them

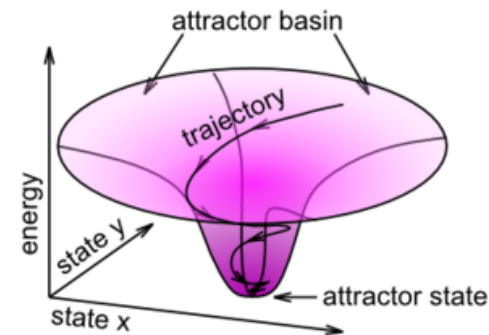
3. Non-linearity – an illustrative classification



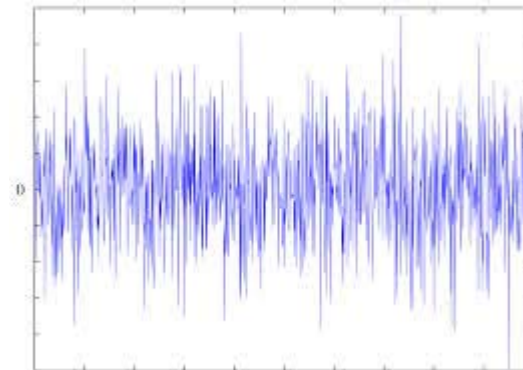
A. Curvilinear systems
(e.g., 'dose-response')



B. Attractors
(definable basin w thresholds)

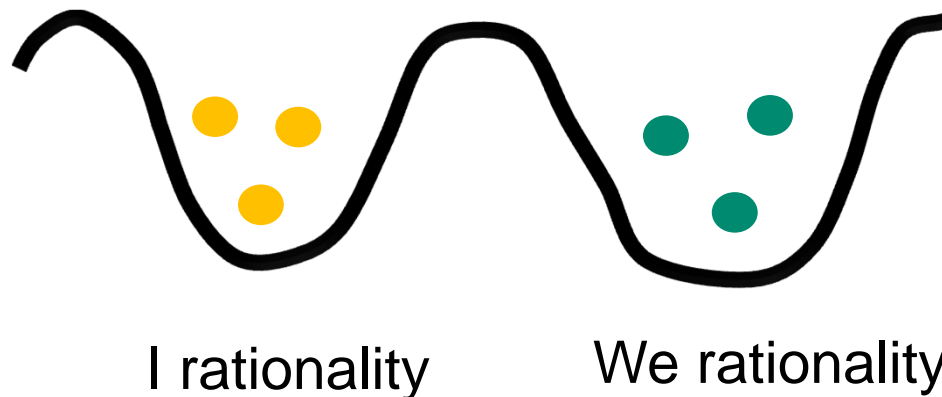
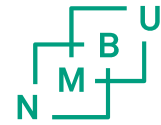


C. 'Noise'
(no definable basin)



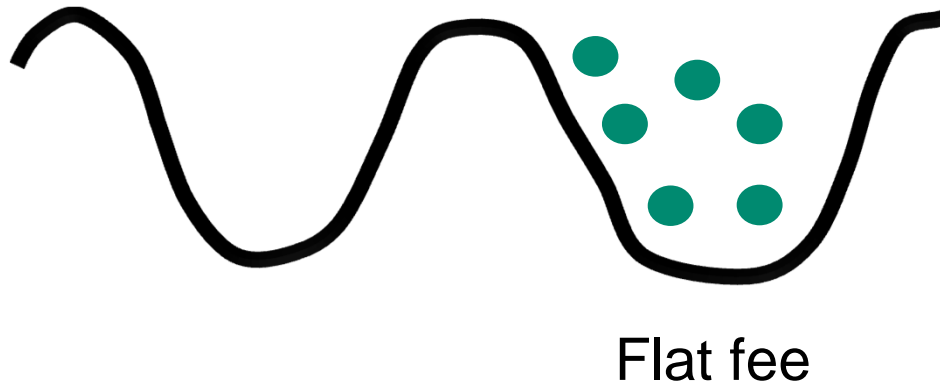
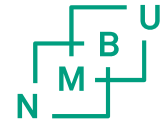
3. Non-linearity (cont.)

Institutions as attractors



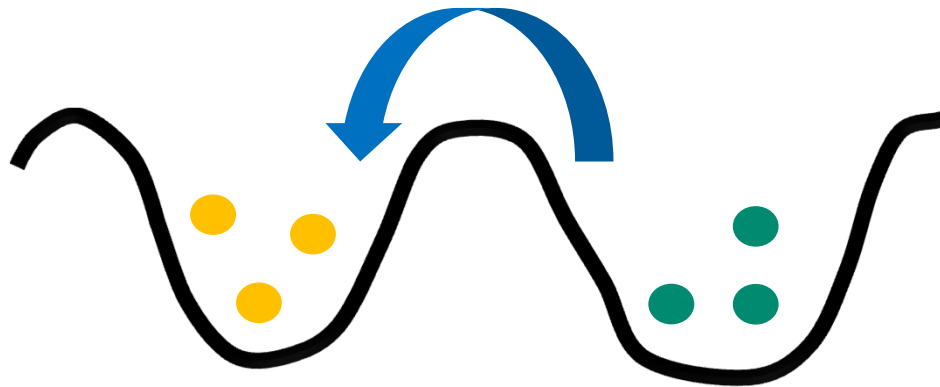
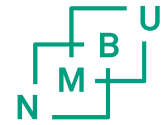
- The interplay between individual and institutional characteristics

3. Non-linearity (cont.) Institutions as attractors (cont.) Interplay institutions and individuals The example of waste fee



- Shift from a flat waste fee to a fee per kg unsorted waste (work w/ Marit Heller)

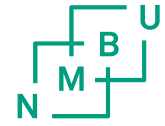
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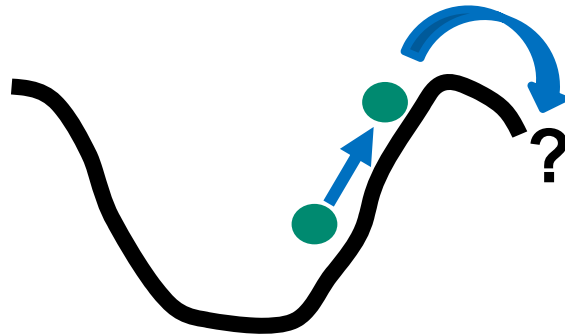
Weight based fee

- Shift from a flat waste fee to a fee per kg unsorted waste (work w/ Marit Heller)
- Differentiated response – dependent not least on internalization of environmental norms

4. Environmental governance

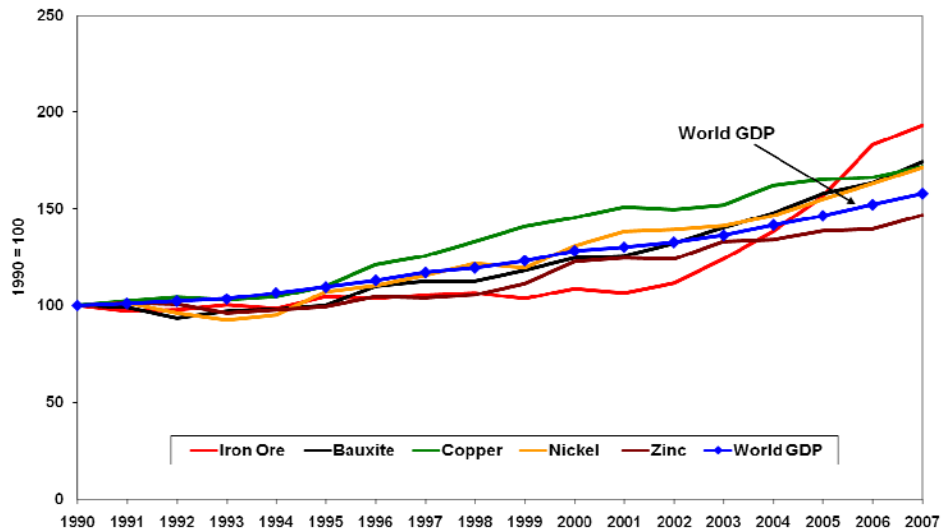
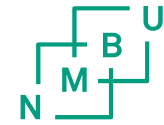


- Our environment implies **interdependent actions**
- Environmental systems display a certain level of **resilience**
- The latter is **good** as it offers us space for utilizing natural systems to cover our needs and time to adapt
- This is **bad** as it conceals the seriousness of problems as we approach thresholds



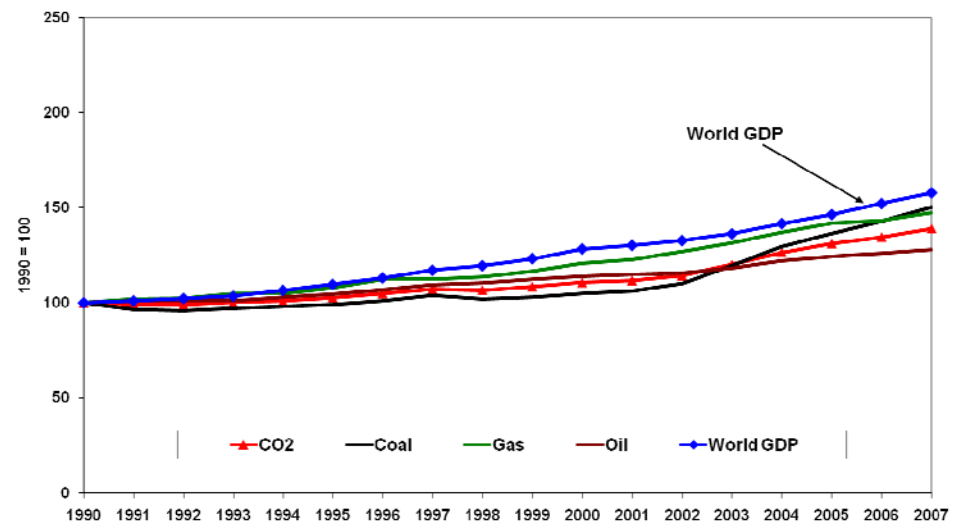
4. Environmental governance (cont.)

Increasing throughput → thresholds

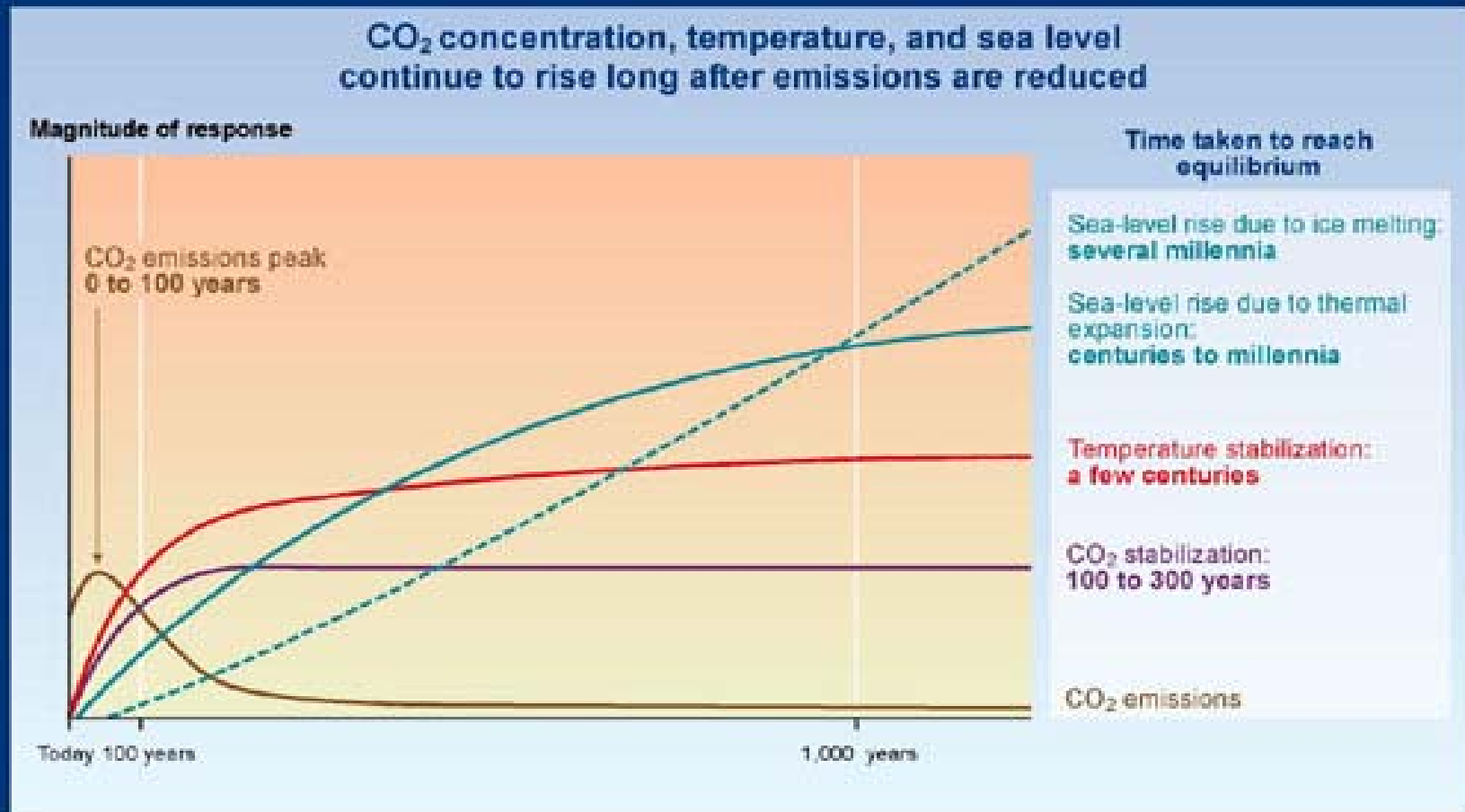
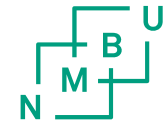


- (Present form of) economic growth seems strongly linked with increasing throughput

Jackson (2009)



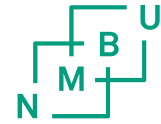
4. Environmental governance (cont.) Systems and time lags



SYR - FIGURE 5-2

4. Environmental governance (cont.)

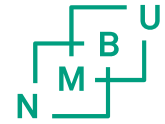
Present institutions: The four dimensions



1. Rights: **Individual rights** to ‘economic resources’ – resources that are/can be commodified – are strongly protected. (Protecting some...)
 - a) Operating in markets → **positive feedbacks**.
 - b) Burden of **proof** by those trying to protect the integrity of environmental systems (strengthen resilience and ensuring ‘safety’)
 2. Transaction costs: **High** for coordinating **individualized while still interdependent actions**
 3. Perceptions: **Myopic**; oriented at individual gain
 4. Motivation: **Individual rationality** dominates
- **(Corporate governance) demands a world without thresholds...**

4. Environmental governance (cont.)

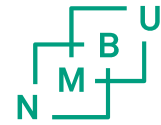
Present policies



- **Ex post**, myopic and rather static
- **Legal** regulations in the form of limits
- **Economic** regulations in the form of taxes, subsidies and tradable quotas (markets)
- Not hopeless, but **limited** (ex post; individual rationality → systemic conflict between the I and the We)

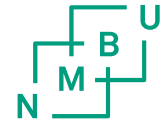
4. Environmental governance (cont.)

Institutions for non-linear systems?



1. **Rights:** Strengthened and widened responsibility of actions
 2. **Transaction costs:** Reduce costs of interaction
 3. **Perceptions:** Broadminded and farsighted
 4. **Motivation:** Foster social rationality (the attractor of cooperation)
- Create positive synergies between the 4

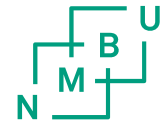
4. Environmental governance (cont.) Institutions for non-linear systems? (cont.)



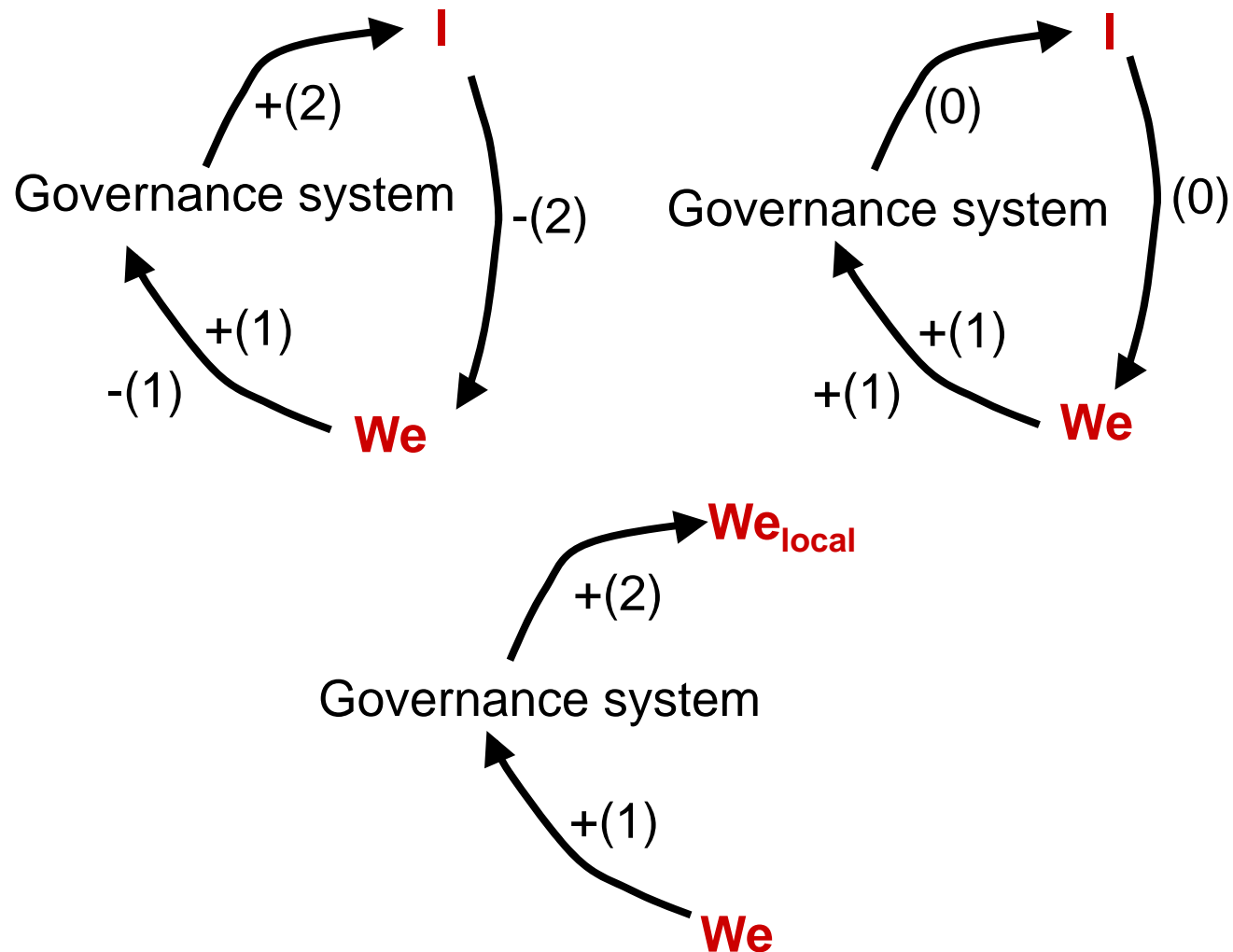
Operationalizing

- **Institutions for integrated and responsible action** regarding both consumption; production; and international trade
- Operational goal at macro level: **Reduce the need for growth**
- The key lies in the **motivation behind production/ investment** → **socio-ecological enterprises** – new ownership structures and aims
 - Firms that **do not need a growing demand**
 - Firms that are highly **sensitive to their environmental impact** → facilitate coordinated action (level 1)
 - Firms that accept **collectively defined norms** regarding their operations → facilitate coordinated action (level 2)
- **'Fine-tuning'** at local and regional levels

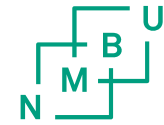
4. Environmental governance (cont.) Institutions for non-linear systems? (cont.)



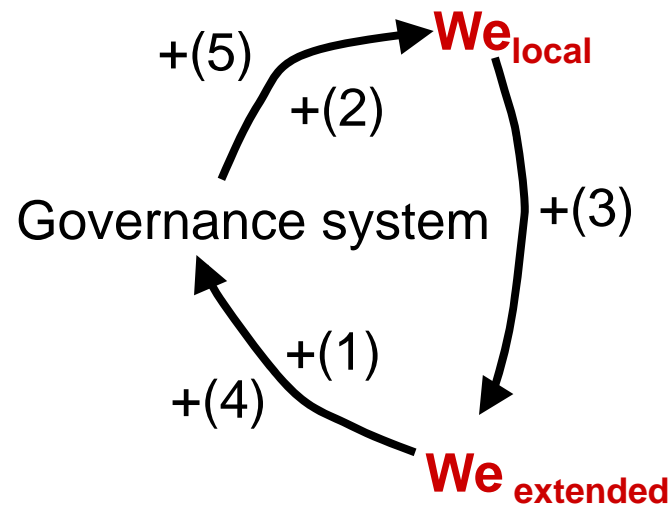
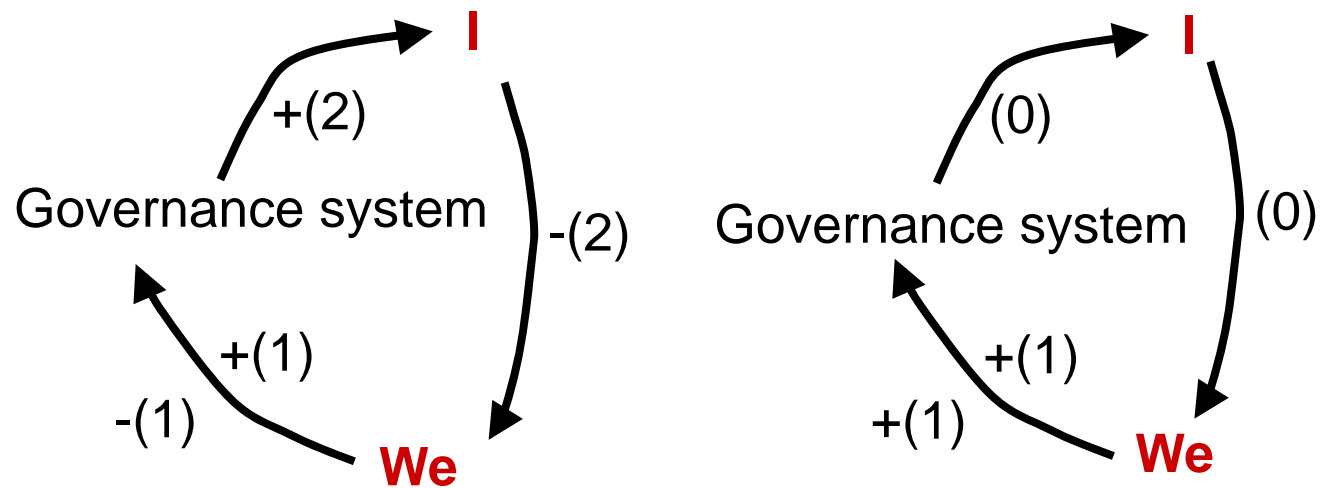
Vicious and positive cycles



4. Environmental governance (cont.) Institutions for non-linear systems? (cont.)

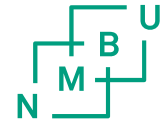


Vicious and positive cycles



Attractors shifts:
Deepening and
strengthening
'attractors of
cooperation'

5. Conclusion



- Governance in the anthropocene implies responding to challenges we have caused at levels beyond the ‘local’ – it demands **reorganizing**
- Existing **institutional structures** are **ill-equipped** to meet the challenges of us operating in environmental systems that are non-linear and characterized by thresholds
- Progress lies especially in understanding the non-linearities observed in the **interplay between institutions and human motivation**
- Progress lies in deepening and strengthening the ‘**attractor of cooperation**’ – strengthening institutions that foster cooperative action