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Agency as redefined by climate change : the case of the Arctic

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Research questions and objective

Who can do what for the Arctic to adapt to climate change **and** to contribute to the mitigation of emissions? ... considering:

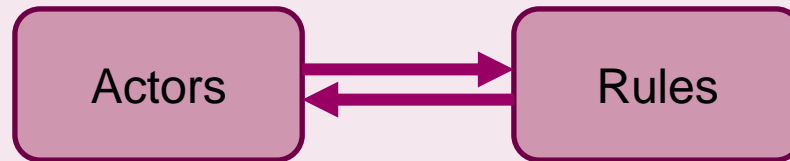
- Globalized fossil-fuel based industrial development
- That the Arctic is of common interest for its region **and** for humanity

Develop a framework to conceptualize the Arctic as an integrated system:

- Identify stakeholders concerned by climate change and their interactions in and around the Arctic
- Model the various actors' choices for reaching sustainable natural resources uses in the case of the Arctic

Our assumptions:

- We start out with a socio-historical approach: identification of actors and systems/structures (rules, institutions)



- We do not patron Regime Theory, as it assumes that one type of actor (i.e., nation-States) stands above both actors and rules

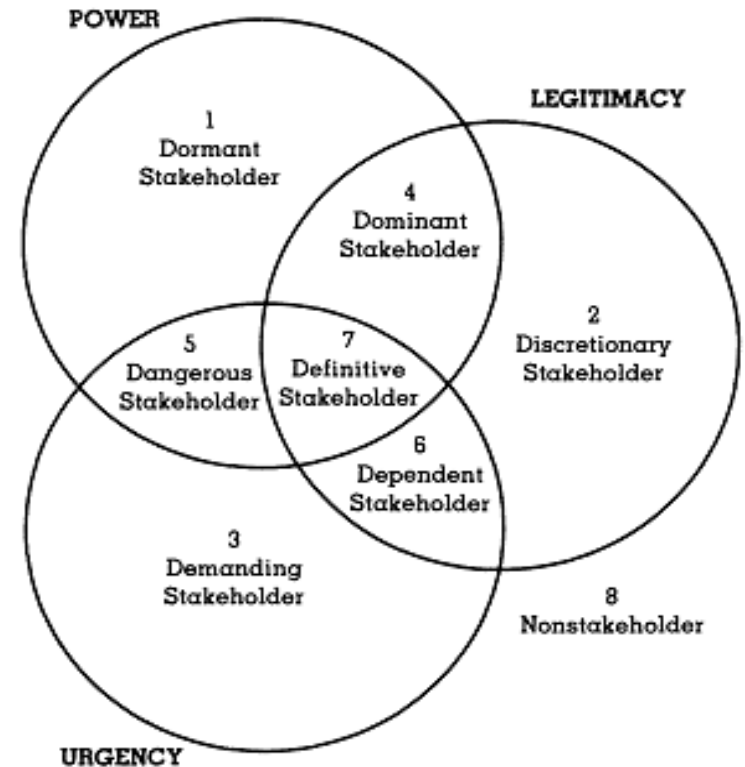
Shifting Arctic agency over the past 25 years: 4 periods

- (1) **Cold War:** East/West blocks of States, peace and environmental movements
- (2) **Immediately after Cold War:** big powers and scientists
- (3) **Rio Conference (UNCED):** indigenous peoples, environmental NGOs, regions
- (4) **Early 21st century:** the return of the nation-States, TNCs and SOEs

Stakeholder analysis in the Arctic

The position of actors according to **power**, **legitimacy** and **urgency** (Mitchell) :

- The Arctic States and the SOEs are “definitive actors”
- The other TNCs are “dangerous actors”
- The All others are “dependant actors”



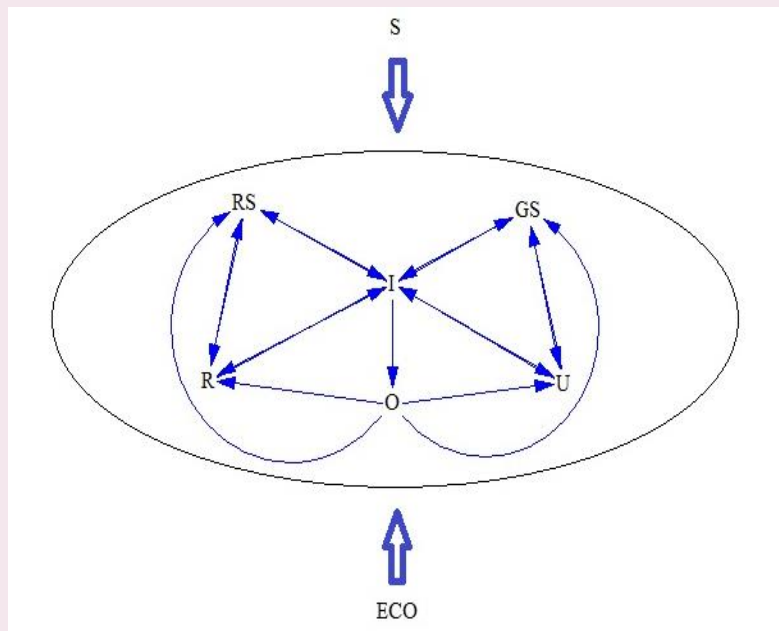
Actors	Power	Legitimacy	Urgency		Stakeholder type
			Climate change	Resources	
Arctic States	X	X		X	Definitive
SOEs	X	(x)		X	Definitive
TNCs	X	(X)		X	Dangerous
Civil society associations and citizens	(X)	X	X		Dependent (Definitive)
Indigenous peoples represented in the Artic Council	(X)	X	X	X	Dependent (Definitive)
Arctic Council	(X)	X	X		Dependent
Regional political organizations		X	(X)	X	Dependent
International Organizations (UNCLOS, IMO)		X	X		Dependent
Regional fisheries management organizations		X	X	X	Dependent
Scientific organizations		X	X	X	Dependent
International Environmental NGOs		(X)	X		Demanding
Non Arctic States, observers to the Arctic Council or not		(X)	X	X	Demanding

The Arctic as a Socio-Ecological Systems (SES)

Strengths of SES framework (Ostrom et al.):

- Integrates social and ecological interactions
- Considers common interests and collective choices

When will agents engage for preventing a Tragedy of the Commons ?



RS: Arctic region

RU: Renewable / **NR** Resources

U: IP and LC / enterprises, employees, consumers

GS: local, regional and global

Problems with secondary variables:

RS: boundaries and size

RU: productivity, predictability, mobility

U: number, leadership, norms, trust, knowledge, values

GS: autonomy

Weaknesses of SES framework (normative)

- Ignores technology as a mediating factor between actors and ecological systems
- Does not deal with non-renewable resources
- Does not account for power relations between stakeholders
- Downplays the role of outside factors, both physical (climate change) and social (globalization, TNCs)
- Does not account for actors being opposed to sustainability
- Cannot account for tipping points and non-linearity of the socio-ecological systems (assumes equilibrium)

Two main possible methodologies to operationalize a framework for Arctic agency under climate change

Agent-based modelling (ABM):

- + can address actors and their interests and behaviour (including the State)
- + can integrate social and ecological variables
- + can integrate technological change (but limited for impacts of innovation)
- + bottom up approach based on extensive descriptive data (historic / comparative)
- has difficulty with global and long term dynamics (complexity and uncertainty)
- has difficulty with tipping points

System dynamics (SD):

- + tipping points
- + global dynamics (but has difficulty with local dynamics)
- + can deal with resources exhaustion
- + can integrate technology
- does not account for actors and structures (cannot really integrate the social)
- agency is external to the system
- top-down modelling according to preconceived interactions and feedbacks

Criteria for choosing a methodology for our integrated framework

	Integrated (social and ecological)	Actor- based	Technology	Power relations	Dynamics and tipping points
ABM		X	X	X	
SD	X		X		X

An integrative framework for modelling agency towards adaptation to - and mitigation of - climate change

- Actor-based
 - Common interest oriented
 - Power relations among stakeholders
 - Socio-technical-ecological interactions
 - Non-renewable resources depletion
 - Tipping points and qualitative system changes
- Modeled with a combination of ABM (bottom-up, locally grounded, and case-based) and SD (global, feed-back loops, tipping points) methodologies

*Jakk !
Many thanks!*