

Learning in Natural Resource Management: some theoretical and empirical aspects

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Seminar Outline

- The Origins of the Discourse
- Some Theoretical Aspects
- The Rationale of Current Empirical Research
- A Case Study: Learning and a Protected Area
Establishment

Origins of the Discourse

Why this interest in learning?

can be related to the *outcomes* assumed on its behalf and to the *circumstances* which are conducive to learning.

Origins of the Discourse

- Natural resource management seeks to balance the needs of people with the capacity of the natural resource system.
- Rigid and uni-dimensional management methods with a narrow definition of the problem led to a gradual and unexpected change of the ecosystem (Holling, 1995) .



**New ideas and approaches:
e.g. adaptive management and
governance.**

Origins of the Discourse

- A pioneering piece: in 1971 Edgar S. Dunn, inspired by evolutionary theory and Dewey's experimentalism, suggested a theory of *creative social learning*.
- His critique was directed toward a deterministic understanding of social and economic change and learning was used as a dynamic metaphor for the study of human behaviour.

Origins of the Discourse

- Natural resource management seeks to balance the needs of people with the capacity of the natural resource system.
- Power imbalances and top-down decision making led to issues of social justice, resource depletion and conservation led displacement (i.e. Tacconi, 2000; Brechin, 2002)

New ideas and approaches:

e.g. participative approaches, new ideas.

Origins of the Discourse

- Weblar et al 1995; social learning refers to the process by which changes in the social condition occur-particularly changes in popular awareness and changes in how individuals see their private interests linked with the shared interests of their fellow citizens.
- Uncoordinated individual actions into collective actions that support and reflect collective needs and understandings.
- Civic virtues, moral sentiments.

Origins of the Discourse

A reading that suggests the discourse on learning in NRM originating in two different epistemological traditions.



Theories of
democracy

Complex systems
theory

Origins of the Discourse

How these underlying epidemiologies have influenced the *interpretation* of learning in NRM.

Interpretation: as a process leading to knowledge enhancement, moral development and change in the way participants see the problem domain.

- assessment criteria of a participatory workshop (Webler et al., 1995),

- as process outcome that helps joint action.

Interpretation: as an emergent property resulting in, and leading to, adaptive capacity of a given social-ecological system.

- as a process characteristic, or trigger.

Origins: type of learning

The literature spans across several contexts of application, looks at different units of analysis and uses more types of learning.

Origins: type of learning

- Webler et al. (1995), Schusler et al. (2003), Bouwen and Taillieu (2004) and Wildemeersch (2007) use the term *social learning*,
 - Saarikoski (2000), Blatner et al. (2001) and Daniels and Walker (1996) use the term *collaborative learning*,
 - Pretty (1995) uses *learning*,
-
- Dunn (1971), Friedmann (1984) Groot et al. (2002), Keen et al. (2005), Leeuwis et al (2002), Parson and Clark (1995), Pahl-Wostl (2006), Röling (2002), Tabara (2005), Wildemeersch (2007) use *social learning*,
 - Berkes et al. (2003), Maarleveld and Dabgbégnon (1999), Olsson et al (2004), the SLIM and the Harmonicop projects use more types of *learning*.

Origins: why

Learning: contributes to democratic qualities of the society.

Webler et al. 1995.

Learning: contributes to the adaptive capacity of the socio-ecological system.

Gunderson et al. 1995

Who is learning?

Workshop
participant

Socio-ecological
system

What are the outcomes?

Knowledge, skills,
value positions,
increased trust
levels

Change of the
system - a new state

Few issues

- Authors use many types of learning, but they seldom clarify if, and how, these differ one from another, or whether they are synonyms,
- Some that are interested in a social dimension, would then focus at participants' experience with the participatory workshop,
- Who learners are is not always clarified,
- Most literature is interested in more immediate outcomes, such as the achievement of a policy-decision, and does not consider processes that may sustain learning in the long-term (Schusler et al, 2003),
- There are under-explored feedback processes,
- Not much explored what factors are those conducive to learning (participatory process vs. group work).

Few issues

These, and other, questions attracted the attention of authors who have suggested:

- to account for different levels of aggregation,
- to consider more than one type of learning,
- to go beyond a workshop context.

Empirical Research

Empirical Research

Is a measurement of (social) learning a
feasible attempt?

Empirical Research

A measurement - implies the existence of targets that could inform the meaning of an achieved performance level. Also, a measurement would imply the existence of a definition of the phenomenon one aims to measure and an assumption on how to do so in a meaningful way - e.g. temperature with degree Celsius.

This is less straightforward for the social phenomena given that different interpretations may support different empirical practices.

Empirical Research

An assessment allows some room for exploration and in can this allow a refinement of the understanding of the phenomena under observation.

Also, assessments allow for an integration of qualitative and quantitative elements, and the two *together* are assumed to give better opportunities to capture more compressively social phenomena, when compared to uni-method research

Empirical Research

Empirical research aims to:

- verify if, and how, learning took place,
- verify the efficacy of a given tool, such as a participatory workshop, for supporting learning,
- test assumption and further refine the understanding of this phenomenon.

Empirical Research

- The discussion “has not materialized in a coherent set of criteria that allow for empirical analyses” (Siebenhüner 2004;150).
- Yet several have conducted empirical research on learning in NRM.

Empirical Research

Selected authors and methodologies used

AUTHORS	METHODOLOGY	UNIT OF ANALYSIS	METHODS OF DATA COLLECTION
1995, Webler and Kastenholz	Case study	Group of Participants	Mix methods for data collection
1996, Daniels and Walker	Case study	Group of Participants	Mix methods for data collection
1999, Millar and Curtis	Case study	Actors (farmers, researchers, public and community facilitators)	Qualitative methods
1999, Maarleveld and Dabgbégnon	Historical Analysis of Institutional Development	Managed resource systems	Secondary data, Observation
2000, Saarikoski	Case study	Group of Participants	Mix methods for data collection
2003, Schusler, Decker and Pfeffer	Case studys	Group of Participants	Mix methods for data collection

Empirical Research

- Webler et al. (1995) used a *questionnaire*, participant *observation* and in-depth *interviews* with workshop members at different times of the process.

- Schusler et al. (2003) used a mid-conference open-ended *questionnaire*, *observation* and a final close-ended *questionnaire* for assessing the participatory process and structured *telephone interviews* for assessing learning elements.

- Saarikoski (2000) used *document analysis*, *participant observation* and *interviews*.

- Daniels and Walker (1996) used a post-workshop *survey* in combination with informal *observation* and post-workshop *discussion*.

- and.....

Empirical Research

- Millar and Cutris (1995) used *interviews*
- Maarleveld and Dabgbégnon (1999) have used a *historical analysis* of collective decision-making in two managed resource systems (following Parson and Clark's (1995) model of five questions - Who learns?; What is learned?; How is it learned?; and Why is it learned?).

Empirical Research

Outcomes of selected empirical research

AUTHOR	OBSERVED ASSESSMENT OUTCOMES			
Webler et al. (1995)	Learning about facts			
	Understanding of others' perspectives	Mutual respect for positions	Attitude changes towards other	Meaning of citizenship
	Feelings of solidarity		Empathize with others	
	A sense of collegiality	Group identity	Commitment to the project	
	Trust, change in levels			
Schusler et al. (2003)	Learning about facts	Problems and opportunities	Presence or lack of resources available to their communities	Actions that might address problems
	Understanding concerns of other participants		Areas of agreement and disagreement among participants	
	Collaborative relationships		Group common purpose	
	Trust, gained in others			

A Case Study:

Learning and a Protected Area Establishment

(part of a PhD Dissertation)

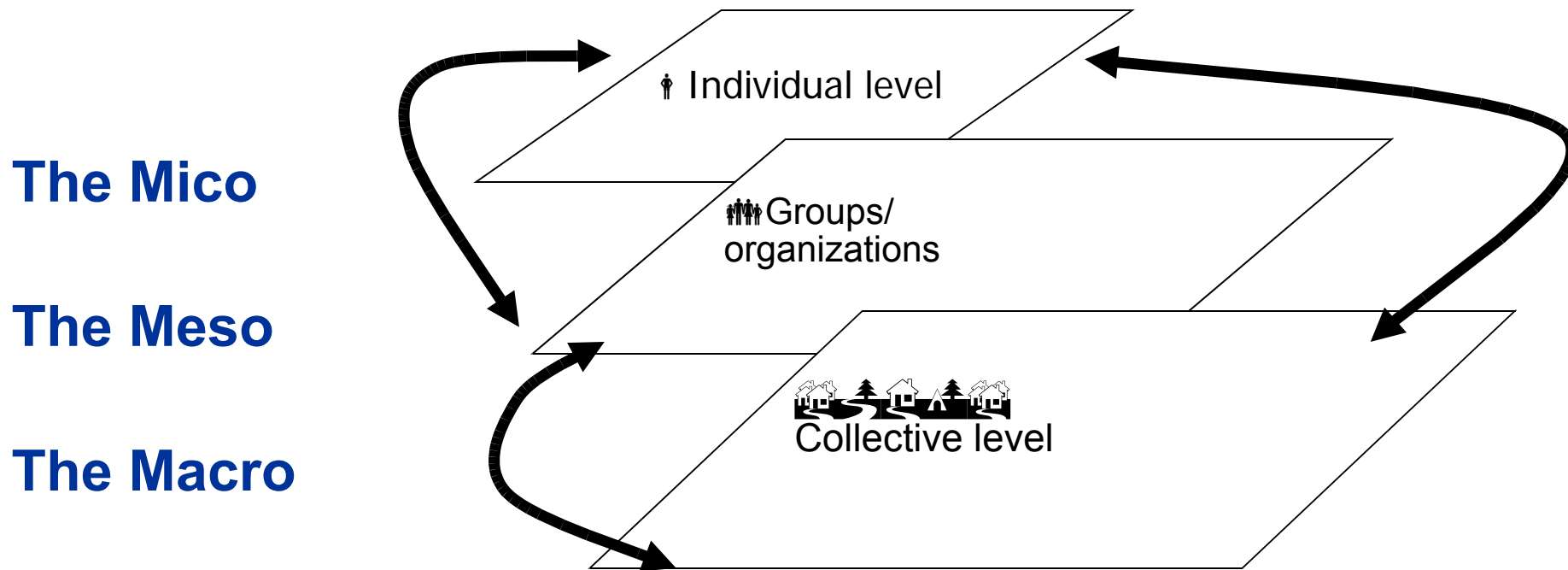
A Case Study

List of assumptions:

- participatory workshops can trigger learning,
- more types of learning can occur a NRM situation,
- higher levels of aggregation have an important role for understanding change processes,
- social capital has a role in supporting learning in NRM.

A Case Study

The conceptual model



Make the model operational with established learning theories from psychology.

A Case Study

Accounting for the criticism have the model was made operational with the help of other conceptual tools and established learning theories from psychology.

The Micro *Transformative learning, Self-directed learning*

The Meso *Collaborative learning*

The Macro *Social capital*

A Case Study

- *Transformative learning theory* assumes that learners are capable of self-reflexivity and engagement in critical discourses, which have a transformative potential on the way they see the world.
- *Self-directed learning theory* focuses on processes by which adult learners take control over their own learning and learning goals, on how they identify necessary resources, decide on learning methods to use and how to evaluate progress
- *Collaborative learning theory* explains that individuals engaged in a group activity, tend to be engaged in a more active way in the learning process and become more responsible for their own learning. In this the results achieved in a collaborative learning situation are attributable to social interaction, which stimulates elaboration of conceptual knowledge and verbalisation of their understandings.

A Case Study

<i>Unit of analysis</i>	<i>Outcomes</i>		
Micro level, the individual	Knowledge	Skills	Opportunities
Meso level, groups	Knowledge	Skills/practice	Shared understanding
Macro level, communities	Collective/ knowledge	Collective identity	Social Capital

A Case Study

Rural communities in two protected areas, Slovenia:

The Triglav National Park - first established in 1924/extended in 1981,
no participatory methods

The Goricko Krajinski Park - established in 2005 with participatory
methods

Methodology used – mixed methods

Interviews with 30 key informants

Questionnaires TNP 109 + KPG 100

Observation of the rural setting

A Case Study – qualitative data

Semi-structured interviews interviews, of which a sub-group of has participated in workshops, consultations and other events during the establishment period:

“[Workshops] were good because it boosted participants’ confidence. Each of us had to prepare a public presentation and in this sense, it was really good. It was quite interesting when some women become engaged on a topic. They never spoke in public out of some sort of respect, and always kept themselves to the last rows. It was good to see them blooming in the process. We had some quite positive moments”
(Farmwoman, 2005).

A Case Study – qualitative data

Narratives suggests for the presence of *learning outcomes*, identified for the Micro level.

- *“I have attended the workshop for youth tourism and tourist guides. There we learnt about the history and the natural heritage of this area”* (Public Servant, 2005).
- *“It was busy, people attended the workshops in their free time, they gained specific skills, and realised what it means to do something in relation to the protected area”* (Employee at the Local Development Agency, 2005).
- *“I attended the course for Hungarian language and the course on marketing strategies”* (Craft entrepreneur, 2005).
- *“..although I didn’t have time [to go to all], these [workshops] were useful. I saw some things and refreshed [some of my] skills”* (Entrepreneur in Agritourism, 2005)

A Case Study – qualitative data

- Narratives suggests for the presence of *learning outcomes*, identified for the Meso level. Respondents related that *new knowledge* and *information* was coming into their group/association during the establishment process and was used accordingly.
- Informants had difficulty in identifying the *skills* gained by association members in relation to the park.
- Several respondents suggested that this park is an *opportunity* for their associations/groups.

A Case Study – quantitative data

Micro reliability

Triglav Park $\alpha=0,285$, standardized values $\alpha =0,300$
inter-item mean value of 0,125

Goričko Park $\alpha=0,551$, standardized values $\alpha =\mathbf{0,576}$
inter-item mean value of 0,311

Meso reliability:

Triglav Park $\alpha = 0,487$, standardized $\alpha= 0,558$
inter-item mean value of 0,297

Goričko Park $\alpha=0,707$, standardized $\alpha=\mathbf{0,718}$,
inter-item mean value of 0,459

A Case Study – quantitative data

Multiple regression *with 2 indep. variables used for prediction:*

- ***Micro level_i = b₀ + b₁ ParticYN_i + b₂ IndReal_i + b₃ + ε_i***
- *Realisation of individual projects (IndRealiz) and participation in workshops in connection to the protected area (ParticY/N).*

- ***Meso level_i = b₀ + b₁ GRealiz_i + b₂ GProj_i + ε_i***
- *Realisation of projects in relation to the park (GRealiz) and engagement in rural development projects (GRProj).*

A Case Study – quantitative data

- Distribution of standardised values for the three-item Micro index and the four-item Meso index were tested for reliability and results suggest that the Micro index is better suited for one sample only: the Goričko sample.

		TRIGLAV PARK		GORIČKO PARK	
		Z Meso	Z Micro	Z Meso	
N	Valid	67	100	68	
	Missing	42	0	32	
Mean		.000	.000	.000	
Std. Error of Mean		.122	.221	.121	
Median		-.200	-.3049	-.158	
Std. Deviation		1.000	2.20628	1.000	
Variance		1.000	4.868	1.000	
Skewness		.386	.307	.469	
Std. Error of Skewness		.293	.241	.291	
Kurtosis		-.662	-.603	-.506	
Std. Error of Kurtosis		.578	.478	.574	
Range		3.761	9.18	3.862	
Minimum		-1.275	-4.01	-1.445	
Maximum		2.486	5.17	2.417	
K-S Test		D(109)=.120, p=67	D(100)=.068, p=.200	D(100)=.132, p=.005	

A Case Study – quantitative data

- How well can a set of predictor variables predict scores on the Micro compound index?
- Which variable is the best predictor of the Micro compound index?
- How well can a set of predictor variables predict scores on the Meso compound index?

Thank you !

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