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## Thinking outside the box ... – 10 years practical experiences in interdisciplinary education and research

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## SLUSE


Danish University Consortium for Environment and Development – Sustainable Land Use and Natural Resource Management funded in 1998 with the aim to:

“Promote joint education and research across institutions, regions and disciplines; develop post-graduate courses in sustainable land use and natural resource management; assist in the empowerment of communities through the teaching and research activities as well as fostering partnerships with a range of stakeholders; and enhance the human capacity within participating countries in the above areas.”

University partners in Malaysia, Thailand & Southern Africa

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## Activities

1. Course and curriculum development
2. Joint courses, particularly the joint field course
3. Shared supervision of master students
4. Joint research
5. Creating an interdisciplinary working platform, and developing a field based, interdisciplinary, problem oriented education and research approach

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## Some educational outputs

The highest ranked skills gained from SLUSE were the ability to work interdisciplinary (62% answered to a great extent) and the ability to work in an international setting (63% answered to a great extent)

Seventy-four percent of the respondents responded affirmatively to the statement that SLUSE has given them qualifications which they could not have obtained in other ways during their education

Employers valued the ability of SLUSE graduates to work across disciplines, on problem-oriented projects, and their adaptability to new cultural settings and experience of international settings

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## SLUSE Research




Started as an educational program

**Research based education**  
Research therefore included based on educational argument  
Research therefore started after educational activities

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## Capacity building

Research introduced in a context of capacity building with respect to:

- Holistic approaches as opposed to traditional disciplinary approaches
- Interdisciplinary methods and organisation of research
- Research methodologies (in-field as well as data-treatment and -analysis, and synthesis writing)

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## Barriers

- New mode of research cooperation (interdisciplinary teams, detailed fieldwork, groupdiscussion of results etc.)
- Modest practical experience with analytic tools (evaluation of reliability and validity of data, statistics etc.) (Thailand)
- Time constraints due to many educational and administrative duties
- Inter-university cooperation problems due to disagreements on sharing of responsibilities and funds

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## Issues

- A culture of politeness – limiting critical thinking (Thailand)
- Need for joint field work in order to transcend conceptual barriers – 'seeing is believing'
- Interdisciplinary work is confusing, while stimulating, because it challenges the disciplinary approach

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## Thailand SLUSE Research Projects

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## Song Pilot Research Objective

- Test and develop an interdisciplinary research methodology, building on the fieldcourse experience
- Capacity development
- Investigate land use changes
- Understand the dynamics behind upland farming
- Investigate relationship between upland and lowland farming

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## Upland / lowland farming and deforestation

**Socio-economy**  
Social- economic and cultural factors affecting NRM

**Land use / GIS**  
Land use history, mapping and tenure analysis

**Agro-ecology**  
Landuse - physical environment interaction especially soil and water

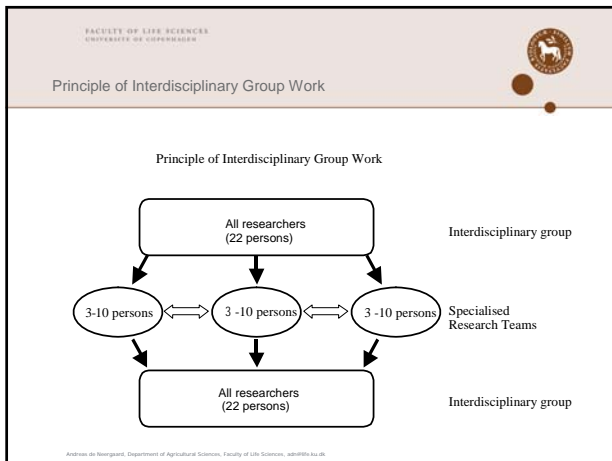
**Forestry**  
Inventory and use of forest and livelihood importance sp. NTFP

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## Phases in Song Research Project

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Some results

It was shown how upland fields in forest reserves (and hence illegal) are widespread, commonly accepted, transacted, providing substantial subsistence to farmers livelihood,

- not strongly correlated with only the lower socio-economic stratum,
- not showing severe erosion or other land degradation signs,
- and strictly controlled by local middle-men.

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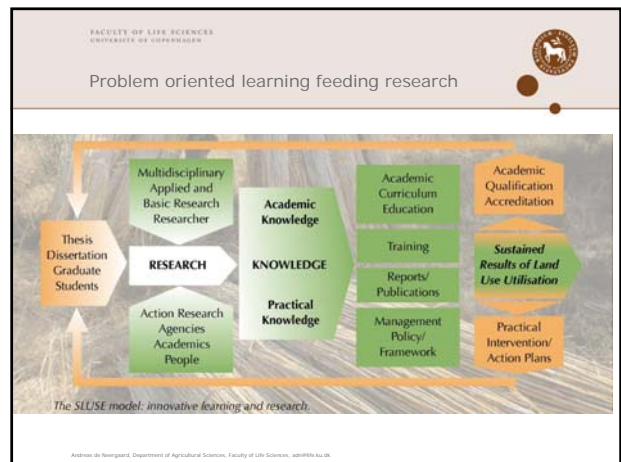
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Some results (II)

Farmers are increasingly diversifying their livelihood away from agriculture, but it has not yet been possible to identify a clear environmental impact of this i.e. in the form of diminished expansion of fields into forest areas.

Rather, there are indications that distant fields are maintained, but that, when suitable, perennial crops like fruit- and timber trees are substituting annual crops.

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Giving up the disciplinary perspective as the 'final' benchmark may get you into trouble ..

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Giving up disciplinary perspective


Why are South African smallholders not embracing ZT with open arms?

Bolliger et al.

Ploughless agriculture or zero-till (ZT) ...being hailed as part of a new Green/Blue Revolution by Nobel laureate Norman Borlaug .... has also become increasingly suggested as a possible alternative agricultural land management strategy for rural Southern African smallholders

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Although founded in the apparently rational inference that ZT eliminates a considerable cost of small-holder agriculture by doing away with plough payments, it appears that little effort is made to try to view this through the lens of smallholders' agency or priorities

... while much-touted potential benefits of ZT – e.g. SOM build-up, erosion restriction, improved soil structure, moisture conservation, more timely planting and lower labour demands – are indiscriminately lumped into the ZT package, being accepted as intrinsic to ZT rather than as being characteristic of how and under what conditions ZT is being practised.

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A 'brave' conclusion ...

In Brazil, it was a crisis mentality founded in unprecedented land degradation that forged a willingness to depart from conventional practice.

Among South African small-holders, on the other hand, there is rarely a similar sense of urgency...for homeland residents, a smallholding is more about a "place to stay" than a "place to farm"

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Going counter current ....


**A fresh look at shifting cultivation: Fallow length an uncertain indicator of productivity**

Mertz et al.  
Agricultural Systems xxx (2007) xxx–xxx

Shifting cultivation is practiced by millions of farmers in the tropics and has been accused of causing deforestation and keeping farmers in poverty. The assumed positive relationship between fallow length and crop yields has long shaped such negative opinions on the sustainability and environmental impact of the system, as population growth is believed inevitably to lead to its collapse.

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Falsification of an established 'truth' may be a daunting task ..... and at the end of the day seem as a common sense result

With cases from Malaysia and Indonesia, we show that fallow length is a weak predictor of crop yields, though interactions with fertilizer inputs may increase its importance. Other factors such as drought, flooding, and pests are more important determinants of yields.

The implication is that when using natural fallow as the only means of nutrient supply, there is no need to cut old fallow vegetation. Moreover, there is no evidence of system collapse, even at short fallow periods.

We conclude that shifting cultivation should be accepted as a rational land use system and that earlier calls for bringing a "Green Revolution" to shifting cultivators are still relevant to achieve intensive and sustainable production.

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Working for Water program

Largest environmental program in Africa  
Annual budget 100 mill. US\$  
Dual purpose:

- Eradicate invasive plant species
- Job creation in rural areas

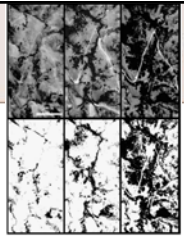

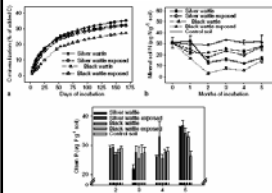
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AGRICULTURAL SYSTEMS

Australian wattle species in the Drakensberg region of South Africa – An invasive alien or a natural resource?

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### Wattle as a resource for village households

All households used it as their primary heat source and for building materials. Other uses included medicine extraction and 20% of the interviewed households gained income from selling firewood.

From the rural communities' perception, the greatest concern regarding the alien species is its high water consumption (although this did not affect them directly), and the fact that it provides cover to thieves and criminals.

Consequently, most villagers wanted either a reduction of the wattle stands (58% and 86% in the 2001 and 2003 study, respectively), or that they remained as at present (42% and 10%, respectively).



We argue that the current practice of externally funded wattle control is not sustainable in the long term.

We discuss alternative approaches with a higher level of community participation and ownership, and conclude that the current underutilization of land may, ironically, be one of the largest constraints for a viable solution to the spread of wattle.



### Comment from anonymous reviewer

The major problem with the paper in its present form is that it reports on three quite different studies, each of which is interesting in its own right, but needs to be dealt with more thoroughly before it can be published. The three studies attempt to

- (1) quantify the rate of spread based on an analysis of aerial photographs;
- (2) evaluate the importance of wattles in rural households ... and
- (3) quantify decomposition rates based on decomposition experiments.

Each of these should be published separately in my view. By combining them, this paper creates the impression that it is dealing with the wattle problem in a holistic manner.

**Potentials**

- Long-term personal relations established
- New forms of cooperation introduced and tested
- New contacts and bonds between otherwise separate disciplines established
- Thus significant experience gained improving future prospects for efficient and successful research cooperation

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### Some final considerations ....

Inter- or transdisciplinary research will often require a departure from disciplinary thinking in order to bridge conceptual gaps

This will challenge peers, whether as colleagues or reviewers and this can impede dissemination and recognition of results

Therefore a research effort must also accommodate disciplinary outlets in order to ensure a reasonable short-term gain for the individual researchers involved

And perhaps a strategy for the dissemination of the inter/transdisciplinary outcomes should be mapped from the outset of the research