

Understanding land-use trends

more questions than answers

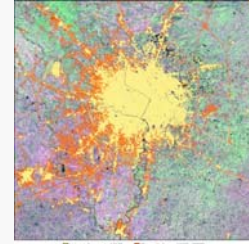
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Information and understanding

- Data and information on LUCC have grown faster than understanding (?)
- How do we make sense of the information?
- How useful are our approaches and theories?



Chengdu, China



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How do we conceptualise LUC?

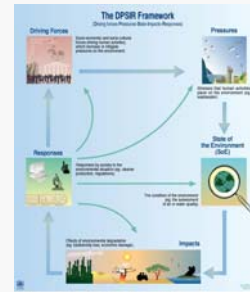
- Decisions or 'drivers'?
 - the net result of numerous individual decisions?
 - or the product of impersonal 'drivers'?
- False alternatives perhaps, but how do we reconcile them?



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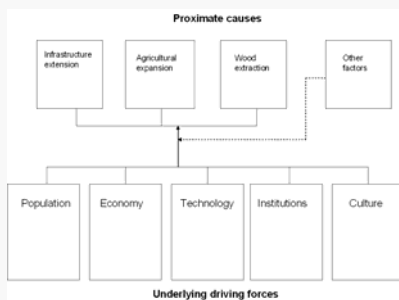
Decisions or drivers?

- Challenge of integrating or reconciling approaches
- 'Drivers' often used at larger scales
 - land use and environmental change
 - DPSIR**
 - Driving forces
 - Pressures
 - State
 - Impacts
 - Responses
 - natural sciences background
 - unease about 'forces' in relation to human decisions
 - but 'drivers' or 'driving forces' widely used (e.g. in relation to deforestation)



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Deforestation



After Geist and Lambin (2002)



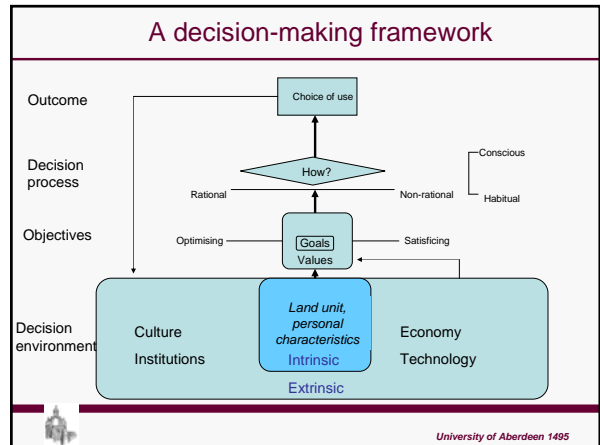
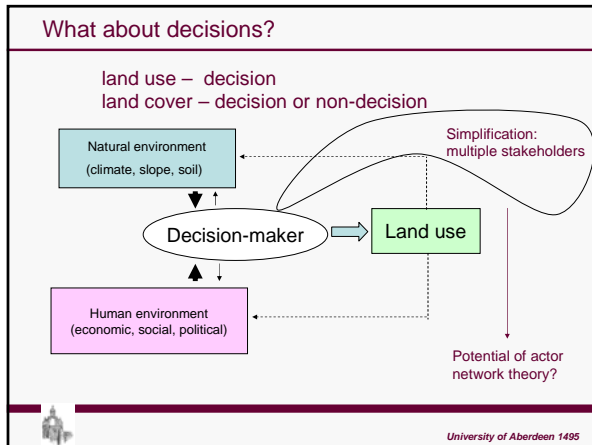
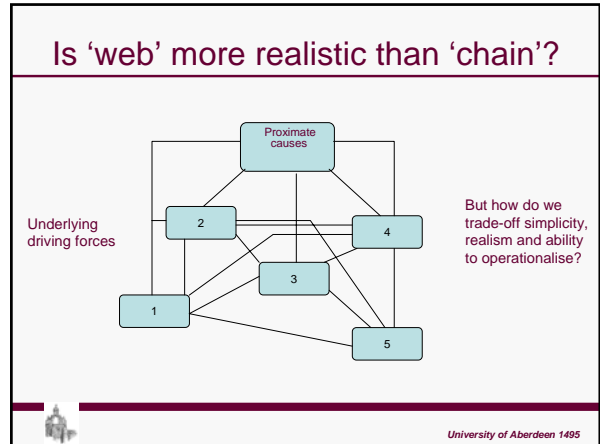
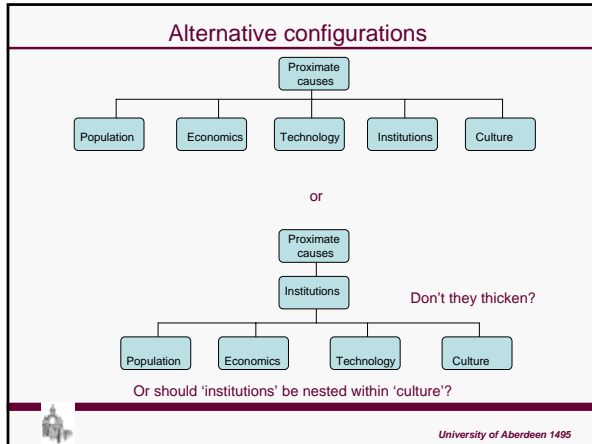
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The 'underlying driving forces'

- Five or six commonly listed
 - Population
 - Economics
 - Technology
 - Institutions (policies sometimes separated out)
 - Culture
- Problem of indicators/quantification
 - Emphasis on the easily quantifiable ones? Neglect e.g. of culture?
- Other problems
 - Equivalence of categories
 - Independence of categories/ underplaying of interaction or synergy
 - Uncertainty – each unpredictable?
 - recourse to 'scenarios'



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Problems with decision-making approach

- Fluid population of land users
 - Entrants: successors, others
 - Departees: retirees, others
 - Fathomability?
 - attitudes, values, goals, behaviour
- Fluid framework of land units
- Fluid decision macro-environment
- And interactions between levels

Leavers Arena t_2 Entrants

Restructuring

Leavers Arena t_2 Entrants

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Prospects for hybridisation?

UNDERLYING CAUSES	CONSTRAINTS ON CHOICE	PROXIMATE CAUSES	CONSEQUENCES
Cultural <ul style="list-style-type: none"> Shift to environmental social paradigms 	Land Quality <ul style="list-style-type: none"> Land suitability for alternative uses 	Agricultural Changes <ul style="list-style-type: none"> Restructuring to capture economies of scale on-farm diversification (e.g. agri-environment schemes) sub/retrofitting redundant buildings pluricentricity 	Environmental <ul style="list-style-type: none"> land taken for development loss of biodiversity in arable land soil erosion eutrophication loss of upland habitats gain in lowland habitats
Policy & Institutional <ul style="list-style-type: none"> joined-up policies 	Land Tenure <ul style="list-style-type: none"> development rights 	Social Norms <ul style="list-style-type: none"> acceptable behaviours 	
Demographic <ul style="list-style-type: none"> counter/ret migration aging farmers 	Individual Preferences <ul style="list-style-type: none"> attitudes to risk 	Access to Capital <ul style="list-style-type: none"> role of banking sector and Local Enterprise Companies 	
Economic <ul style="list-style-type: none"> dependence on subsidy value of ground 			
Technology <ul style="list-style-type: none"> role in cost reduction and economies of scale 			
Trigger Events <ul style="list-style-type: none"> weather economic shocks disease public opinion shifts 			

Potential of agent-based modelling?

slow variables (3-10 y)

fast variables (< 1 y)

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Level of understanding/explanation?

How do we decide on appropriate level of explanation of (e.g.) deforestation?

Should we focus on agents, proximate causes or underlying causes?

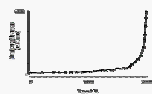
Loggers



Road extension



Demographics, geopolitics etc



Are proximate factors easier to identify?

But are underlying 'drivers' more amenable to policies?



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How do we distinguish between incremental change and new paradigm?

- e.g. have we moved from rural production to consumption or entered a post-productive era?



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Or is it simply a marginal change driven by economics?

- Compare 19th c globalisation effects
- Scottish Highlands: sheep farming replaced by hunting



Post-productivism....?



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And how do we view land-use change?

- Is our mindset still conditioned by classical ecology?
 - stability normal/good
 - change abnormal/bad
 - or what shapes our attitudes?
- Are constraints on our understanding imposed by mindsets dominated by positivism, linearity, reductionism?



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Finally,

- Are we experiencing paradigm shift, towards multifunctionalism?
 - is/was mono-functionalism a 'modern' aberration?
 - implications for land-use classification/mapping?
- do we use different approaches in global North and South?
- will trajectories in the South resemble those in the North?



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