

Complexity and Agroforestry: Ways to Embrace to Challenge

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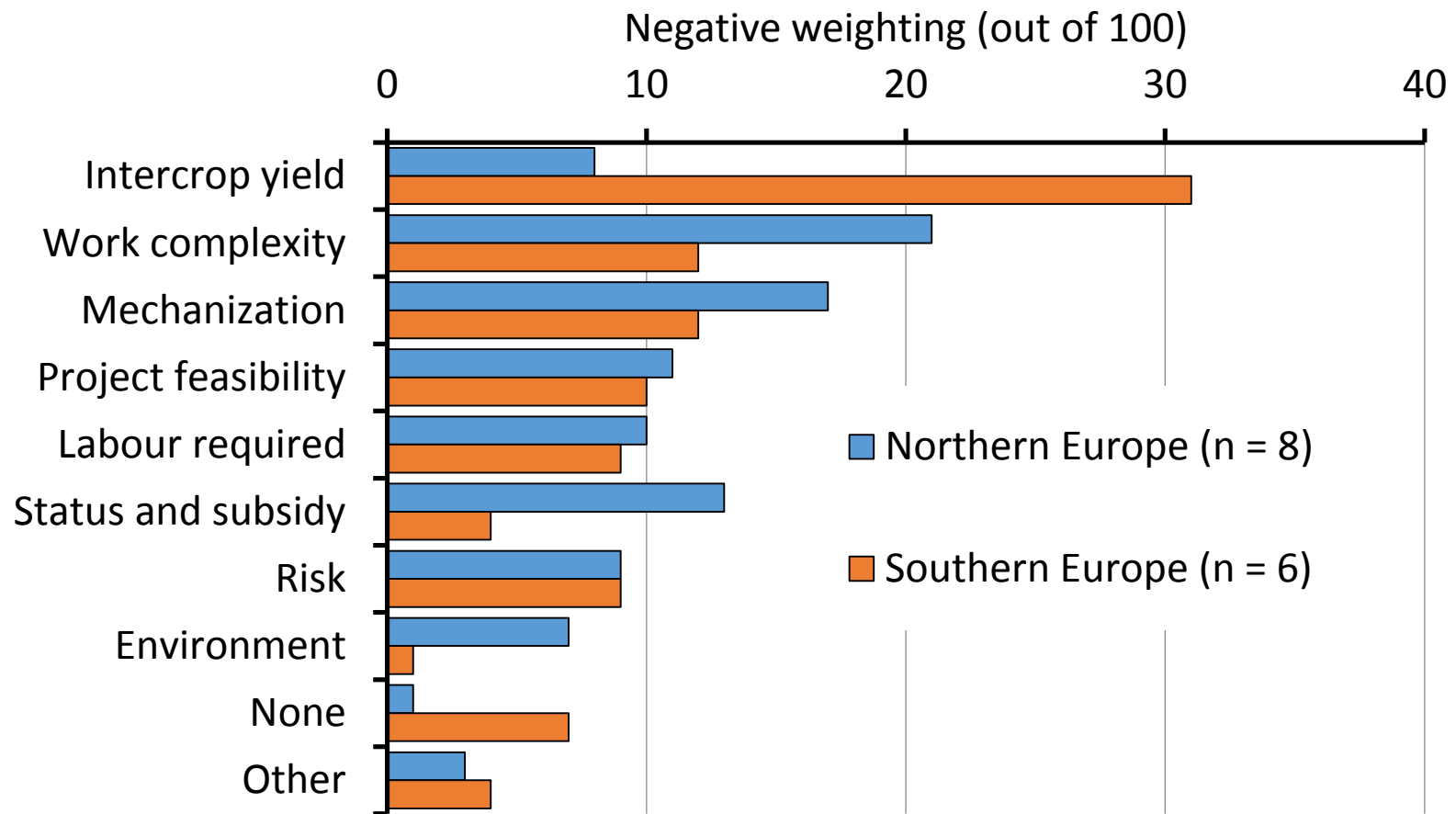
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Agroforestry as a multiple land use

Farmers identified work complexity as a key negative aspect of silvoarable systems (Graves et al., 2009)



Initial results from the AGFORWARD project asking 344 farmers and other stakeholders in the EU to identify the key positive and negative aspects of agroforestry against 45 criteria.

Positive aspects

0.0 0.2 0.4 0.6 0.8 1.0

Animal welfare
Production
Product diversity

Management

Biodiversity
Environment
Carbon
Landscape
Soil conservation

Socio-economic

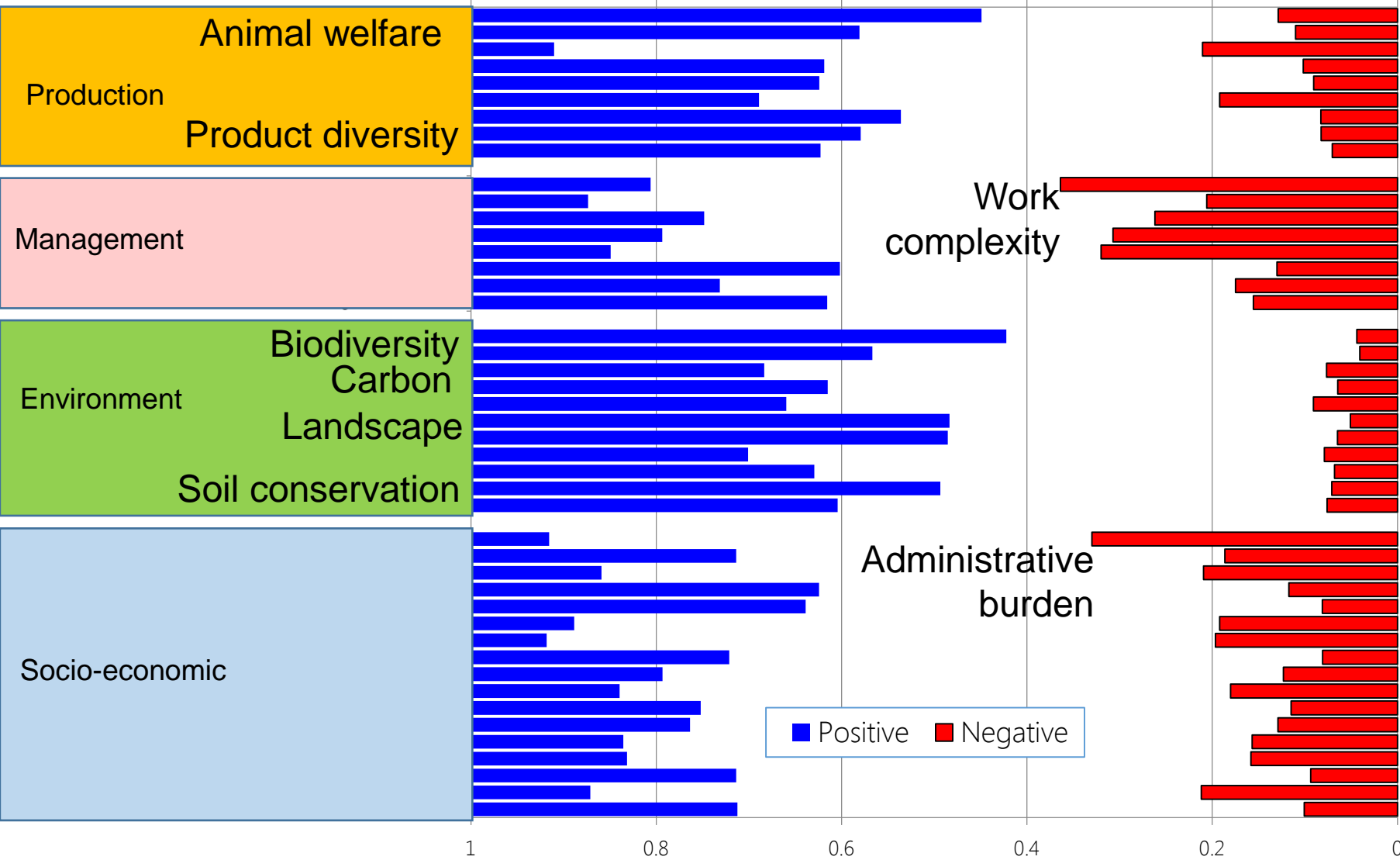
Work complexity

Administrative burden

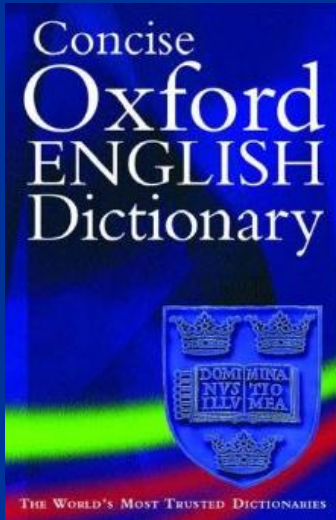
■ Positive ■ Negative

1 0.8 0.6 0.4 0.2 0

Negative aspects

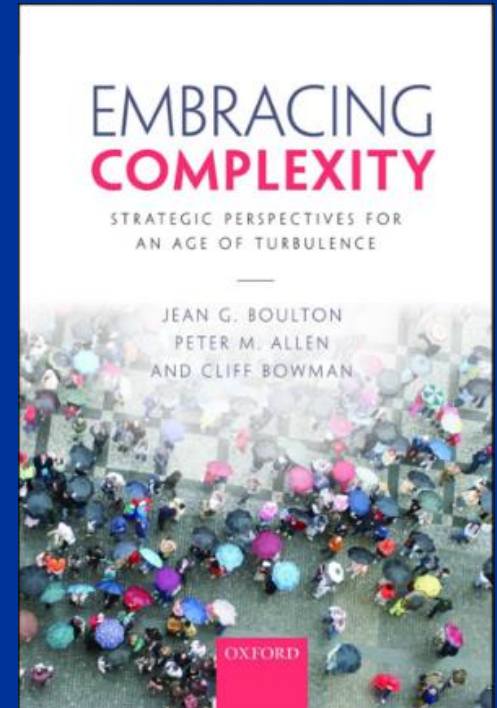


What is Complexity?

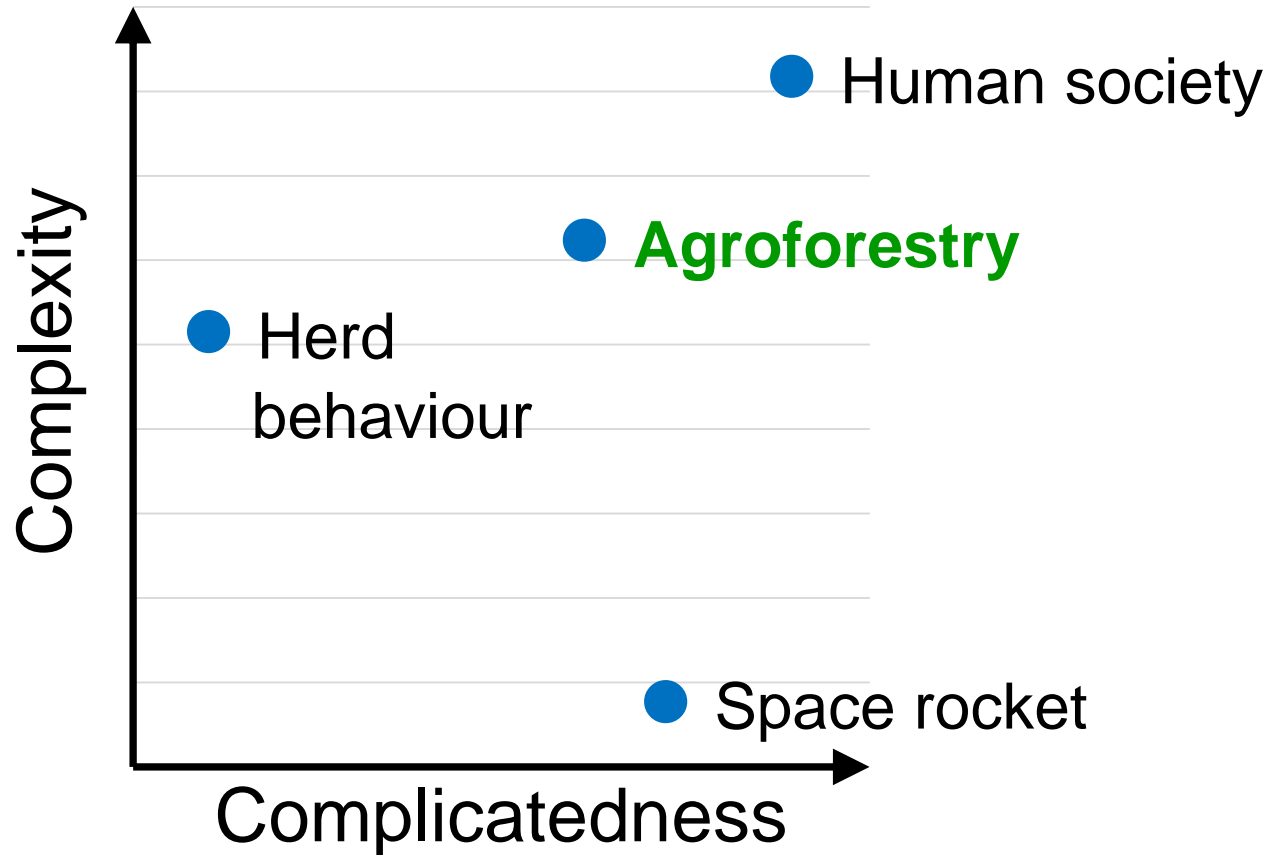


Complex: “consisting of many different and connected parts”
“not easy to understand”

Complexity is the result of the interconnections of many diverse non-standard components that interact in non-linear ways
(Boulton et al., 2015)



Agroforestry, like life, is complex and complicated



Complexity: large numbers of simultaneously interacting entities giving rise to **emergent** (often surprising) patterns

Complicatedness – systems, typically with some function, with an organisation that demands lengthy descriptions

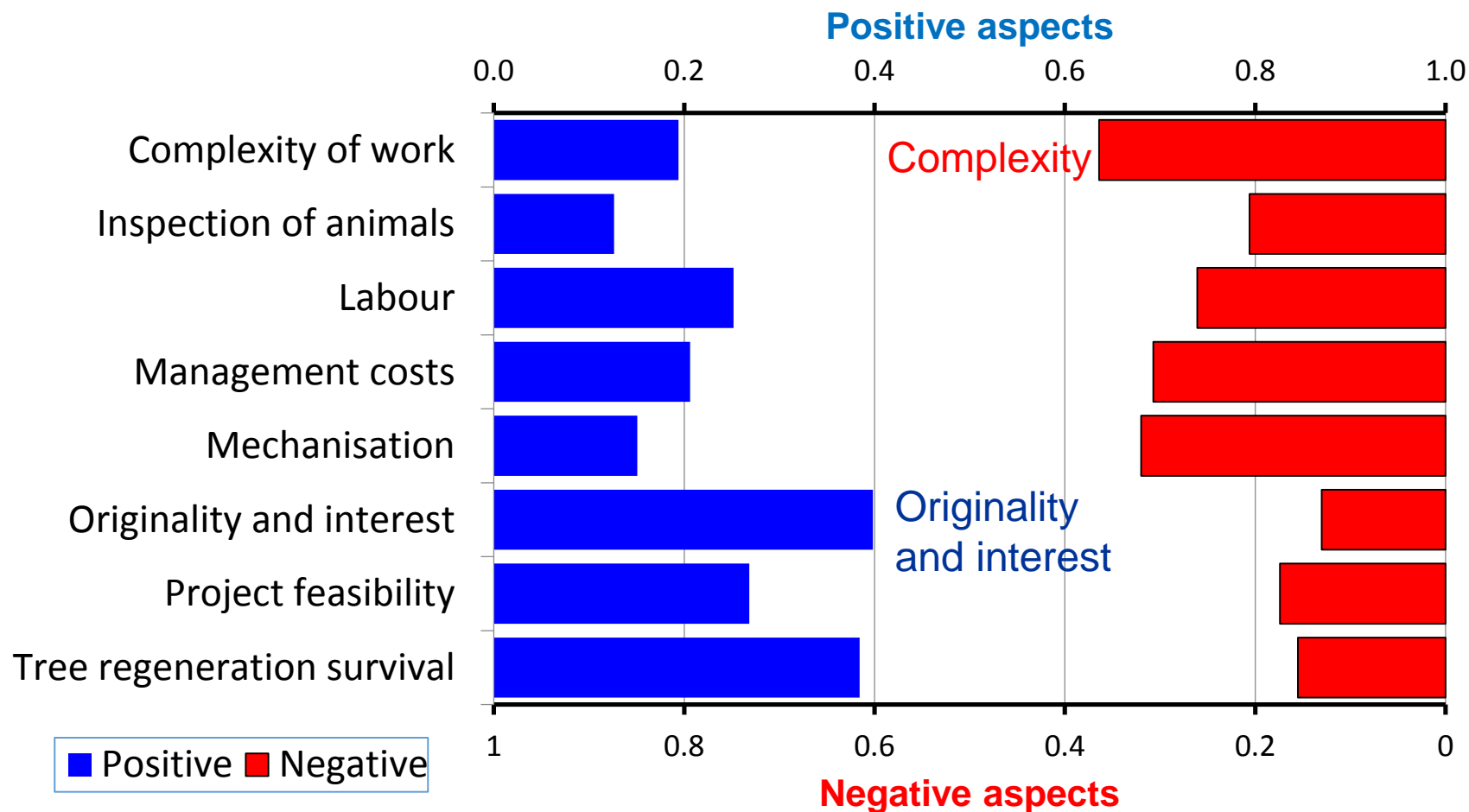
Approaches to embrace complexity

1. Thinking differently

The most important component of an agroforestry system are people



Initial results from the AGFORWARD project asking 344 farmers and other stakeholders in the EU to identify the key positive and negative aspects of agroforestry management



Approaches to embrace complexity

2. New arrangements to work together

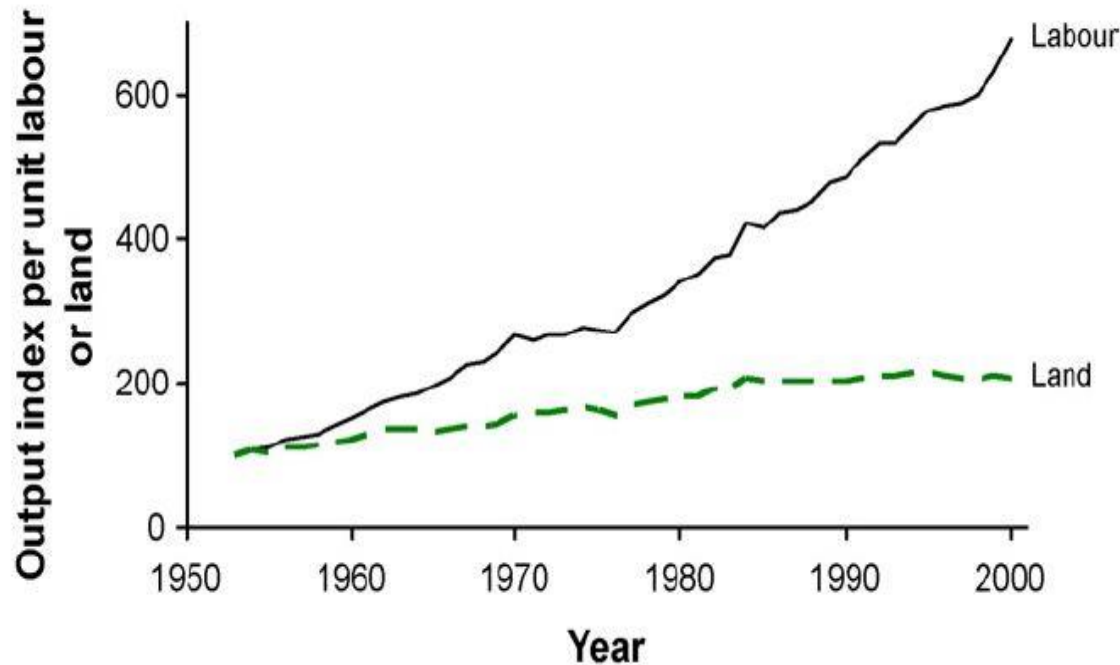


If you own an apple orchard;
can you work with someone
who wants grazing for their
sheep?



Approaches to embrace complexity

3. Moving beyond yield per unit labour



Labour productivity drives many decisions

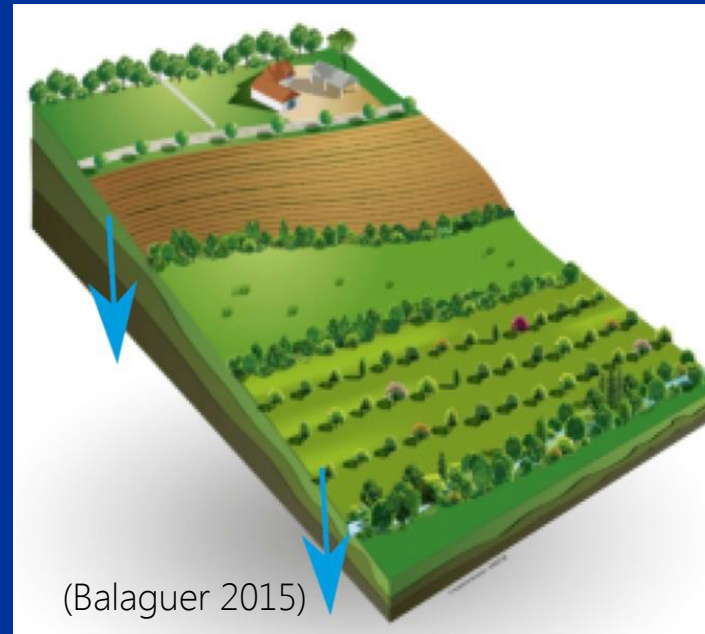
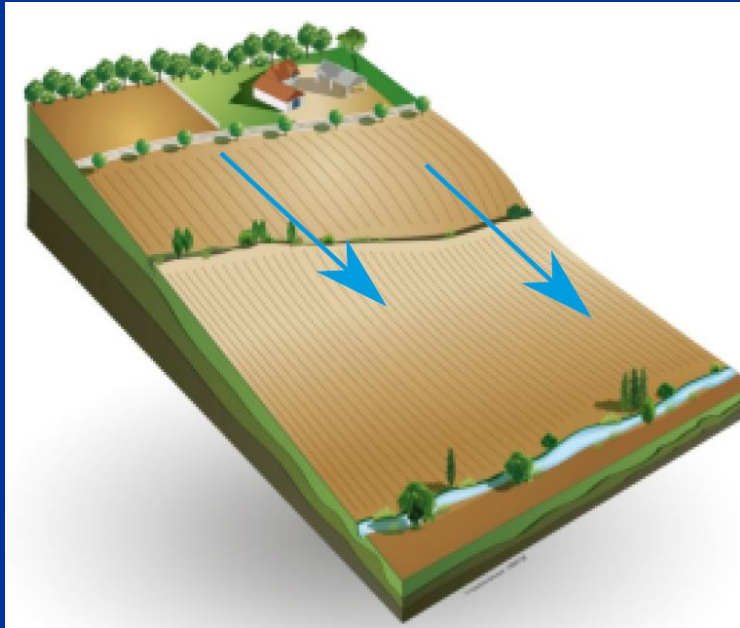
Alternatives:

- Higher product prices
- Lower machinery costs
- More fulfilling work

Levels of output per unit of land (dashed line) and unit of labour (solid line) between 1953 and 2000 (1953 = 100) (Thirtle and Holding, 2003).

Approaches to embrace complexity

4. Thinking beyond the farm



Modelled effect of trees in the 4 km² Pontbren sub-catchment, Wales (Wheater et al., 2012)

Management choice	Change in flood peaks
Remove all trees	+20%
Baseline situation	
Add tree shelterbelts	-20%
Afforestation	-60%

Summary



- Agroforestry is complex
- This may be off-putting to managers who seek to minimise uncertainty; to others agroforestry offers originality, interest, and opportunity
- Lower labour productivity may be offset by increased product prices, lower machinery costs, or more enjoyable work
- Agroforestry may be less complex if we think beyond the farm boundary



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