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Resilience and livelihoods in low rainfall agro-silvo-pastoral systems

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Bread-and-butter research and practice outputs

- **Dryland management practices**

- Soil and water flow management
- Pasture and livestock management
- Biosecurity – weeds, pests and diseases

- **Integration and co-benefits, and implications for ‘licence to operate’**

- Plot, landscape and catchment scale integrated production and conservation
- Management and policy for new land uses such as carbon farming
- Integrating Indigenous perspectives into land management
- Managing for high levels of climate variability

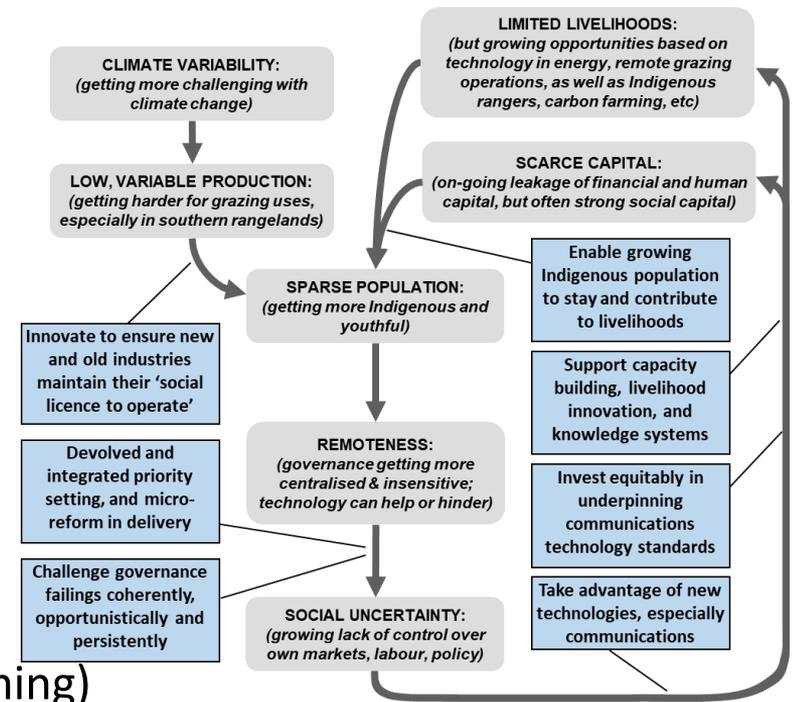
- **Responding to Land Degradation Neutrality needs**

- Monitoring systems to evaluate LDN
- On-farm and regional use of remote sensing (from drones to cell-phones to satellites)
- Etc...



Framing issues

- **Dryland Development Paradigm**
 - 1 – Reynolds *et al.* 2007 *Science* **316**
 - 2 – Stringer *et al.* 2017 *Land Deg&Dev* **28**
 - Desert system ideas in Australia
 - **Resilience and not fighting the last war**
 - Resilient to what?
 - Specified resilience
 - To known risks (perhaps with uncertain timing)
 - General resilience – on-going change and uncertainty
 - Ready for the unexpected (as well)
- *Are our mental and economic models suited to this?*



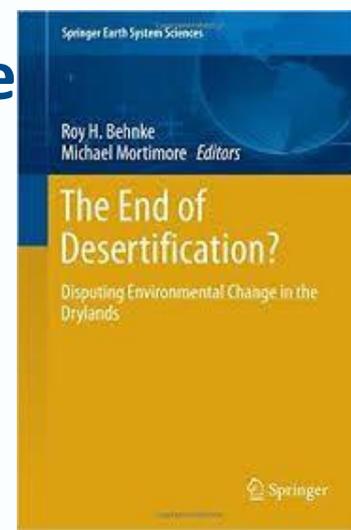
Foran *et al.* 2019 *Rangeland Journal* 41: 271.

Dealing with a world of values, power and change

Behnke & Mortimore 2016 *The End of Desertification?*

Reflections on their views for drylands globally:

- 1. Power:** Disruptive effects of local and post-colonial centralised power structures in undermining successful community self-management
- 2. Global Change:**
Reality of population, urbanisation and global change - conditions changing from what was successfully managed in the past
- 3. Narratives:**
Influence of negative mental models and narratives, in research as well as the public mind, reinforced by media self-censoring



(Stafford Smith 2016, Chapter 20 "Reflections on the mirage" in Behnke & Mortimer)

Dealing with a world of values, power and change

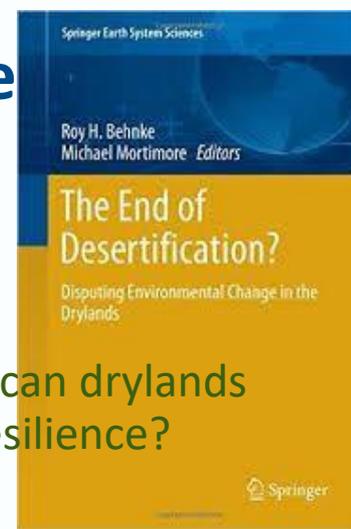
Behnke & Mortimore 2016 *The End of Desertification?*

Challenges for drylands globally:

1. **Power:** recognising the inevitability of centralized power dynamics, how can drylands organize themselves and create cross-scale alliances to build desirable resilience?
2. **Global Change:** how can different drylands best be given support to handle the pressures of global change as they play out in local populations and environments, without creating dependency?
3. **Narratives:** what is the high level, positive, and probably value-laden narrative about the future of drylands across the world which would override the impacts of power dynamics and global change?

e.g. support urban migration and a good remittance system, with networking and a good narrative, rather than discourage movement? (but, in which systems will this work?)

(Stafford Smith 2016, Chapter 20 "Reflections on the mirage" in Behnke & Mortimer)



Building general resilience

What to value:

- Reserves (in many forms)
- Response diversity (in many pathways)
- Social capital, networks & institutions
- Human capital, inclusive, equity
- Systems thinking, tight feedbacks
- Cross-scale thinking
- Appropriate connectivity
- Reflective adaptive learning
- Be safe to fail, rather than fail-safe

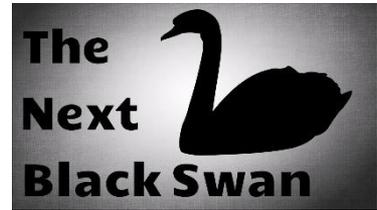
What economic norms say:

These are just inefficient 'redundancies' (because of our discounted time horizon)

These can't be measured/included in economic efficiency measures

These are incompatible with specialisation for efficiency

Our optimisations are never wrong!



- All of these are important for developing *general resilience* for drylands to black swan events, or even lesser change and uncertainty

➤ *Ask yourself – are we allowing these factors to be valued?*

Summary

- Diverse technical research and practice in Australia to draw on
 - Mutually valuable work still to be done here
 - Includes engagement processes and governance lessons not yet mentioned
- Broader framing is worth considering
 - Highlights that these are important but probably not the limiting factors in better drylands outcomes
- Approaches to building resilience and appropriate transformability could be mutually useful

Thanks

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