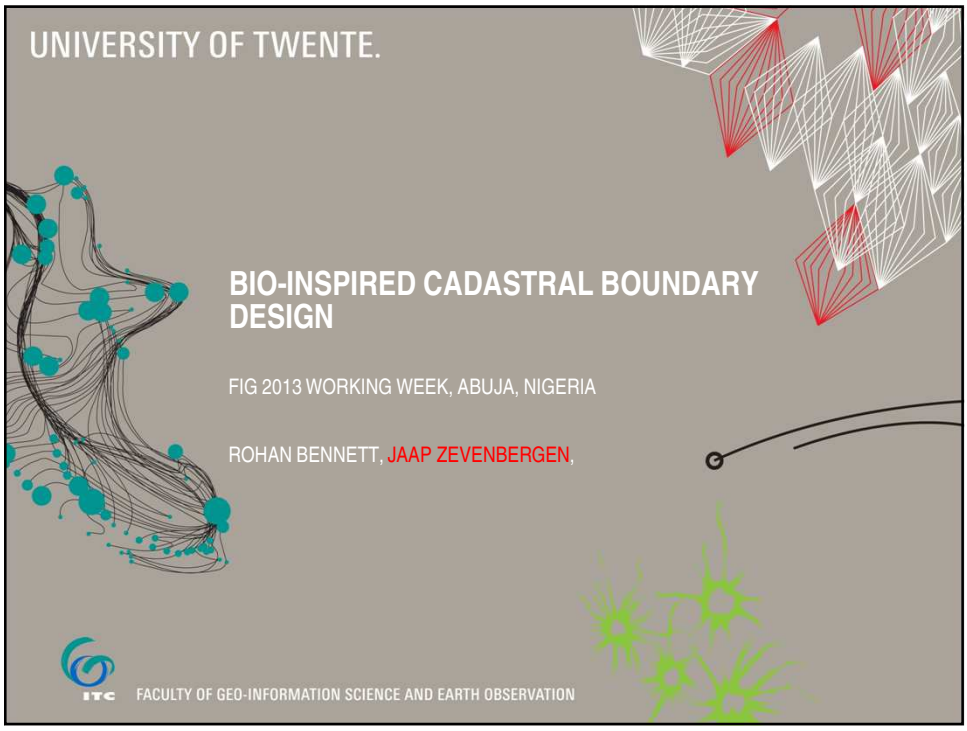


Overview

1. The ecological ignorance of western boundary systems
2. Bio-Inspired boundaries: the emerging solution
3. Potential impact and benefits of the 'green' cadastre
4. Current limitations and future work
5. Conclusion

Three problems with 'western' boundary systems

1. Establishment and maintenance are often economically expensive
2. Very specific social norms must be in place
3. Ignore or weaken systems in surrounding natural environments
   (most natural 'boundaries' are gradual transitions: monoculture fields vs. stabilized mixed nature (sometimes no equilibrium is reached)

Solutions…

1. Establishment and maintenance are often economically expensive
   - Low-cost and high-speed approaches
   - Standardization e.g. LADM
2. Very specific social norms must be in place
   - Participatory approaches
   - Recognize customary tenures e.g. STDM
3. Ignore or weaken systems in surrounding natural environments
   - ……?

Bio-Inspired Boundaries?

- Move beyond boundary systems that rely purely on geodetic principles
- Design boundary approaches that are sympathetic and opportunistic towards natural or existing biological and ecological systems
- An extension of the 'general boundary' concept
  - in some laws: accretion of dry falling land along a riverbank to right holder of the bank

What is Biomimicy?

- A design approach or philosophy
- Principles inherent in nature should be used to inform the design process
- A strand of biological science or ecology is fused with a design approach and the principles from another disciplinary area
  - animal skin structure to increase aero-/hydrodynamic vehicles)
- In general:
  - Identify a function to perform > 'biologize' the question > find nature's best practice > translate the best practice into buildable things

Important role for the geosciences

- New geospatial technologies to play an important role
- Wireless Sensor Networks
  - fish stock boundaries (See work of Matt Duckham)
- Airborne Sensors
  - vegetation boundaries using Near Infra Red or thermal sensors
- GNSS
  - fauna movements and boundaries

Potential impact and benefits

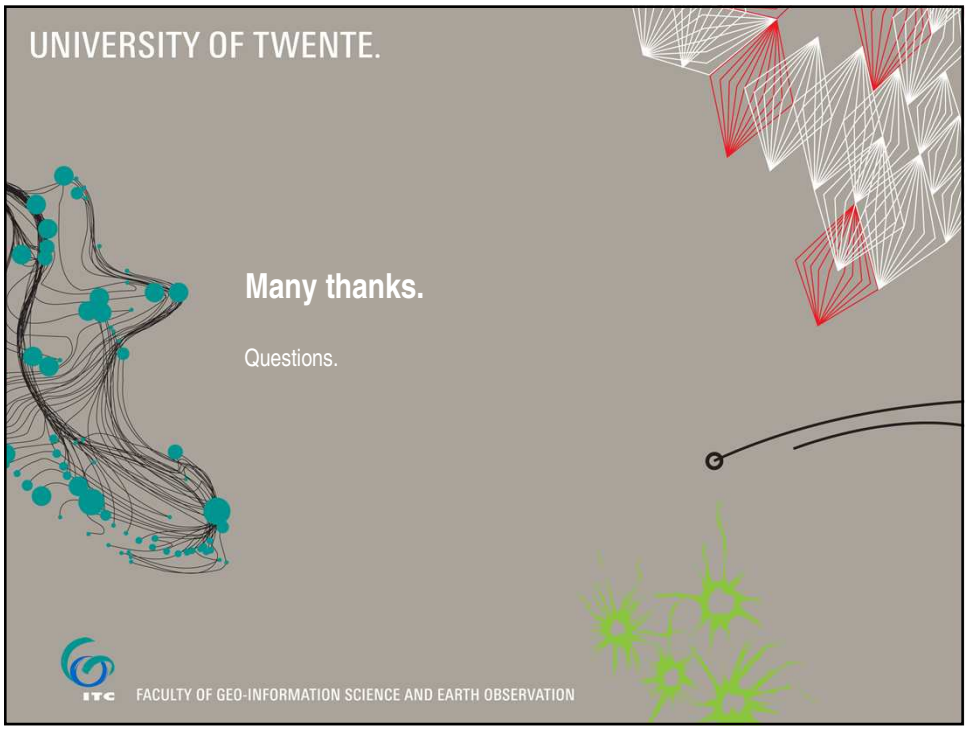
- Environment
  - Boundaries that are more sensitive to natural processes
  - Support for Pan-European Ecological Network (PEEN) or Natura2000
- Social
  - Useful in customary boundary contexts e.g. pastoralism
- Economic
  - May be lower cost and more rapidly deployed
  - New opportunities for geospatial sector e.g. mapping bio-boundaries

Current limitations (or opportunities)

- No strong links between cadastral sciences and ecology
- Existing research focuses on making western approaches cheaper and faster – not on making approaches 'greener'
- Biomimicry design processes for land administration are largely unknown and unexplored
- 'General boundaries' are a starting point, but, the opportunity exists to go beyond 'rivers', 'forests', and 'ridges'

Conclusion

- Existing approaches to boundary definition are ecologically ignorant
- Ecological and biological systems already provide blueprints for creating boundary systems more in tune with environment
- Coupled with new geospatial technologies, the biomimicy design approach offers a new opportunity to boundary design
- What next?
  - Build better links with ecology
  - Illustrate the problems with more evidence
  - Identify best cases – design – prototype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Many thanks.
Questions.
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