Integrated Analysis:

Models for Supporting Sustainability Decision Making

Transition toward sustainability after 15 years. January 2016.

Integrated Assessment

- What progress has been made in developing models to support decisions related to sustainability
- What are the remaining gaps and critical barriers to progress?
- What new efforts are needed to address opportunities related to sustainability?

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
THE GLOBAL GOALS
For Sustainable Development
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE AND JUSTICE STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS

IAM History

- Acid rain
- IPCC
- Millennium Ecosystem Assessment
- InVEST & other ecosystem service models
  - Work with stakeholders and decision makers
  - More fully integrating ecology
- Models of specific thematic areas (food-water-energy nexus)
- Madingley model

IAM Progress: Synthesis

- More robust, rigorous, models
- More integrated, with more feedbacks
  - From climate to climate and economics to climate, economics, and some ecology ….
- More use of these models
- More regional assessments and regional models

Remaining Gaps

- Still not regularly used for decision-making
- Limited focus and topics
  - Effect of single interventions, single focus
  - Where's the ecology?
  - Social systems entirely non-evident (except economics)
- Feedbacks are still rare, and limited in the action within models
  - Economy and climate, but few ecological feedbacks
- Do they work? Are they right?
- Scale
- Risk and uncertainty

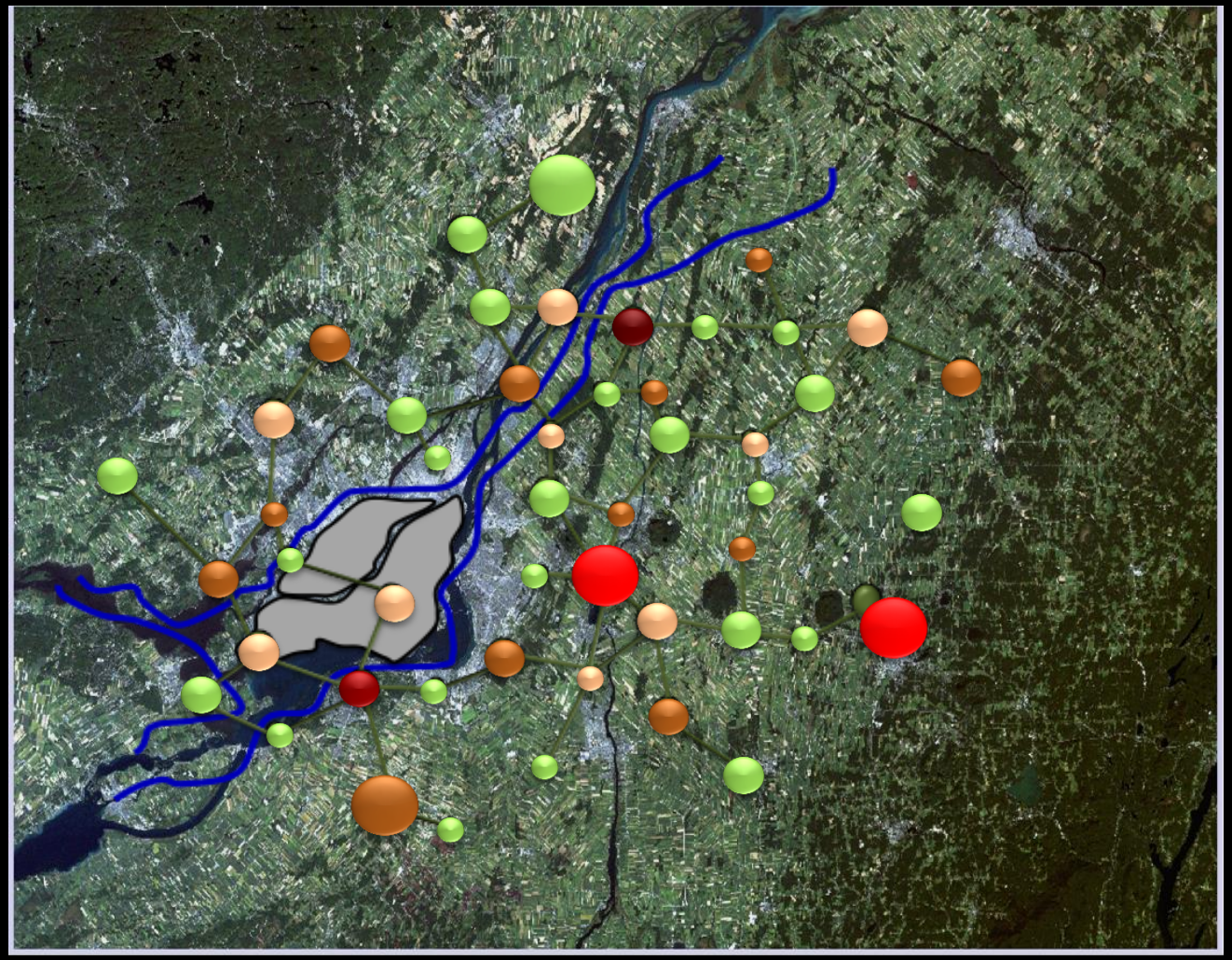
New Efforts Needed: Move towards wellbeing

- Co-design, co-production
- Test the models, assess the assessments
- Critical linkages and feedbacks
- More integrated, highly flexible models
- Better thinking about positive futures and how to transition towards them

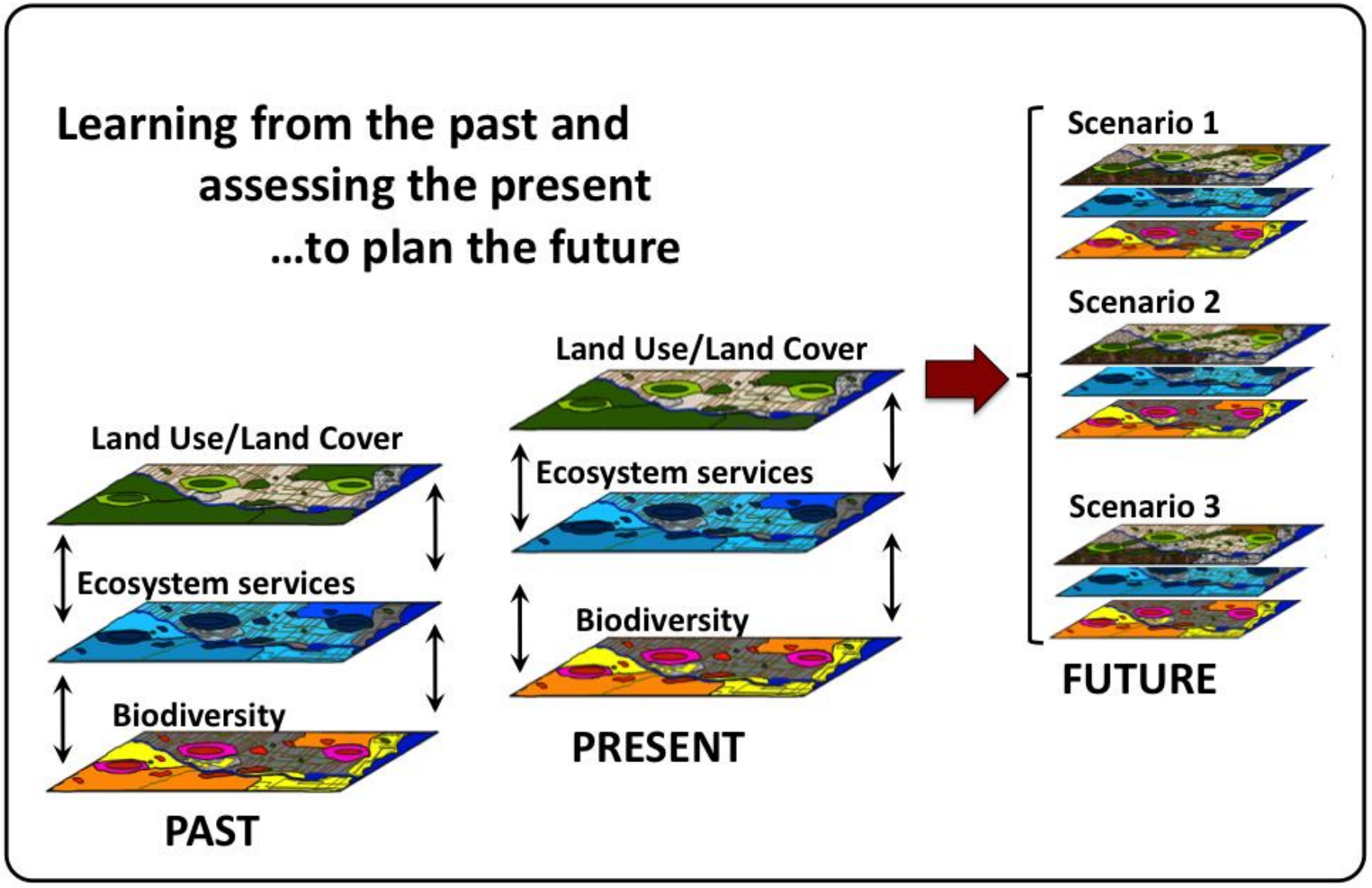
Human well-being as the target outcome

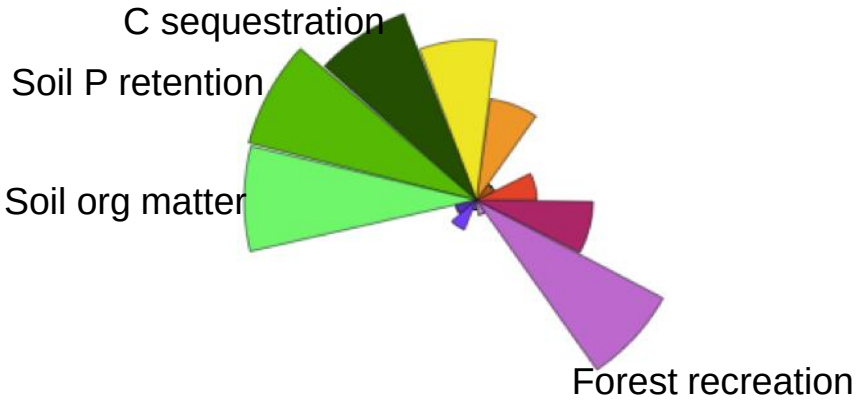
- To understand well-being, not just climate and food, but multiple ecosystem services
  - Multiple forms of capital, but are they substitutable? When? How does this impact resilience and sustainability of production?
- Not just production of multiple services, but distribution of services to people
- Not just distribution of ES, but how people's lives are affected

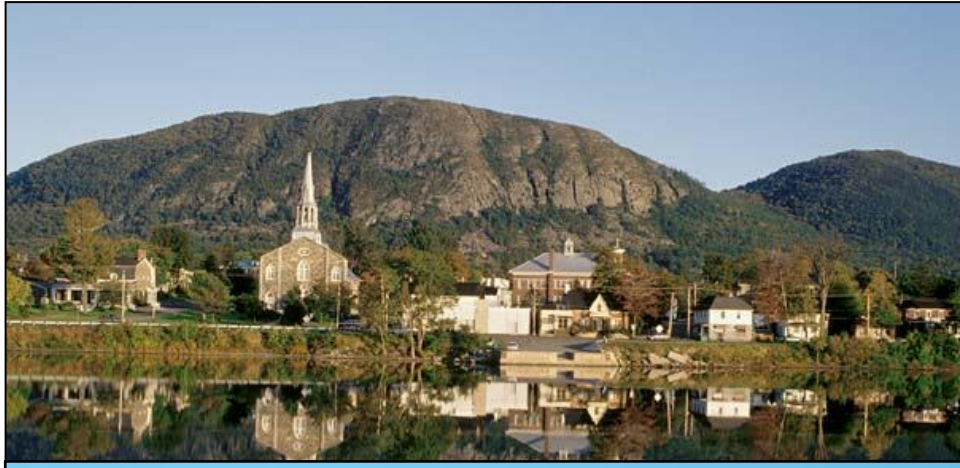
Co-design, co-production

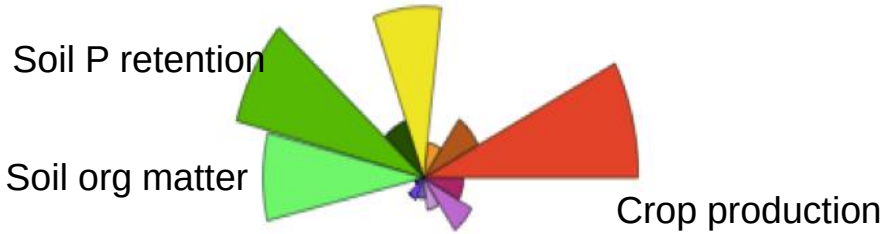


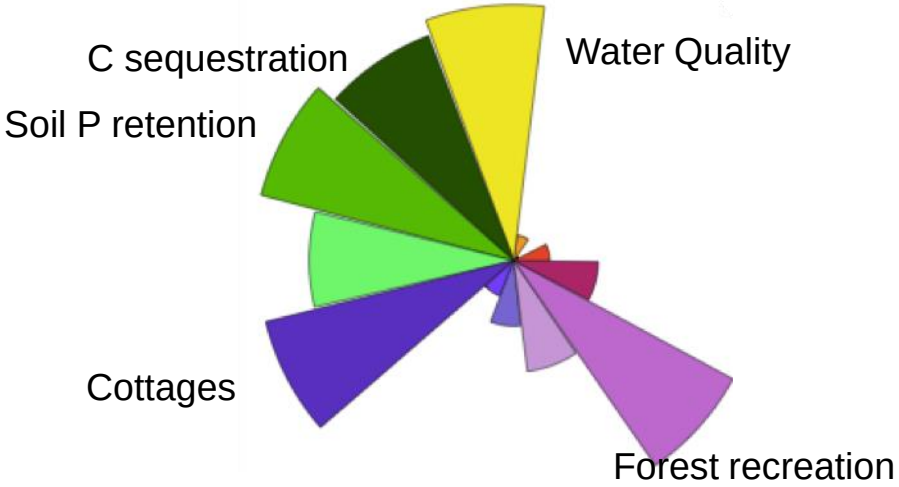
Slide courtesy of Andy Gonzalez


Learning from the past and
assessing the present
…to plan the future
Land Use/Land Cover
Ecosystem services
Biodiversity
PAST
Land Use/Land Cover
Ecosystem services
Biodiversity
PRESENT
Scenario 1
Scenario 2
Scenario 3
FUTURE


C sequestration
Soil P retention
Soil org matter
Forest recreation




Soil P retention
Soil org matter
Crop production


C sequestration
Water Quality
Soil P retention
Cottages
Forest recreation

Scénario 1

TROP, C'EST COMME PAS ASSEZ

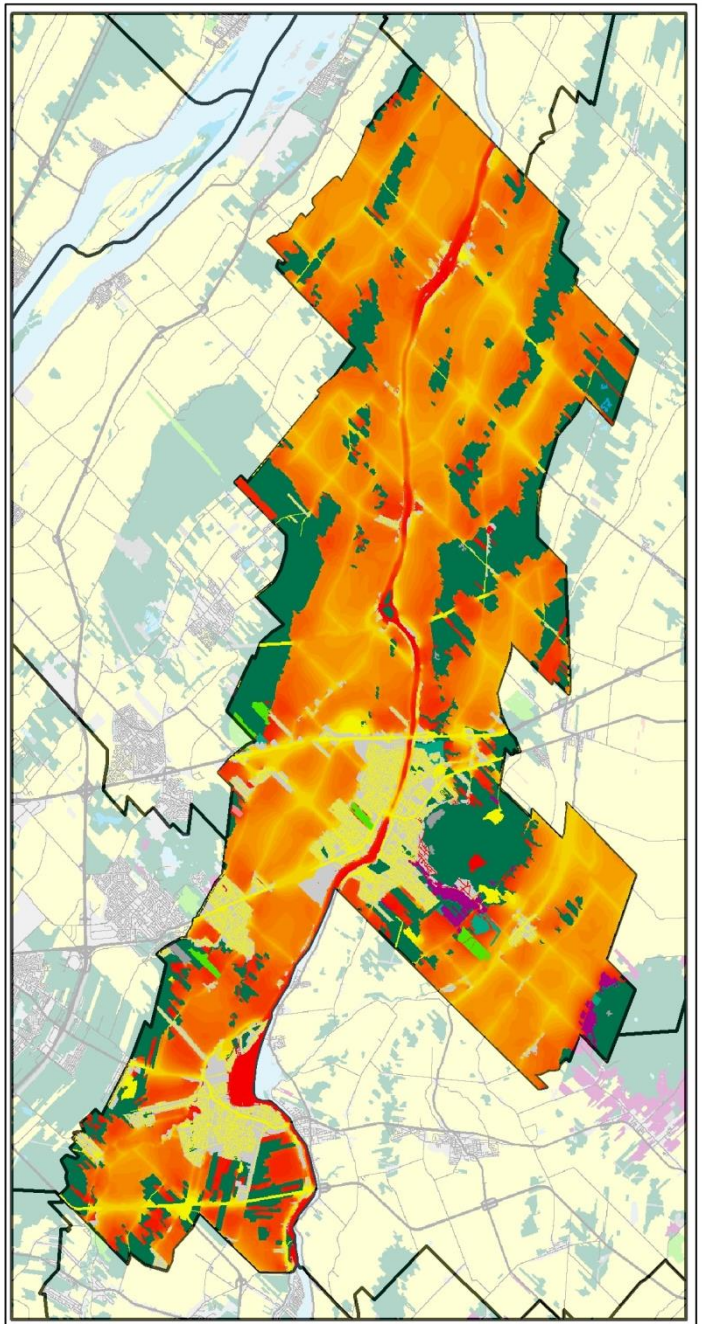
Drawn by Denis Blainville

Scénario 2

LE PLEIN D'ÉNERGIE

Drawn by Denis Blainville

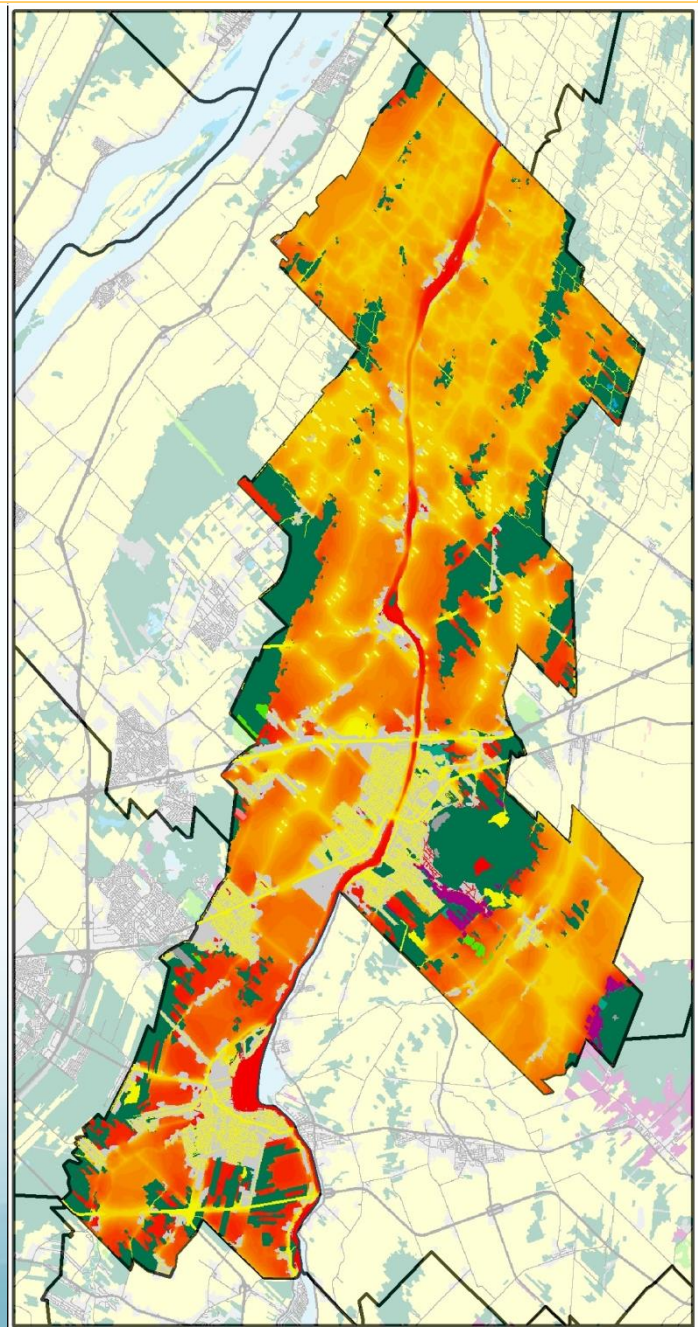
Scénario 2 : Le Plein D’énergie



Aesthetic quality

Today

Scenario 2



Critical linkages and feedbacks in more integrated, highly flexible, dynamic models

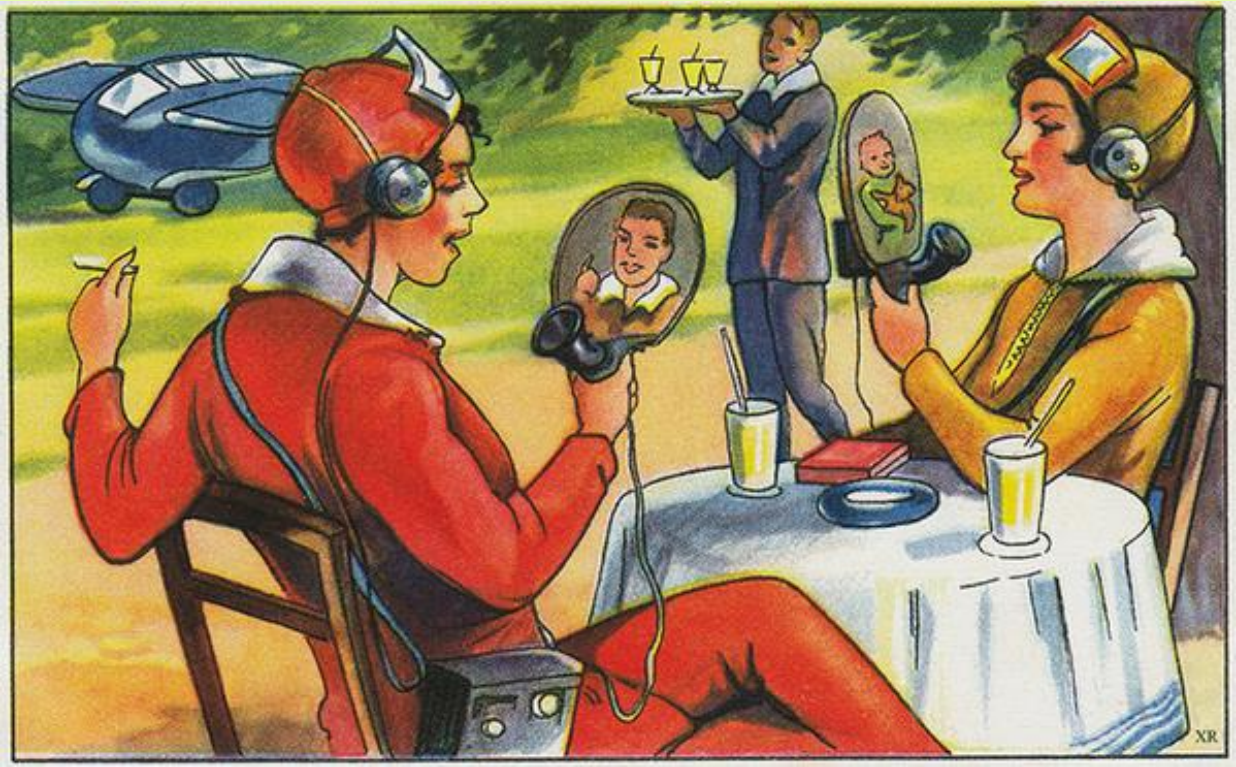
Better thinking about futures

Stories are powerful things: they create our reality as much as they explain it.

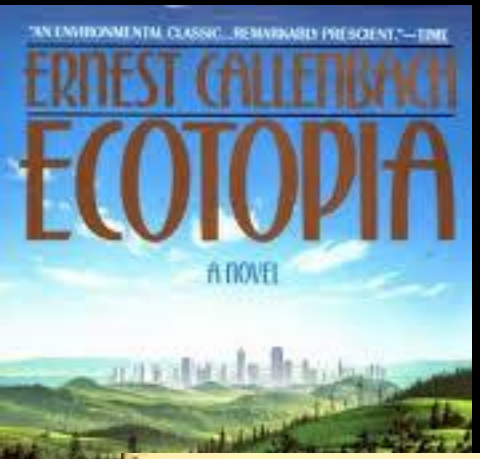
Seeds of a Good Anthropocene

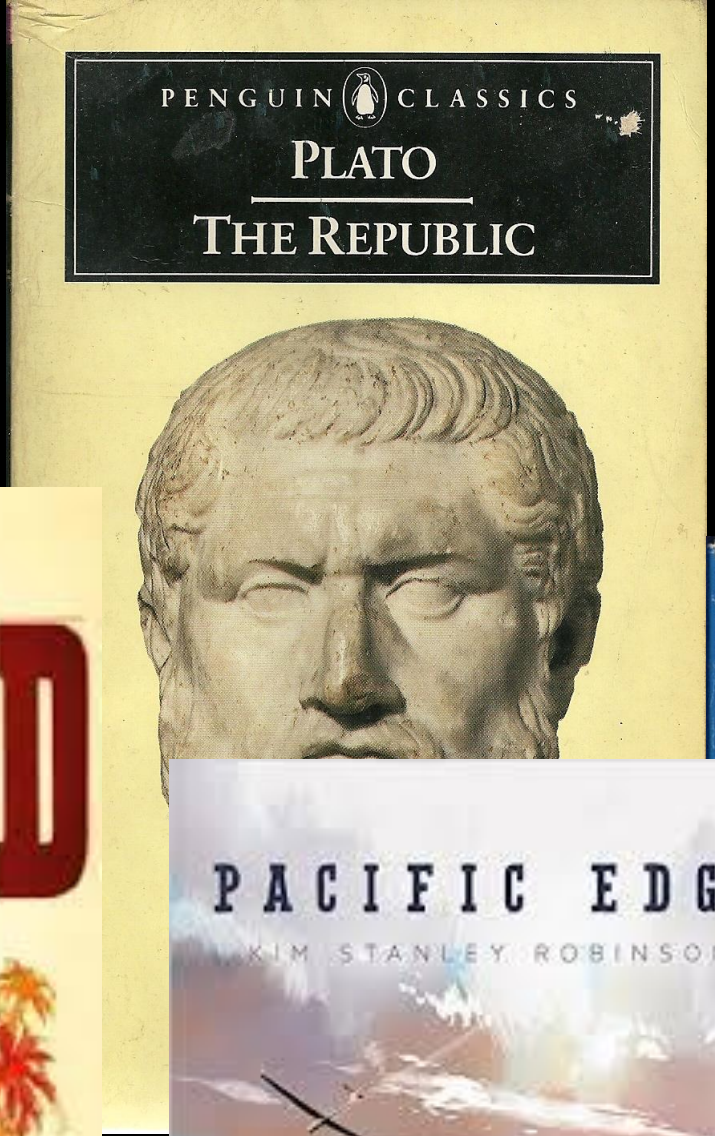
Pockets of a better future

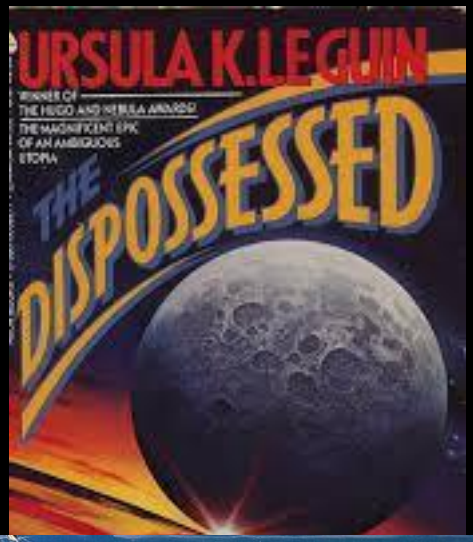
that are already in existence today

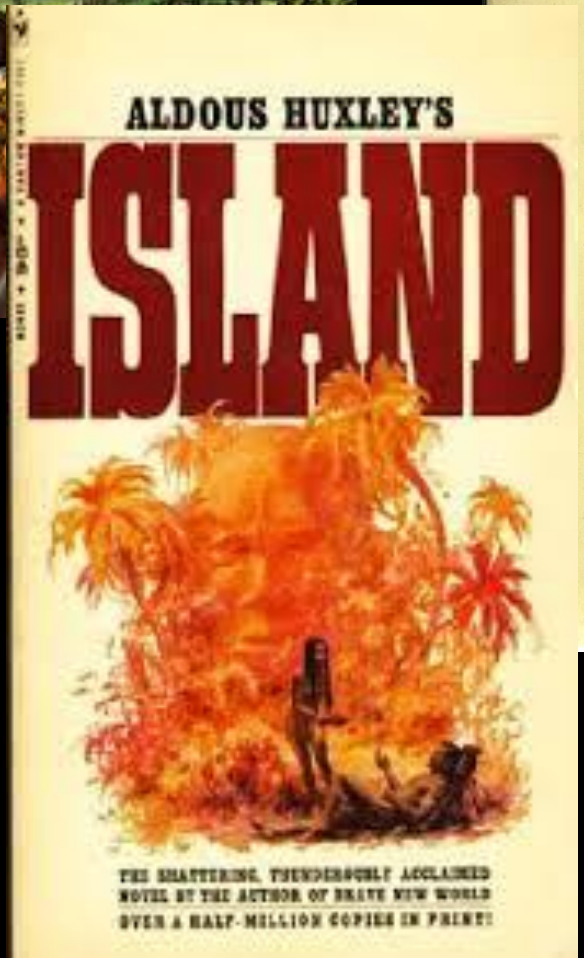


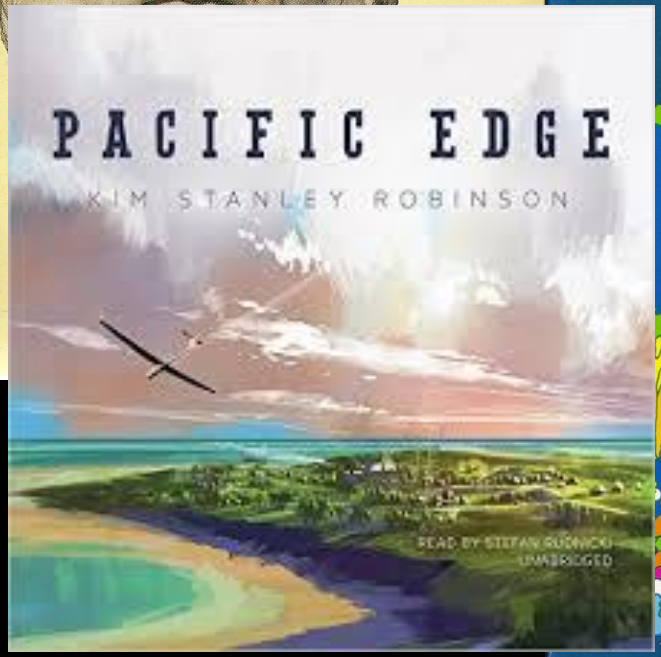
Why “Good” Anthropocene(s)?

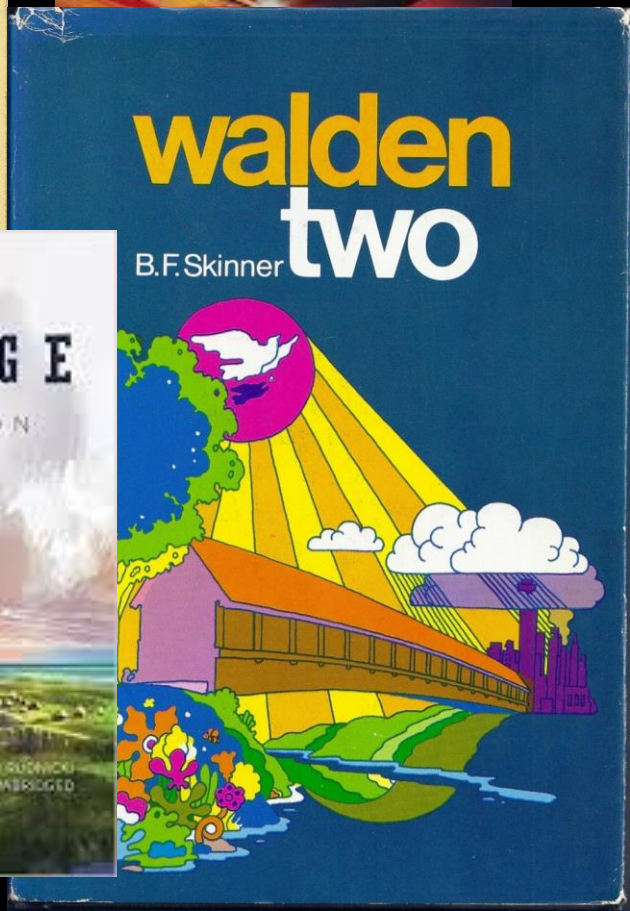

"AN ENVIRONMENTAL CLASSIC...REMARKABLY PRESCIENT."—TIME
ERNEST CALLENBACH
ECOTOPIA
A NOVEL


PENGUIN CLASSICS
PLATO
THE REPUBLIC


URSULA K. LE GUIN
THE DISPOSSESSED


ALDOUS HUXLEY'S
ISLAND
THE SHATTERING, THUNDEROUSLY ACCLAIMED
NOVEL BY THE AUTHOR OF BRAVE NEW WORLD
OVER A HALF-MILLION COPIES IN PRINT!


PACIFIC EDGE
KIM STANLEY ROBINSON
READ BY STEFAN RUDNICKI
UNABRIDGED

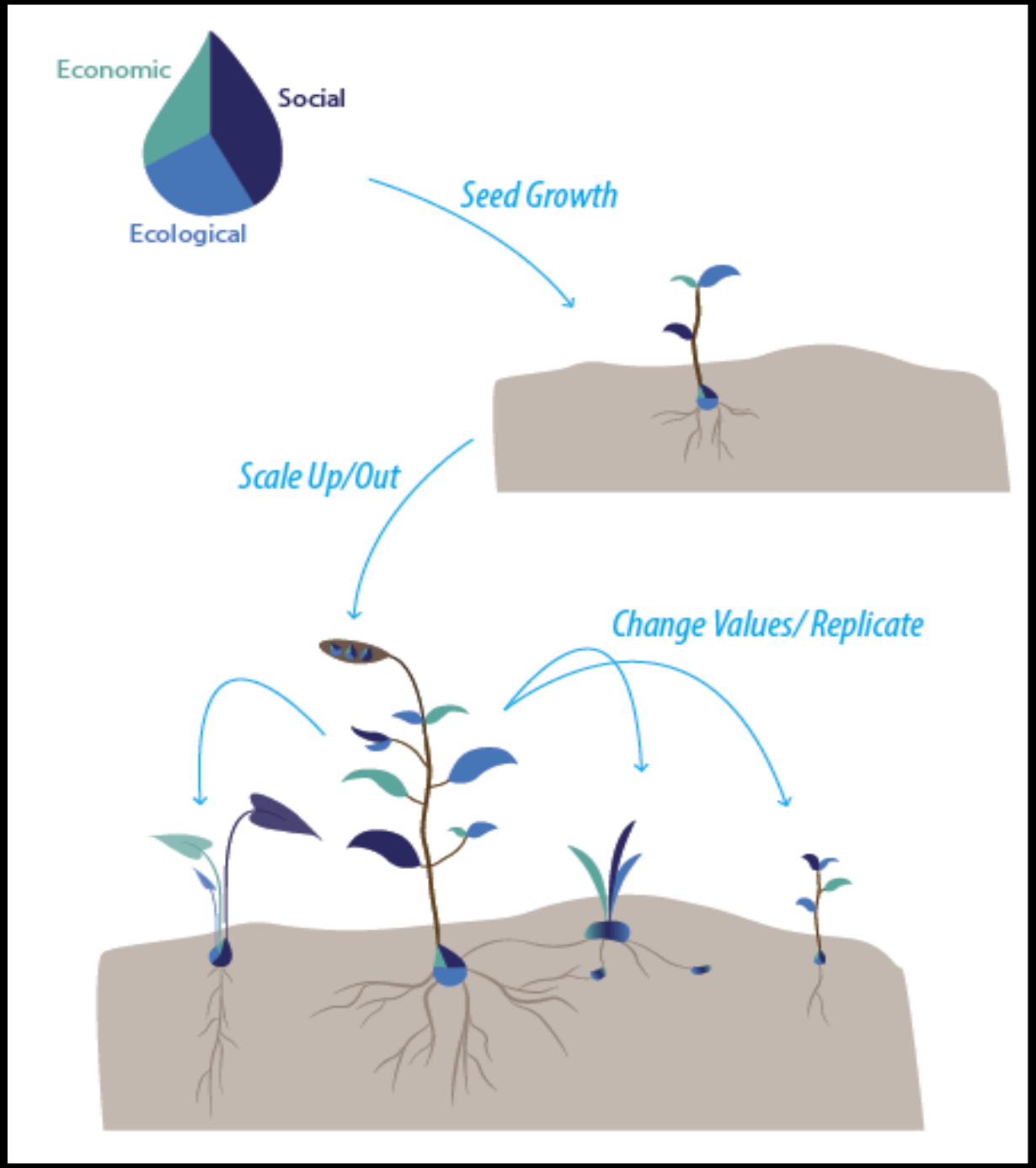

walden two
B.F. Skinner

Issues not well represented in existing narratives:

- Cultural diversity (e.g. non-state movements)
- Resilience (of nature & people)
- Political economy (colonialism, conflict, etc)
- Cities (different types of urbanization)
- World views (especially about nature)
- Trust (in other people, institutions)
- Hope, Fun, etc...

Why seeds?

Innovate
Reform
Innovate + Reform
Stop


Economic
Social
Ecological
Seed Growth
Scale Up/Out
Change Values/ Replicate

What's next for IAMs?

- More regional models, more scaling
- Co-design, co-production
- Test the models, assess the assessments
- Critical linkages and feedbacks
- More integrated, highly flexible models
- Better thinking about positive futures and how to transition towards them

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