

# Towards a sustainable society

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Any questions?

# Sustainable planet, or region?

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- Global sustainability

# Towards a sustainable society

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- The role of research
- If we are to discover what it is to be sustainable, the *nature* of research is a more important and interesting question

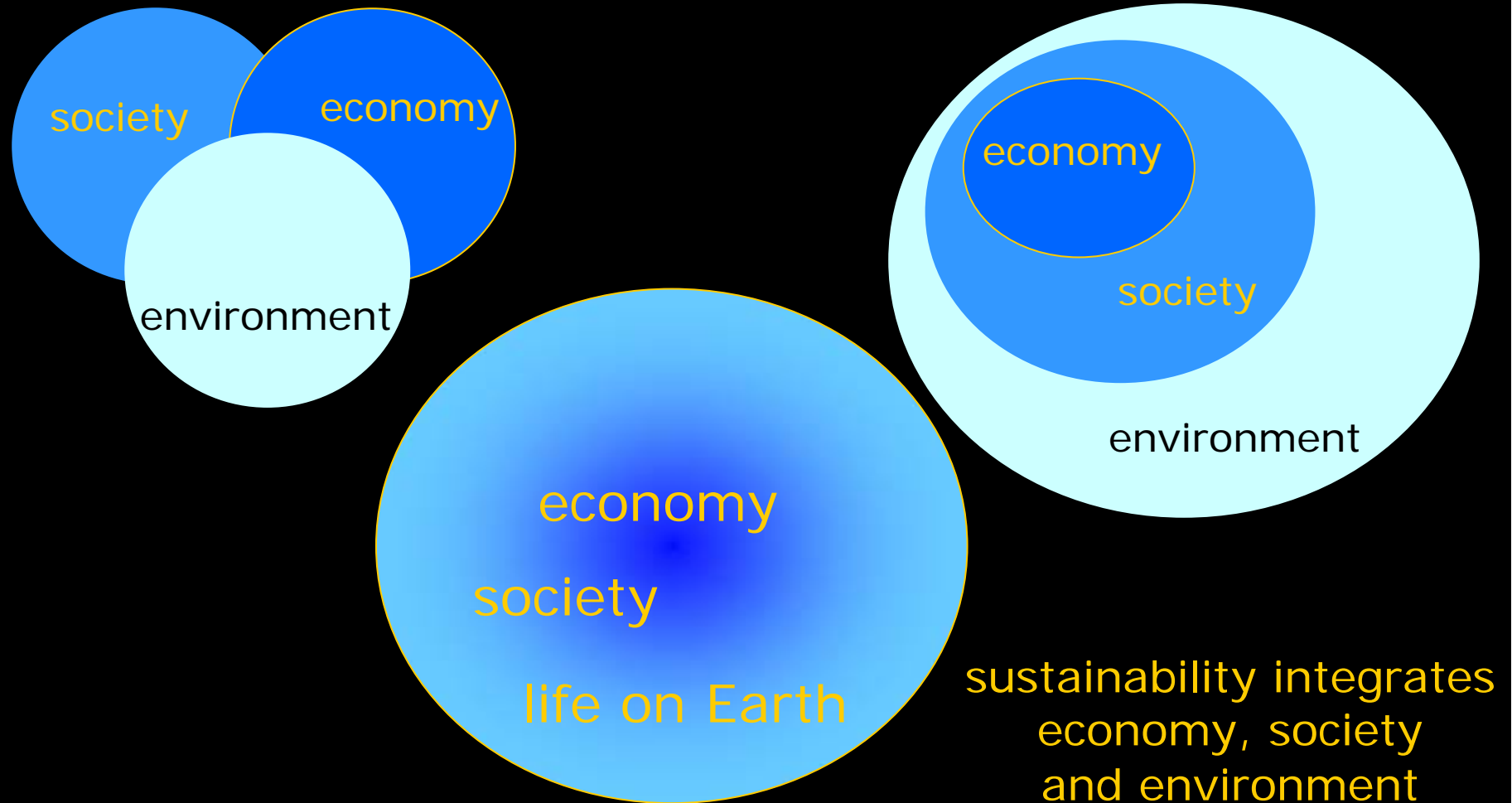
# Key concepts

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- the Earth does not depend on us
- boundaries between 'natural' and 'social' are only in our heads
- environmental problems are global but have local sources and consequences
- many countries export the problem
- linear, reductionist thinking is part of the problem, and obstructs solutions

# biodiversity

- I use it to mean “life on Earth”



# non-human view of humans



- Bloated something-other-than-nature
- Not serious about things that matter

# Sustainability

- “preserving life on Earth”
- My position is:
  - many species (including humans) are under threat in this extinction spasm
  - could even be 99.9% of all species
  - still leaves 10k species (possibly not including humans)
- Life on Earth is not under threat
  - but human survival is
- Sustainability is about long-term human well-being

# Long-term human well-being

- Only possible in a sustainable society
- Which is only possible when the relationship between humans and the non-human part of biodiversity (i.e. most of the living world) is sustainable
- Which is only possible when we make modest demands on nature
- Which is only possible with a small population living simply
- Which is only possible when “growth” refers to ethics, not material wealth

# Can we solve one at a time, please?

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photosynthesis over-harvested  
unrestrained economic growth  
rare minerals getting rarer  
inequality and inequity  
water over-allocated  
biodiversity loss  
population growth  
soil degradation  
global warming  
peak energy  
pollution  
violence  
disease  
poverty  
famine  
waste

# Today is unsustainable

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- global trend away from sustainability
  - depleting resources faster than nature can regenerate them
  - degrading or destroying ecosystems faster than they can restore themselves
  - disseminating waste faster than the living world can resorb it
- can not assume a secure and comfortable continued stay on Earth
- achieving sustainable use of natural resources will not “just happen”
  - unprecedented and determined effort

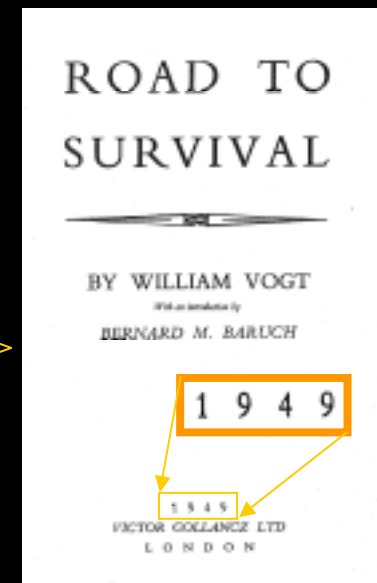
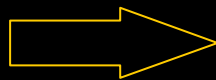
# Factors of non-sustainability

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- Ineffective institutions
- Insufficient monitoring, surveillance
- Insufficient information for policy
- Unclear access conditions, ownership
- Technology unwisely implemented
- Overcapacity for exploitation
- Subsidies
- Illegal financial transfers
- Uncertainty, variability, fragility

# 5 stages of grief

- Denial — everything looks fine to me
- Anger — someone is to blame
- Bargaining — buy our way out
- Depression — goodbye, future
- Acceptance — hello, reality



# Sustainability

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- Is the realisation (the making real) that there is no longer a difference between
  - what we can do
  - what we must do
- Therefore sustainability isn't a problem. It's the solution.
- The problem is, how do we reach that solution?

# Obstacles to reaching solution

- From a scientific perspective
  - Planetary scale issues, metre scale science
  - Inappropriate data
    - ↳ You get what you measure
  - Lack of reliable data
    - ↳ Particularly at global scales
  - Lack of reliable models
    - ↳ Black Swan effect
  - Lack of reliable concepts
    - ↳ Learning by getting it wrong

# Seeing through the wall



**GREEN DAY**

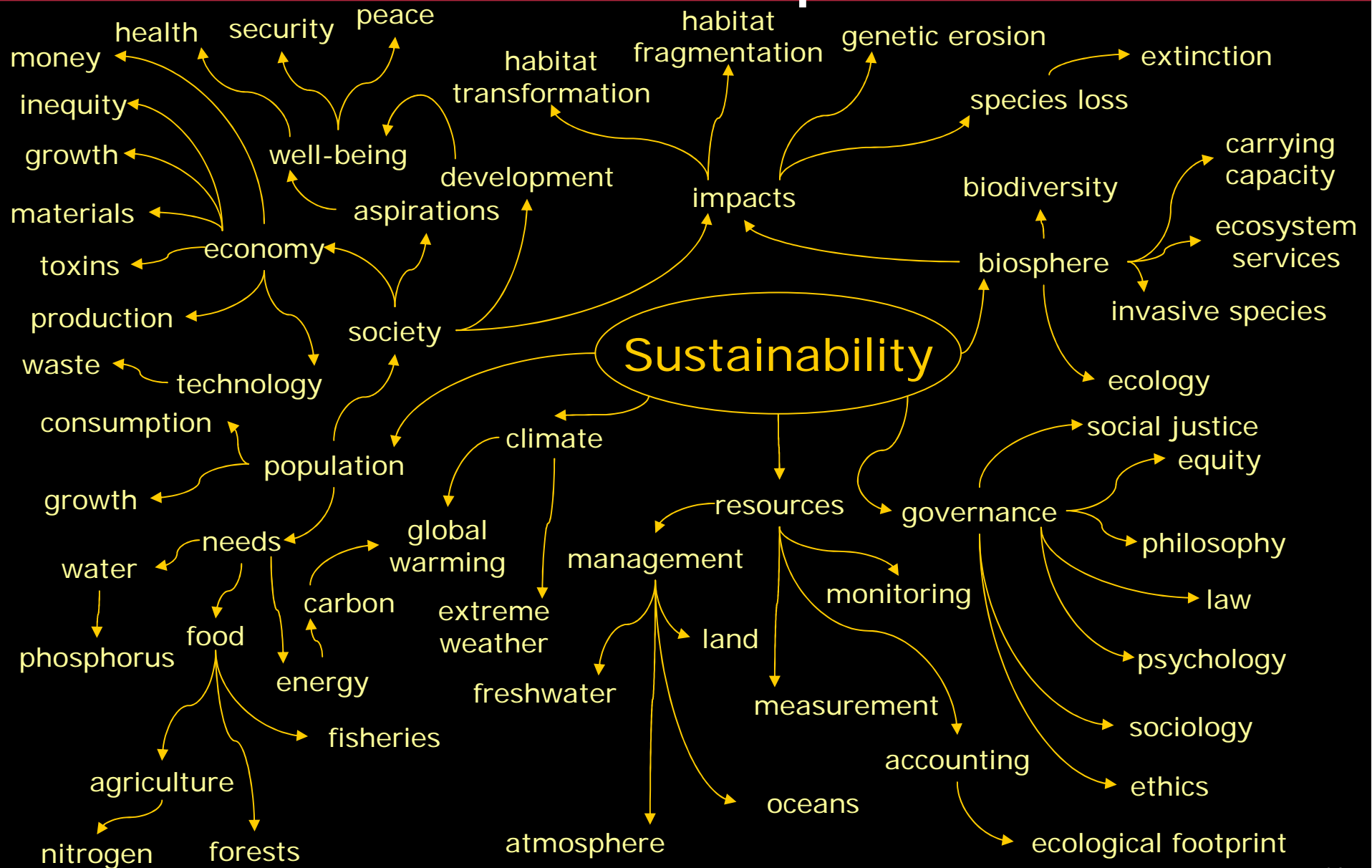


**21<sup>ST</sup> CENTURY  
BREAKDOWN**



**HOPE FOR A BETTER TOMORROW**

# Research in a complex world



# Complexity and reductionism

- Day by day, minute by minute, our world becomes more complex
- Examining fragments rarely helps us to understand complexity, and never to understand emergent behaviour
- When we represent and view reality as components and spare parts we blind ourselves
- Reductionism and technology brought us to this mess; why hope they will help us out?
- We must abandon boundaries in our thinking

# Science and technology

- control over Nature
- freedom from Nature



# attitudes towards knowledge

- Dominance
- Objectivity
- Reductionism
- Understanding
- Determinism
- Positivism
- Prediction
- Control
- Care
- Wholeness
- Holistic perspective
- Conscience
- Connectedness
- Morality
- Gardening
- Love



which set of attitudes is more likely to develop human potential and enrich human life?



# The meaning of human

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- In dominating the planet, we become accountable for it.
- In manipulating life, death, reproduction, the normal and the pathological, we become responsible for them.
- We are going to have to decide about every thing, and even about Everything—about the physical and thermodynamic future, about Darwinian evolution, about life, about the Earth and about time.

Serres, Michel (1995) *Natural Contract* U. Michigan Press

# Social, natural, economic?

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# Complex world

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- Complex interconnected problems
- Interactions between global and local scales
- Partial, fragmented knowledge systems
- Only one planet

# Some roles of research

- We need:
  - reliable global catalogue of species and habitats
  - measures of rate of loss of species and habitats
    - ↳ especially where diversity is greatest
  - comparable methods of measuring diversity
  - methods to relate diversity to human requirements
  - assessments of conservation status and trends

# Sustainability

- persistent human wellbeing
  - Can only be achieved if the living world maintains essential processes, functions, diversity and productivity
    - ↳ At the same time as it provides for human needs



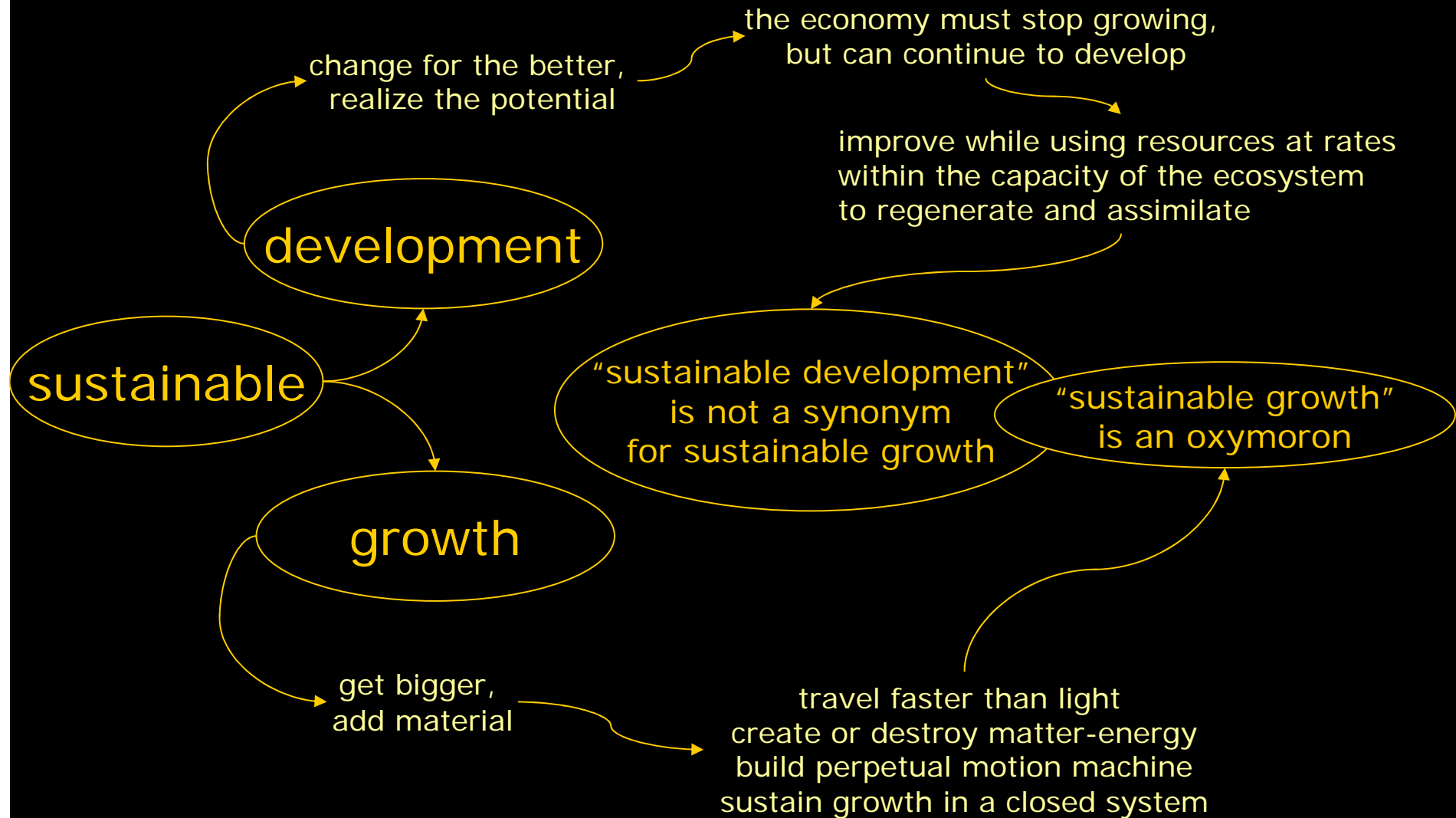
- a journey
- an important but unfocused concept
- a feel-good buzzword

# Unfortunately, though...

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- necessary (but not sufficient) conditions for sustainability:
  - stopping human population growth
  - stopping growth in the rates of consumption of resources

# Growth, development?



# Consumption

- human transformation of materials and energy
  - Unsustainable if it
    - ↳ makes materials or energy less available for future use
    - ↳ negatively impacts biophysical systems
  - sustainable rate of transformation depends on
    - ↳ rate of resource regeneration
    - ↳ capacity of the environment to assimilate waste
    - ↳ rate at which more abundant alternatives can be developed to replace material or energy source
  - research is needed to determine sustainable rates of consumption

# Consumption: your duty



- Nobody is a *citizen* any more
- Everyone is a *consumer* or a *customer*
- Citizens have rights and civic responsibility
- Consumers have money and a duty to consume
- in the sacred name of economic growth

# A word on technology

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- Most species limited by environmental resistance (often energy supply)
- Technology = domination
- technology sets aside environmental resistance and allows human populations to grow beyond "natural" limits
- unintended effect: environmental impact
- sustainability is not about domination but about dealing with the consequences of domination

# When they say... they mean

- Opportunities
- Exciting challenges
- Citizen (rare)
- Sustainable
- Developing nation
- Think out of the box
- Organic
- Food security
- Sustainable growth
- Sustainable development
- Major problems
- Insoluble problems
- Consumer
- Gobbledegook
- Failed state
- Please don't ask me
- Industrial
- Profit for Monsanto
- Perpetual motion
- Sustainable growth

# Your consumption

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- Your impact on the Earth is non-zero
- You don't know what that impact is
- This is the one subject that matters
- We have far too little information
- We live in a fairy tale land
- The world for which you educate your children may not exist for them

# Important research

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- How to assess real ecological cost of goods and services?
- How to get companies to find out and tell us honestly?
- How to build them into pricing and taxes?
- How to use revenue to manage, protect and regenerate ecosystems including those in soils and water?

# Sustainability

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- Nobody said it would be easy
- Nobody has ever been there
- Nobody is in charge
- Nobody is going to help us out
- We are on our own with this one
- Your brains and your energy are our hope for the future

# The solution is obvious

